

SELF STUDY REPORT

2018



**COLLEGE OF BASIC
SCIENCES &
HUMANITIES**



**CCS Haryana Agricultural University
Hisar, Haryana-125004**



FOREWORD

Haryana is one of the smallest States in India with 4.4 million hectare of land forming 1.4% of the total geographical agricultural area of the country. Haryana is leading state for Agriculture production in the country and one of the biggest contributors of food grain to the central pool.

Though the country is fast marching onto the path of modernity through industrialization yet agriculture sector remains the backbone of the economy. Agriculture helps industry too and provides raw material to it. In addition to feeding our population, agriculture also contributes in a prominent way to the country's export endeavours.

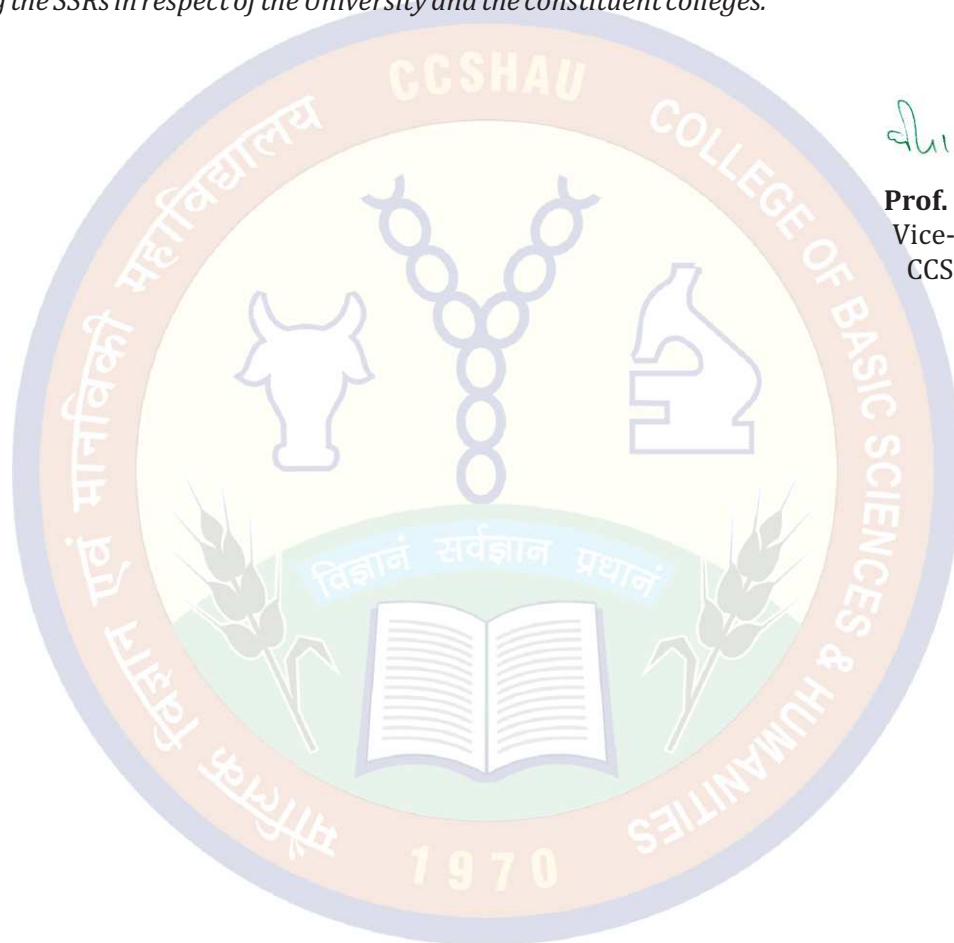
The advancements in the areas of food and agriculture have been possible due to an intelligently planned and conscientiously imparted agricultural education. We, at CCSHAU are paying great attention to the emerging areas of agriculture in the era of digitization, technological advancement, developing University entrepreneur/industry linkages and inspiring the students, farmers for Agri Entrepreneurship.

CCSHAU, Hisar was among the first four universities to receive accreditation from ICAR in 1999 for its excellence in teaching, research and extension. Since then it has gone from strength to strength and has fortified its teaching, research and extension activities further. It now has collaborative programmes with the ICAR Institutes in education and research. The University believes in innovative ventures and has taken several ground-breaking initiatives. The University established Deendyal Upadhyaya Centre of Excellence on Organic Farming with the objective to popularize organic farming in the State and also set up Agri Business Incubation Centre for the youth of State with the mission to inculcate a culture of advance motivated entrepreneurship to achieve the growth and success of emerging technology in agriculture and allied sectors. CCSHAU is committed to furthering agricultural education and has established a College of Agriculture at Bawal, Rewari. The University also created new departments of Seed Science & Technology, Physics, Chemistry, Basic Engineering, Renewable and Bio Energy Engineering for betterment of teaching and research. The CCSHAU has been ranked 76 in overall category and 50 in University category as per NIRF India Ranking 2018. In recognition of its singular accomplishments in teaching, research and extension, it was bestowed upon with Sardar Patel Outstanding ICAR Institution Award-2016. To prepare varsity students for different competitive exams including ICAR-PGS exam, JRF- SRF and ASRB, a Students' Centre for Career Excellence has been set up under Counselling and Placement Cell of Directorate of Students' Welfare. CCSHAU is leader amongst the higher education institutes of the country and has won many prestigious awards and honours.



The University is, in fact, creating new vistas in its chosen fields and has become truly a global university with various international MoU's and an increased student reach. Accreditation is a process of authorization or official approval of the profile, strengths, and achievements of an institution. The University has been ranked Number 4 amongst agricultural universities of ICAR and is the only premier University of Haryana in Top 50 Universities of the country. The Self Study Reports of the University and its constituent colleges give us an opportunity to acquaint stakeholders afresh with our goal to provide holistic education to our students.

I appreciate the dedicated commitment of all concerned members of various Committees in preparing the SSRs in respect of the University and the constituent colleges.



Prof. K. P. Singh
Vice-Chancellor
CCSHAU, Hisar

PREFACE

It is my privilege as a Dean, College of Basic Sciences and Humanities, Chaudhary Charan Singh Haryana Agricultural University to submit this self study report for validation & accreditation to Indian Council of Agricultural Research. The College of Basic Sciences and Humanities (COBS&H) was established in 1970 as one of the constituent colleges of CCS Haryana Agricultural University, Hisar. It is housed in a magnificent four storey building. The college offers M.Sc. and Ph.D. degree programmes in various disciplines. The admission to M.Sc. programme is through Common Entrance Test conducted by the University, while Ph.D. admissions are on the basis of merit. From 2017-18, the admission to Ph.D programme in all the disciplines is through Common Entrance Test except Statistics and Sociology. Admissions in these two disciplines will be through CET from 2018-19. The college also offers basic science courses to B.Sc. (Ag.) and B.Sc. (Home Sci.) students of constituent colleges of the University. It also offers two P.G. Diploma courses namely, "Communication skills in English" and "English-Hindi Translation".

The COBS&H has eleven departments namely Botany & Plant Physiology, Chemistry, Biochemistry, Food Science & Technology, Languages & Haryanavi Culture, Mathematics & Statistics, Physics, Microbiology, Molecular Biology, Biotechnology & Bioinformatics, Sociology and Zoology & Aquaculture.

The Faculty of the College is well qualified, competent and very dedicated. Several faculty members have received ICAR sponsored Best Teacher Award and recognition from National/International Societies. The faculty has implemented several adhoc research projects from outside national & international agencies, and published quality research papers in high-impact factor journals. The College has filed 16 patent applications; three of these have already been granted.

The COBS&H has the honour of having distinguished persons achieving Padam Shree Award, positions of Vice-Chancellors of various Indian Universities and being the senior administrators in organizations like ICAR, CSIR, CCMB and ICRISAT.

The COBS&H has well-equipped laboratories, modern smart class rooms, CCTV cameras, air-conditioned committee room and an auditorium with modern audio-visual facilities having a seating capacity of about 315 persons. The college has 32 net houses, two transgenic green houses, a bio-fertilizer production unit and a biogas plant. The college has a computer centre that has facilitated in imparting computer literacy to the students, and establishing Wi-Fi network and AEBS biometric systems in the University.

The COBS&H has well established Central lab housing various sophisticated and costly instruments like Surface plasmon resonance, high throughput multichannel potentiostat

galvanostat, scanning electrochemical microscope, real time quantitative PCR, Elisa reader, western blot system, GLC, fermenter, chlorophyll fluorescence meter, rapid visco analyzer, lyophilizer, etc.

The COBS&H has a botanical garden covering an area of 10.5 acres having plant biodiversity of nearly 600 species that includes ornamental foliage plants, seasonal flowering plants, bamboos, ferns, cacti and succulent plants, medicinal and aromatic plants, chrysanthemums, roses, aquatic plants, climbers, shrubs, and trees. It has a wide scope in imparting knowledge of flora and fauna to students.

The COBS&H has been ICAR accredited since inception. The teacher/students ratio is about 1:2 that speaks of the more personal attention being given to the students for imparting quality education. The effective teaching, stringent examination and evaluation procedures have made the students to excel in their respective fields.

We strive tirelessly to upgrade skills & knowledge and guide our students to take their place as responsible citizens of India. We do our best to provide holistic education to our students and in doing so we aim to achieve a commitment to a better India for all of us. This SSR is a communication of our efforts towards this end.

A total of about 60 PG students have qualified NET (UGC, CSIR, ICAR) and other competitive exams in past three years. Several of our students have secured international fellowships including Monsanto-Beachell Borlaug, BBSRC-DFID, Canadian Commonwealth, Indo-Israel, DAAD; and National fellowships e.g. INSPIRE, CSIR and UGC etc. The alumni of the college have found placements in reputed Institutions such as ASRB, DRDO, CSIR, ICAR, SAUs, Govt. Colleges, public/private institutions/industries, abroad etc.

We look forward to a rewarding interaction with the ICAR peer reviewing team during their forthcoming visit to our institution.



Prof. Rajvir Singh
Dean ,COBS&H
CCSHAU, Hisar

CONTENTS

6.5.1. College Administration	2
6.5.2. Faculty	29
6.5.3. Learning Resources	51
6.5.4. Student Development	59
6.5.5. Physical Facilities	78
6.5.6. Research Facilities	80
6.5.7 Outcome / Output	90
6.5.7.1 Student Performance	90
6.5.7.2 Student Placement Profile	90
6.5.7.3 Awards/ Recognitions	91
6.5.7.4. Employability	97
PROGRAMMES	
Biochemistry	99
Botany and Plant Physiology	109
Chemistry	123
Food Science and Technology	131
Mathematics and Statistics (including Physics)	141
Microbiology	151
Molecular Biology, Biotechnology and Bioinformatics	161
Sociology	177
Zoology and Aquaculture	185
Languages and Haryanvi Culture	197
Computer Section	205
ANNEXURES	211



SELF STUDY REPORT FOR COLLEGE OF BASIC SCIENCES AND HUMANITIES

Established in 1964, as a part of the erstwhile PAU Ludhiana, the College of Basic Sciences and Humanities became one of the independent constituent colleges of Haryana Agricultural University, Hisar in 1970. The college runs M.Sc. and Ph.D. programmes in different disciplines i.e. Biochemistry, Bioinformatics, Botany, Chemistry, Food Science & Technology, Microbiology, Molecular Biology and Biotechnology, Physics, Plant Physiology, Sociology, Statistics and Zoology. The Food Science and Technology discipline was started in 2001. Department of Biotechnology was created in 1997 taking faculty from Genetics, Microbiology, Biochemistry and Plant Breeding departments promoting interdisciplinary research. Departments of Mathematics, Statistics & Physics and Botany & Plant Physiology have started M.Sc. courses in Physics and Environmental Science from 2017-18, respectively. A separate Physics department has been created in 2018. Initially started with the trimester system of education, it was replaced by semester system in 1987-88. **Dr. S.R. Vyas** was the founder Dean of this college.

The college imparts quality education to post-graduate students of Basic Sciences and Humanities. It also undertakes teaching of under-graduate and post graduate students from all the constituent colleges of the university. The college is a symbol of performance, potential and progress. Its iconic status of 47 years makes it an unrivalled institute of research, teaching and extension.

The college has a unique distinction and privilege to have faculty honoured with –

- Padam Shri (Dr. J.B. Chowdhury)
- Vice Chancellors of CCS Haryana Agricultural University, G.B. Pant University of Agriculture and Technology, Pant Nagar (U.P.), OPJS University, Rajasthan
- Rafi Ahmed Kidwai, Hari Om Ashram Trust, ICAR team awards.
- Fellows of NAAS, IAS, NASI etc.
- The faculty has secured several prestigious International fellowships (Rockefeller Foundation's PDF and BCF fellowships, DAAD fellowships, Indo-Japan Exchange Fellowship, AHRD Fellowship (ICAR), DBT Overseas Associate fellowship), for their Post-doctoral and/or advance research.
- Six of the faculty members have received ICAR sponsored "Best Teacher Award" of the University.
- Our faculty has been awarded several competitive research grants over the years from International agencies such as UNDP, PL480, Rockefeller Foundation, USA and National agencies like DBT, DST-GOI, ICAR, CSIR, DRDO, UGC.
- Two students were awarded Jawahar Lal Nehru Best Thesis Award by ICAR. Several students were also bestowed with V.D. Kashyap Gold medal for Best Thesis.
- Several teachers are on editorial boards of high ranking journals, member Board of Studies in other institutions.
- Our students are pursuing higher degrees in reputed National and International Institutes and have been selected as faculty in reputed Institutions such as DRDO, ICAR, ICGEB, SAUs, Govt. Colleges, Public/ Private institutions/industries.

VISION

- To impart basic education integrating teaching, research and extension in areas relevant to agriculture with academic excellence

MISSION AND GOAL

- To produce quality human resource

- To conduct basic research in state/nation's priority areas related to agriculture
- To develop technologies to combat various constraints in agricultural production in the country
- To reduce the gap between existing and novel technical innovations, development of products and their speedy commercialization

OBJECTIVES

- To impart knowledge in various disciplines of basic sciences to the students from constituent colleges of the university.
- To strengthen and achieve excellence in teaching, research and to develop quality human resource in various disciplines of basic sciences.
- To develop skills and values among students to make them competent not only for government services and industries but also as entrepreneurs.
- To develop technologies that can contribute towards the upliftment of the Indian rural economy, employment generation and increased avenues of self employment.
- To develop new technologies for sustainable agricultural production and to refine existing technologies. These are communicated to the stakeholders through class room teaching, seminars, exhibitions, expert lectures and through lab and field demonstrations.
- To develop linkage with national and international universities, industries and to promote public-private partnership.

6.5.1. College Administration: *Whether the Dean's post sanctioned by the appropriate authority as per ICAR Model Act/UGC guidelines? Date of selection of present dean, mode of selection, tenure etc. shall be mentioned. Clearly mention the staff and infrastructure/facilities available in the Dean's Secretariat.*

The Dean's post is sanctioned by the appropriate authority as per ICAR Model Act. The Dean is appointed on a tenure basis for a period of four years through open selection on All India basis. **Prof. Rajvir Singh** has been appointed Dean, College of Basic Sciences and Humanities on December 22, 2017.

6.5.1.1. College Dean's office establishment

DEAN'S SECRETARIAT		
Dean's Name	Prof. Rajvir Singh	
Staff of the Dean Secretariat:		
Staff	Sanctioned Posts	In position (filled)
AAO/ Supdt.	01	01
Personal Secretary/ Personal Assistant	01	01
Office Assistants (No.)	03	03
Clerks (No.)	04	04
Messengers (No.)	04	02
In Charge Computer Centre	01	01
Computer operator (No.)	02	02
Driver	01	01
Liftman	01	01

Central facilities include Directorate of Students Welfare, Library, Estate and Maintenance office, Hospital and hostel facilities.

Infrastructure facilities available in the Dean's Secretariat

The different sections of the Dean's Secretariat (establishment branch and accounts branch, academic branch, PS Office, AAO/superintendent Office, cashier desk, Store (s), Committee Room, Common room for girl students) are well furnished and have all the facilities required to carry out their work. There are five wash rooms, 1 for Dean, 2 females and 2 males. In addition, there is an auditorium with a seating capacity of about 315 persons. The details of the infrastructure in the Secretariat are as under:

Dean's Office	: Dean's Chamber, Sofa Set, Computer with printer, scanner, Table, Chairs, Cupboard, AC, Phone, Fax
Establishment branch and accounts branch	: Tables, Chairs, Almirahs, Cupboards, Desert coolers, Computers
Academic branch	: Tables, Chairs, Almirah, Cupboards, Desert coolers, Computers
PS Office	: Chair, Table, Sofa, Computer, Almirahs, Cooler, Phone
AAO/Superintendent Office	: Table, Chair, Phone, Cooler
Cashier desk	: Table, Chair, Cooler, Almirah, Rack
Store (s)	: Table, Chair, Almirah, Computer, Racks
Committee Room	: 01 with seating capacity of 50 persons and equipped with LCD, Video conferencing facility
Waiting Lounge / Hall for Visitors	: 01 with Sofas, Tables, Chairs, drinking water
Common room for girl students	: 01 with Sofas, Tables, Chairs
Washrooms/Toilets	: 05 (1 for Dean, 2 females and 2 males)
Auditorium	: 01, Established in 1976 with seating capacity of 315 persons, stage, interactive podium and LCD facility
Lift and Ramp	: Differentially able friendly
Computer Centre (College Level)	: 01 (with 67 computers and 5 printers)
Departments	: 11 + Computer Section <ol style="list-style-type: none"> 1. Biochemistry 2. Botany and Plant Physiology 3. Chemistry 4. Food Science and Technology 5. Languages and Haryanvi Culture 6. Mathematics and Statistics 7. Microbiology 8. Molecular Biology, Biotechnology and Bioinformatics 9. Physics 10. Sociology 11. Zoology and Aquaculture
Lecture Halls with Dean's office (no.)	: 03 Room No.1 at ground floor with seating capacity of 80, Blackboard and CC Camera

	Room No.2 at ground floor with seating capacity of 40, Blackboard and CC Camera Room No.3 at first floor with seating capacity of 50, Blackboard and CC Camera
Conference Hall	: 01, Situated in Bio-fertilizer Lab., Department of Microbiology with seating capacity of 30 Equipped with LCD projector with Screen
Smart Class Rooms (No.)	: 01 (Room No. 8), Seating capacity of more than 40, with LCD projector and interactive board, Blackboard
Seminar/ Lecture Rooms (No.)	: 14 (All Departments and Computer section)
Biochemistry	01 (Room No. 436), Seating capacity- 40 with LCD Projector, Computer, CC Camera, Blackboard & screen
Botany and Plant Physiology	: 01 (Room No. 326), Seating capacity- 40 with LCD Projector, Computer, CC Camera, Blackboard & screen
Chemistry	: 01 (Room No. 410), Seating capacity- 30 with LCD Projector, Computer, CC Camera, Blackboard & screen
Food Science and Technology	02 (Room No. 5, 8), Seating capacity- 40 with LCD Projector, Computer, CC Camera, Blackboard & screen
Languages and Haryanvi Culture	: 01 (Room No. 11), for UG & PG classes, Seating capacity- 30 with Blackboard & LCD Projector with screen
Mathematics and Statistics	: 01 (Room No. 14), Seating capacity- 40 with LCD Projector, Computer, CC Camera, Blackboard & screen
Microbiology	: 01 (Room No. 220), Seating capacity- 40 with LCD Projector, Computer, CC Camera, Blackboard & screen
Molecular Biology, Biotechnology and Bioinformatics	: 03 (Room No. 23, 24, 141), Seating capacity- 40 in each with LCD Projector, Computer, CC Camera, Blackboard & screen
Physics	Seminar room combined with Mathematics and Statistics
Sociology	: 01 (Room No. 203), Seating capacity- 40 with LCD Projector, Computer, CC Camera, Blackboard & screen
Zoology and Aquaculture	: 01 (Room No. 313), Seating capacity- 40 with LCD Projector, Computer, CC Camera, Blackboard & screen
Computer Section	: 01 , Seating capacity- 40 with LCD Projector, Computer, CC Camera, whiteboard & screen
Exhibition Hall / Wings	: 01 at ground floor with Display boards and tables
College Library	: Central Library available Departments have separate libraries
Departmental Library	: 10
Biochemistry	Room No. 419; 201 M.Sc. and 92 Ph.D. Theses
Botany and Plant Physiology	: Room No. 315; 5 books, 124 M.Sc. and 77 Ph.D. Thesis; other books transferred to main library
Chemistry	: Room No. 419; 95 M.Sc. and 48 Ph.D. theses
Food Science and Technology	Room No. 7; 81 books, 217 M.Sc. and 12 Ph.D. Thesis
Languages and Haryanvi Culture	: Room No. 401; 175 books
Mathematics and Statistics	: Room No. 4; 306 Books and 118 Thesis

Microbiology	:	Room No. 235; 254 Books, 256 M.Sc. and 109 Ph.D. Thesis
Molecular Biology, Biotechnology and Bioinformatics	:	Room No. 134; 163 Books and 219 Thesis (M.Sc.:156 MBB +2 Bioinformatics, Ph.D.:61)
Sociology	:	Room No. 214; 102 Books, 129 M.Sc. and 41 Ph.D. Thesis
Zoology and Aquaculture	:	Room No. 304; 78 books, 106 M.Sc. and 59 Ph.D. Thesis

Departmental Computer facility	:	<ul style="list-style-type: none"> • Each faculty member of COBS&H has computer facility with internet connection • The office of each Department of COBS&H has computer facility with internet connection • Three Departments and Computer Section have Computer Lab for students <ol style="list-style-type: none"> 1. Mathematics, Statistics & Physics(Room No. 15): 16 computers 2. MBBB(Room No. 134): 6 computers all with internet facility; one printer 3. Zoology and Aquaculture (Room No. 309): 3 computers out of which one has printer and internet connection 4. Computer Section: 67 computers with internet connection
---------------------------------------	---	---

Washrooms/Toilets

Washrooms/Toilets (No.)	:	He	She	Other
Dean Office		02	02	01
Departments		14	14	01 01 (Bio-fertilizer Lab.)

Stores

Dean Office	:	01 (Room No. 12)
Biochemistry	:	01 (Room No. 431)
Botany and Plant Physiology	:	01 (Room No. 330)
Chemistry	:	Combined with Biochemistry
Food Science and Technology	:	01 (Room No. 6)
Languages and Haryanvi Culture	:	01 (Room No 406)
Mathematics and Statistics	:	01 (Room No. 7)
Microbiology	:	01 (Room No. 240)
Molecular Biology, Biotechnology and Bioinformatics	:	01 (Room No. 133)
Sociology	:	01 (Room No. 211)
Zoology and Aquaculture	:	01 (Room No. 317)
Total	:	10

Under Graduate Labs with College

Departments		Number	Lab No.	Location	Facility in the Lab
Biochemistry	:	01	Biochem. 1 (Lab No. 3)	IATTE	chemicals, reagents, glassware etc. and small
Botany and Plant Physiology	:	02	Bot.1 & Lab No. 319	1 at Department, 1 at IATTE Building	Facility to conduct different Botany and Plant Physiology courses practical
Chemistry	:	02	413B Chem.1	Department IATTE	Burette, pipettes, other glassware, reagents, chemicals, furnace etc.
Languages and Haryanvi Culture	:	01	--	Ground Floor	Combined with seminar room having LCD facility
Microbiology	:	01	Micro. 1	IATTE	Microscopes, Glass Slides, Stains, Petri plates
Physics		02	38 & 39	IATTE	All facility for practicals available
Zoology and Aquaculture	:	02	Zoo 315 Zoo 1	Department IATTE	Preserved specimen of different phylum, Tissue slides Facility for conducting physiological tests
Computer Section	:	01		Computer Section	Desktop computers with internet and various programmes
Total	:	12			

Post Graduate Labs with College

Departments		Number	Lab No.	Location	Facility in the Lab
Biochemistry	:	01	421	Department	Facilities to conduct different courses practical
Botany and Plant Physiology	:	01	324	Department	Facility to conduct different Botany and Plant Physiology courses practical
Chemistry	:	01	413	Department	Burette, pipettes, other glassware, reagents, chemicals, furnace etc.

Mathematics and Statistics	:	01	15	Department	Total computers = 16, However 10 computers are connected with internet facility along with one common/ attached printer. The statistical softwares SAS, R, SPSS etc are available to conduct the PG practicals
Microbiology	:	01	215	Department	Facilities to conduct different courses practical
Molecular Biology, Biotechnology and Bioinformatics	:	01	124	Department	Experiments under different courses are conducted in this lab
Physics	:	02	403/404	Department	Physics practicals
Zoology and Aquaculture	:	01	Zoo 315	Department (common with UG lab)	Facilities to conduct practicals of different courses
Computer Section	:	01		Computer Section	Desktop computers with internet and various programmes
Total	:	10			

6.5.1.2 Monitoring Mechanism for Quality Education : *(Whether the College is having an internal quality assurance system, with appropriate structure and processes, and with enough flexibility to meet the diverse needs of the stakeholders which is required for planning, guiding and monitoring quality assurance and quality enhancement activities of the Colleges):* **Yes, the college has an Internal Quality Assurance Cell (IQAC). Since its inception in 2017, four meetings were held. Last meeting was held on 2.4.2018.**

Composition of IQAC

- (a) Chairperson: Prof. Rajvir Singh, Dean, COBS&H
- (b) Senior teachers and administrative official-
 1. Dr. Rachna Gulati, Prof. & Head, Department of Zoology and Aquaculture
 2. Dr. Rajesh Gera, Professor, Department of Microbiology
 3. Dr. Neeraj, Principal Scientist, Department of Botany & Plant Physiology
 4. Dr. Vinod Kumari, Prof. & Head, Department of Sociology
 5. Dr. Paul Singh, Prof.& Head, Department of Physics
 6. A&AO, COBS&H

- (c) External expert:
1. Dr. S.C. Goyal, SVC, GJUS&T, Hisar
 2. Dr. Hem Raj Sharma, Retd. Microbiologist, Sector-15, Hisar
- (d) Director/Coordinator-Member Secretary
Dr. Neelam Yadav, Professor, Department of Molecular Biology, Biotechnology & Bioinformatics

The IQAC started work towards realizing the goals of quality enhancement and sustenance. The prime task of the IQAC is to develop a system for conscious, consistent and catalytic improvement in the performance of college. The IQAC is playing a significant role in maintaining and channelizing the efforts and measures of the college towards academic excellence.

Functions of IQAC:

- Implementing and improving choice based credit system for curricula of the campus courses.
- Monitoring the teaching-learning process.
- Emphasizing on filling of vacant teaching and non teaching posts.
- Encouraging organization the conferences/seminars/workshops etc. by departments.
- Supporting and encouraging the research projects sponsored by the university and outside agencies.
- Strengthening trainings and placement of students.
- Facilitating Alumni interactions at department level.
- Suggesting new inter-disciplinary programmes in the departments.
- Capacity building and Trainings for faculty and staff Competence.
- Organizing trainings for skill development and entrepreneurship.
- Ensuring extra guidance to students of SC/ST, OBC and weaker section.
- Reviewing Internal Quality Assurance at the end of the year.
- Improving teaching based on feed back from the students, teachers and parents.
- Quick redressal of common complaints and women empowerment.
- A non-smoking and zero tolerance for ragging college.

Monitoring of teaching:

- At the end of the Academic Year, teachers write their Self Assessment Report in discussion with Controlling Officers. In this report, they present the work done in the past year and future plan of the work. Self appraisal report of individual teachers is evaluated by Dean, DR, DEE, DPGS and VC. The comments of final accepting authority are communicated to the teacher for further improvement.
- Evaluation of teachers through feedback performa from students.
- Programme of work, synopsis and thesis work of PG students is approved in Departmental Advisory Committee, Advisory Committee and finally approved by the Dean, PGS.
- The synopsis seminar brings suggestions which are included in final version. The internal evaluation by expert further improves it before submission to the Dean PGS for final approval.
- CCTV cameras have been installed in the lecture rooms/ Seminar rooms which can be monitored in Dean's office.
- Faculty members and students are encouraged to attend trainings, summer school, manual printing and financial assistance is provided.

- To monitor the students progress advisory committee meets regularly and advise the student regarding finalisation of programme of work and research work.
- In case of non-teaching staff, confidential reports are written and approved by their Controlling Officers (in the present case Dean), these are also communicated for further improvement.
- Regular reports are sent to stake-holders in general and to agency from where grant is received specifically.
- The dignitaries or eminent scientists visiting CCSHAU interact with faculty members and students and sometimes they give talk on the field of specialization which is very near to our university priority areas. There is a provision of advance increment, study leave, sabbatical leave for faculty.
- For retention of faculty members, they are given reemployment upto the age of 63 years. There is a well defined process in the university. The proposals for re-employment either come through Head of the Departments or the interested faculty member can give direct application to Registrar which is then forwarded to Chairman of the committee for re-employment.

Monitoring of research:

- The University monitors the quality of research work of faculty members by conducting Research Project Committee (RPC) and technical programmes meetings. The Chairman of RPC is the Vice-Chancellor of the University. All officers of the university, external experts nominated by Vice-Chancellor from other universities, institutes, officers from State Govt. are members of the committee. Concerned HODs as per agenda items are also invited to participate in the meetings.
- RPC discusses the Research schemes which need any change in Title or objectives. Proceedings are then carried out duly approved by Vice-Chancellor. Actions are marked and these are further discussed in the subsequent meetings.
- External experts and officers from State Govt. contribute by giving their suggestions which are duly incorporated.
- Technical Programme meetings are conducted under the chairmanship of Director of Research and in presence of Dean of concerned college.
- In Technical Programme, all HODs and faculty members from related field are invited to participate in the discussion. Faculty members present their work and future plan through power point presentations and if the committee feels the programme of work is modified as per the suggestions.
- For each Department, separate Technical Programme and Appraisal meetings are conducted to discuss the research work, bottle necks and future course of action. Proceedings are carried out duly approved by Director of Research.
- During the deliberation if the Dean of concerned college and Director of Research feels they can give suggestions to change schemes, objectives or titles as per the thrust areas of University, State and Country.
- Technical committee meetings are held to discuss the research outcomes of different schemes and departments.
- Action plan of teachers for research work is discussed in Technical committee meetings.
- Mid-term appraisal meetings are held to review the research work.

Monitoring of extension:

To promote institution-neighbourhood- community network and student engagement, contributing to good citizenship, service orientation and holistic development of students and society, the following activities have been undertaken:

A. By research/survey work and submission of Thesis

1. Kavita Verma (2011). "Consumer behaviour of working and non-working women in Haryana – A Comparative Study. (Ph.D Thesis)
2. Sunita Singh (2013). A study on socio-economic factors affecting women participation in gram panchayat activities in Haryana. (Ph.D Thesis)
3. Rijul (2016). Impact of self help groups (SHGs) on women empowerment in rural communities of Haryana. (Ph.D Thesis)
4. Rahul (2013). Problem of women scientists in Haryana. (M.Sc. Thesis)
5. Sunil (2015). Awareness among rural women about reservation of women. (M.Sc. Thesis)
6. Deepika (2016). Gender discrimination against girl child among parents in rural communities of Haryana – An action research. (M.Sc. Thesis)

B. Adoption of Shyamsukh village under Unnat Bharat Abhiyan and Adarsh Gram Yojana

The college is involved in organization of various extension activities in Adopted village "Shamsukh" Distt. Agroha (Haryana) under Unnat Bharat Abhiyan, Adarsh Gram Yojna and Swachh Bharat Abhiyan. Dr. Vinod Kumari, Convener; Dr. Pushpa Kharb, Dr. Jatesh Kathpalia, Dr. Rashmi Tyagi, Dr. Subhash Chander and Dr. Dharmbir Singh are members during the period under report. Expert lectures were delivered by the faculty on key issues like health, education, sanitation, drainage system, alcoholism and drug addition, poverty and debt, waste management, new agricultural technologies and innovations.

C. Participation in Kisan Mela, Kisan Diwas, Farm Darshan, etc.

The college regularly participates in Kisan Mela, Agri Expo and other farmer's related activities. Department of FST got IInd Prize in Agri Expo held in 2017.

**D. Services to the farmers through helpline, T.V. , radio Talks etc**

Faculty of Department of Microbiology regularly participates in Toll free helpline for Farmers. The faculty is assigned job of addressing farmers questions related to biofertilizers.

E. Organising demonstrations and functions:

- Organized "Gram Udai Se Bharat Udai Abhiyan" on the occasion of 125th Birth Anniversary of Dr. B.R. Ambedkar on April, 2016.
- Organized Awareness Drive on "Swachh Bharat Abhiyan" on Swachhata Abhiyan. Gram Yojana" on June 2, 2016
- Organized Cleanliness Drive in the adopted village in November, 2016

F. Expert lectures by the faculty:

- Delivered lecture on “Biogas plants” and awareness regarding semen, fodder, milk and milk products including the marketing strategies were delivered by the resource persons on 10.4.2015.
- Delivered lecture on “Water management (rain) and water harvesting”, “Vermi compost” on 6.10.2015.
- Delivered lecture on “Dowry problem in society” and “Swachh Bharat Abhiyan and Adarsh Gram Yojana”. General information provided on vegetable and fruit pickles, selection of fresh vegetables and fruits etc. in December, 2015.

G. Trainings organized by Zoology and Aquaculture

Sr. No	Title & date of Training	Category and number of participants (Farmers/ landless labourers/ SC/ women etc.)	District of the participants	Impact of the training
1	Vermicomposting (26 to 28 Feb, 2013)	20 (Gen 2, OBC 15, SC 3)	Badona, (Panchkula)	Participants were distributed kits to be used in establishing vermicomposting unit
2	Vermicomposting (4 to 6 March, 2013)	20 (Gen 15, OBC 1, SC 4)	Shri Krishan Gau Shala, Adampur (Hisar)	Participants were distributed kits to be used in establishing vermicomposting unit
3	Vermicomposting (20 to 22 March, 2013)	20 (Gen 6, OBC 14)	Barsu Majra (Ambala)	Participants were distributed kits to be used in establishing vermicomposting unit
4	Vermicomposting (11 to 13 Dec, 2013)	20 (Gen 15, SC 5)	Umra (Hansi)	Participants were distributed kits to be used in establishing vermicomposting unit
5	Rodent management practices (1-2 March, 2017)	30	KVK Kurukshetra	Participants were distributed kits
6	Rodent management practices (15-16 March, 2017)	30	KVK Mohindergarh	Participants were distributed kits

In addition, trainings on biofertilizers production, biogas technology & composting of wastes, food processing technologies, value addition in foods, communication skills, personality development, genomics, molecular marker and transformation, Statistical methods and data analysis were organized for students and other participants.

H. Awareness Campaign:

The faculty members of College of Basic Sciences & Humanities and other experts have visited the Shamsukh village as per need of the villagers like health, education, sanitation & drainage system, alcoholism and drug addition, poverty, waste management, agricultural and allied activities

and poor knowledge regarding new agricultural technologies and innovations. Several lectures were delivered and awareness programmes were conducted for the improvement of villagers as given below:

Dates	Faculty	Topic
16.08.2015	Dr. Subhash Chander, Asstt. Scientist, Sociology, COBSH with 16 students from UG and PG programme	Awareness was created by the students among the villagers regarding sanitation, drainage system, education, health, gender biasness and waste management
	Dr.(Mrs.) Jatesh Kathpalia, Asstt. Scientist, Department of Sociology	Beti Bachao Beti Padoo
	Dr. Subhash Chander, Asstt. Scientist, Department of Sociology	Sanitation and Education
05.12.2015	Dr. (Mrs.) Rekha Nain, Asstt. Professor, CFST	Vegetable and fruit pickles
	Dr. Rashmi Tyagi, Asstt. Professor, Department of Sociology	Dowry problem in society
	Dr. Subhash Chander, Asstt. Scientist, Department of Sociology	Role of Swachchh Bharat Abhiyan and Adarsh Gram Yojana
30.03.2016	Dr. (Mrs.) Sushila Dahiya, HOD, Department of Sociology	Interaction with new panchayat members on various issues including social welfare programmes, public distribution system, development of agriculture, horticulture and waste management, gram sabha, sanitation and family welfare programme
	Dr. Dharambir Singh, Asstt. Professor, Department of Zoology & Aquaculture	
	Dr. Subhash Chander, Asstt. Scientist, Department of Sociology	
22.04.2016	Dr. U.N. Joshi, Consultant Faculty, Department of Chemistry and Biochemistry	A gram sabha was organized in the village as per instructions issued by Government of India regarding "Gram Uday se Bharat Uday Abhiyan" on the occasion of 125 th Birth Anniversary of Dr. Bhim Rao Ambedkar. The representatives of various department i.e. public health, education, panchayat, social welfare and animal husbandry presented various departmental facilities. Dr. Subhash Chander shared his views on various training programmes and under graduation and post graduation programmes of various disciplines and their scopes.
	Dr.(Mrs.) Jatesh Kathpalia, Asstt. Scientist, Department of Sociology	
	Dr. Subhash Chander, Asstt. Scientist, Department of Sociology	
	Dr. Dharambir Singh, Asstt. Professor, Department of Zoology & Aquaculture	Alcoholism and drug addition
3.12.2016	Dr. Vinod Kumari, Professor & Head, Department of Sociology	Importance of agriculture education in today's scenario.
3.12.2016	Dr. Jatesh Kathpalia, Assistant Professor, Department of Sociology	Problems faced by farmers.
25.5.2017	Dr. Pushpa Kharb, Professor & Head Department of Molecular Biology, Biotechnology & Bioinformatics	Micropropagation Technology

Extension Activities in Sociology

Topic of Activity	Level of Activity	No. of participants	Place
Extension activities in Adopted Village Shamsukh	<ul style="list-style-type: none"> ➤ Health and sanitation ➤ Education, ➤ Gender Issues and waste management 	One Faculty, 16 Students	Adopted Village Shamsukh
	<ul style="list-style-type: none"> ➤ Soil and Water Testing ➤ Nutritional requirements 	02 faculty	Adopted Village Shamsukh
	<ul style="list-style-type: none"> ➤ Textiles and apparel designing and its utility ➤ Beti Bachao Beti Padhao ➤ Education for societal change 	03 faculty	Adopted Village Shamsukh
	<ul style="list-style-type: none"> ➤ Post harvest technology for food preservation 	03 faculty	Adopted Village Shamsukh
	<ul style="list-style-type: none"> ➤ Adarsh Gram Yojana and Swachh Bharat Abhiyan ➤ Dowry issues in society ➤ Role of Panchayat in agriculture, horticulture, public distribution system and waste management, ➤ Gram sabha and family welfare 	03 faculty	Adopted Village Shamsukh
	<ul style="list-style-type: none"> ➤ 125th Birth Anniversary of Dr. Bhim Rao Ambedkar. ➤ A gram sabha regarding “Gram Uday se Bharat Uday Abhiyan” ➤ Training, under graduation and post graduation programmes for employability 	03 faculty	Adopted Village Shamsukh
	<ul style="list-style-type: none"> ➤ Crop Weed Management ➤ Alcoholism and drug menace 	02 faculty	Adopted Village Shamsukh
	<ul style="list-style-type: none"> ➤ Cleanliness drive 	03 faculty	Adopted Village Shamsukh
	<ul style="list-style-type: none"> ➤ Health and hygiene through cleanliness in rural houses 	01 faculty	Adopted Village Shamsukh
	<ul style="list-style-type: none"> ➤ Agriculture Education in Today’s 	01 faculty	Adopted Village Shamsukh

Scenario		
➤ Farmers challenges in today's agriculture	01 faculty	Adopted Village Shamsukh
➤ Slogan writing competition and debate on agriculture education	02 faculty	Adopted Village Shamsukh
➤ Demonstration on how to prepare nutritious 'Bajra Ladoos' ➤ Tips to improve the health of rural women ➤ Importance of good habits to remain healthy	03 faculty	Adopted Village Shamsukh
➤ Haryanvi Sanskriti aur Fagun ke Geet ➤ Folklore activities	03 faculty	
➤ Vermi composting ➤ Control of menance of rats. ➤ Decreasing sex ratio and rural society.	03 faculty	Adopted Village Shamsukh
➤ Tissue Culture ➤ Training imparted by CCSHAU, Hisar.	02 faculty	Adopted Village Shamsukh
➤ Dowry and eve-teasing ➤ Domestic violence and burning problems of society. ➤ How to maintain hygiene in rural area. ➤ Role of linear programme Model in increasing the income of farmer.	04 faculty	Adopted Village Shamsukh
➤ How to make kitchen pollution free. ➤ Cleanliness of house in general	02 faculty	Adopted Village Shamsukh
➤ Weed Management on various crop Alcoholism and drug addition		Adopted Village Shamsukh



Extension activities in Microbiology:

Topic of Activity	Level of Activity	Duration	No. of participants	Place	Date(s)
Demonstration of Biofertilizer production and application technology during various Kisan melas, Kisan Diwas and on Kisan helpline at ATIC, CCS HAU, Hisar.	National level	Throughout the year	-	CCS HAU, Hisar	Throughout the year
Rice straw composting technology during various Kisan melas, Kisan Diwas and on Kisan helpline at ATIC, CCS HAU, Hisar.	National level	Throughout the year	-	CCS HAU, Hisar	Throughout the year
Demonstrated biogas production technology during various Kisan	National level	Throughout the year	-	CCS HAU,	Throughout the year

melas, Kisan Diwas and on Kisan helpline at ATIC, CCS HAU, Hisar.					Hisar	
Organized a seminar on “Solid Waste Management: Present and Future Perspectives” by Dr V. S. Garg, Professor, Guru Jambheshwar University of Science & Technology, on WORLD ENVIRONMENT DAY.	Association of Microbiologists of India (Hisar chapter)	One day	24		LUVAS, Hisar	5.6.15
Organized a seminar on “Easy Rajyoga Meditation to relieve stress at work place” by <i>BK Vandana Bahan</i> , a senior Rajyoga teacher, associated with <i>BK Spiritual University</i> , to celebrate YOGA WEEK (15-21.06.15) and INTERNATIONAL YOGA DAY (21.06.15).	Association of Microbiologists of India (Hisar chapter)	One day	25		LUVAS Hisar	19.6.15
Organized lecture entitled Nanotechnology: small science big dreams delivered by Dr. Neeraj Dilbaghi, Professor, Guru Jambheshwar University of Science & Technology during science awareness program for school children.	Association of Microbiologists of India (Hisar chapter)	One day	100		ID DAV, School Hisar	18.11.16

The Department of Microbiology has been producing biofertilizers for the last 30 years and production has reached to a level of Rs. 43.67 lakhs during the year 2013-14 as per the demand of farmers and other farm agencies. During 1986, the department received productivity award conferred by National Productivity Council of India, New Delhi for biofertilizer production. Liquid biofertilizer technology has been sold to various private entrepreneurs such as M/S MicroBAC India West Bengal (Kolkatta), M/S Bhart Biocon Ltd. Jhunagarh Lane, Chattisgarh and M/S Y.S. Sons Agritech, Baddi Himachal Pradesh for commercialization. Under the banner of RKVY project, the department has not only strengthened the facilities for biofertilizer production but also procured modern and sophisticated equipments like fermenter, liquid filling sealing machine, PCR, agarose and SDS PAGE electrophoresis system, GLC, ELISA reader, microscope with digital camera, DGGE, flash gel system and gel documentation system for both production and quality testing at molecular level.



Extension activities in Food Science and Technology:

Sr. No	Name of the event	Activity	Level	Venue	Date	No. of Participants
1.	Processing of Fruits and Vegetables for ST and ST Youths	Training	State	CFST	March 12-18, 2013	25
2.	Processing of Fruits and Vegetables for ST and ST Youths	Training	State	CFST	June 04-10, 2014	25
3.	Processing of Fruits and Vegetables for ST and ST Youths	Training	State	CFST	March 07-13, 2015	25
4.	Processing of Fruits and Vegetables for ST and ST Youths	Training	State	CFST	March 16-22, 2016	25
5.	Processing of Fruits and Vegetables for ST and ST Youths	Training	State	CFST	Feb 20-27, 2018	25



Educational excursions in Botanical Garden:

The Botanical Garden is being maintained by the Department of Botany and Plant Physiology with rich collection of indigenous and exotic plant species. The plant biodiversity includes nearly 550 species including their variants. Botanical Garden is the major attraction of dignitaries, students

of schools and colleges of Hisar and nearby districts of Haryana. Large number of schools and college students are visiting the Botanical Garden every year and are being properly acquainted with the plant biodiversity by eminent professors and scientists of the Department of Botany and Plant Physiology.



6.5.1.2.(contd): Mention the impact of monitoring on the outcome of the College with reference to students' excelling in academics, nbssearch a extracurricular activities

A. M.Sc. Students passed out during last five years

Department	Specialization	No. of seats										No. of students passed out				
		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Total	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Total	
Biochemistry	Biochemistry	4+1	4+1	4+1	4+1	2+1	4+1	28	3	3	5	3	1	4	19	
Botany and Plant Physiology	Plant Physiology	4	5	5	5	2	3	24	3	5	3	1	4	6	22	
Chemistry	Chemistry	6+1	5	8	4+2	4+2	42	7	7	8	9	5	5	11	47	
Food Science and Technology		4	5	9	4	4	30	8	7	3	4	9	2	33		
Mathematics and Statistics	Statistics	4+1	4+1	4+1	4+1	2+1	30	-	-	2	6	5	2	15		
Microbiology	Microbiology	7	7	5	6	4	34	4	8	7	8	3	7	37		
Molecular Biology, Biotechnology and Bioinformatics	Molecular Biology, Biotechnology and Bioinformatics	6+2	4+1	4+1	4+1	2+1	33	6	6	3	4	3	3	25		
	Bioinformatics	6+2	4+1	4+1	4+1	3+1	31	2	-	-	-	2	-	4		
Sociology	Sociology	4	4	4	4	4	26	-	2	-	2	1	1	6		
Zoology and Aquaculture	Zoology	4	3	3	3	3	22	-	-	4	5	1	4	14		

B. Ph.D. Students passed out during last five years

Department	Specialization	No. of seats										No. of students passed out						
		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Total	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Total			
Biochemistry	Biochemistry	2	2	2	2	-	2	10	4	2	1	5	4	6	22			
Botany and Plant Physiology	Plant Physiology	3	3	4	-	3	17	17	1	5	3	2	5	3	19			
Chemistry	Chemistry	4+0	5+3	5+2	5+2	2+0	33	33	5	7	6	1	2	-	21			
Food Science and Technology	FST	3	3	3	2	1	14	14	-	-	3	1	4	-	8			
Mathematics and Statistics	Statistics	2+0	2+0	2+0	2+1	2+0	13	13	-	-	1	1	-	2	4			
Microbiology	Microbiology	6	7	6	4	3	31	31	2	4	4	4	6	6	26			
Molecular Biology, Biotechnology and Bioinformatics	Molecular Biology, Biotechnology	3	2	2	2+1	-	14	14	1	2	9	7	4	3	26			
Sociology	Sociology	2	2	2	4	4	18	18	1	1	-	-	1	-	3			
Zoology and Aquaculture	Zoology	2	2	3	3	2	15	15	1	-	-	2	3	3	9			
	Fisheries	Programme closed in 2010										-	-	3	-	1	-	4

C. Diploma Students passed out during last five years

Department	Diploma	No. of seats										No. of students passed out					
		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Total	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Total		
Languages and Haryanvi Culture	Diploma in Communication Skills in English	20	20	20	20	20	20	120	2/16	2/16	--	2/10	3/12	3/10	11/56		
	Diploma in English-Hindi Translation.	20	20	20	20	20	20	120	6/15	2/16	2/16	2/11	3/10	6/8	21/70		

D. Students who cleared NET/ARS/GATE or any other examination: 136 (Annexure COBSH I).

E. During the period under review, seventy four students were awarded fellowships from outside agencies (Annexure COBSH II).



F. Research Publications of Students

The M.Sc. and Ph.D. students of the college published their research in referred journals of National and International repute as below -

Department	M.Sc		Ph.D.	
	Number	NAAS Rating	Number	NAAS Rating
Biochemistry	16	0-7.35	20	0-7.5
Botany and Plant Physiology	5	4-6	24	4-6
Chemistry	14	-	7	0-6
Food Science and Technology	36	0-8	11	0-7
Maths & Stat	11	0-6.9	10	0-6.6
Microbiology	26	0-7.3	25	0-7.6
Molecular Biology, Biotechnology and Bioinformatics	18	0-6.2	46	0-15.4
Sociology	11	0-4.8	8	0.67-5.13
Zoology and Aquaculture	31	0-6.15	38	0-5.5

Details are provided in individual programme.

G. One hundred and fifty four students were placed in Govt. and Private organizations under report (**Annexure COBSH III**) .

H. Student Participation in Conferences/ Seminars/ Symposiums/ Workshops
Eighty seven M.Sc. students (**Annexure COBSH IV**) and three hundred and eleven Ph.D. students (**Annexure COBSH V**) attended and presented their work in Conferences/ Seminars/ Symposiums/ Workshops as under-

Programme	2012	2013	2014	2015	2016	2017	2018	Total*
M.Sc.	9	-	16	6	25	18	13	87
Ph.D.	13	19	47	39	100	67	26	311
Total	22	19	63	45	125	85	39	398

*Total number includes the students who attended multiple events

I. Student's Awards in extracurricular activities

2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Total
2	8	7	2	30	9	58

6.5.1.3 CC/Board of Studies: Whether the CC in the Department level and Board of Studies at the College is in place? The composition of the BoS and date of conduct of meetings for last five years and major recommendations made by the BoS should be given in tabular form.

Yes, College of Basic Sciences and Humanities has Departmental Advisory Committee (DAC) at department level and BoS at college level. These are constituted with the approval of the competent authority.

Departmental Advisory Committee: The Departmental Advisory Committee (DAC) is responsible for management of teaching, research and extension within each department of the college.

Composition of DAC:

1. HOD (Chairperson)
2. Professor (Member)
3. Ex. HODs (Member)
4. Associate Professor/Scientist (Member)
5. Assistant Professor/Scientist (Member Secretary)

Composition of Board of Studies:

Chairperson: Dean, COBSH

Members:

1. HOD, Botany and Plant Physiology
2. HOD, Chemistry and Biochemistry
3. HOD, Languages and Haryanvi Culture
4. HOD, Mathematics, Statistics and Physics
5. HOD, Microbiology
6. HOD, Molecular Biology, Biotechnology and Bioinformatics
7. HOD, Sociology
8. HOD, Zoology and Aquaculture (Member Secretary)
9. Incharge, Computer Section

Role of Board of Studies

- The college has a Board of Studies which is responsible for proposing new courses, curricula modification, number of seats for admission and procedures etc. for the various programs offered by the college.
- The Boards of Studies prescribes syllabi so as to ensure integrated and well-balanced courses of study.
- The Board of Studies also overviews the standards of teaching and research regularly.

Date of conduct of meetings for last five years and major recommendations made by the BoS/HODs meeting are given below:

2012-13		
1.	27.4.2012	Development of facilities of Nano technology in Department of MBB
2.	16.7.2012	Exchange of Ph.D. students between PAU- CCS HAU
3.	7.11.2012	Change in number of seats in M.Sc. and Ph.D. Degree in the Departments
4.	11.12.2012	Decision to celebrate the following events in college: (i) National Mathematics Day (ii) Kisan Diwas (iii) Chrysanthemum Show (iv) College Prize Distribution Function
5.	11.12.2012	Provision of educational tour for the students
6.	20.12.2012	Wearing the college blazer and Lab. coats in labs made compulsory for students
7.	20.12.2012	Submission the articles for college magazine

2013-14		
1.	2.8.2013	Submission of the cases regarding vacant posts of teaching and non-teaching staff for clearances to the College review committee
2.	25.10.2013	Offering of Service courses by Department of Math & stat to the students of Department of Agricultural Economics (i) Stat-569 Time Series Analysis (2+1) (ii) Stat-573 Statistical Quality Control (2+0)
3.	8.1.2014	Instalment of CCTV Cameras at three entry points of the College
4.	13.2.2014	Creation of a new Department of Environmental Science It was recommended that as of now it be created as a separate section with the Department of Botany and Plant Physiol. and an M.Sc. programme in Environmental Sciences be started.
5.	13.2.2014	Merger of Bioinformatics Section with the Department of Molecular Biology & Biotechnology
6.	13.2.2014	Common Entrance Test (CET) for admission to Master's level in Basic Sciences
7.	13.2.2014	Entrance Test for admission to Ph.D. in various disciplines of Basic Sciences
8.	20.2.2014	Use of safety measures while using the chemicals/waste products in the lab. Chairperson constituted the committee to assess the ways of disposing waste in various departments of the College.
2014-15		
1.	30.10.2014	Universities and institutions for doing Ph.D. by CCS HAU in-service candidates was discussed and It was decided that the following Universities/Institutes should be included in the list: i) All State & Central Agricultural Universities ii) ICAR, CSIR, IISc. (Bangalore) and other central government institutions for all the departments in COBS&H iii) All Universities recognized by UGC
2.	30.10.2014	MBB 501 as prerequisite for course MBB-604/VSC 604/FLA 605 (Advance in Crop Biotechnology) Cross-listing and teaching of Micro 505 and MBB 506 courses
3.	9.11.2015	The number of seats for M.Sc. and Ph.D. programmes in College of Basic Sciences and Humanities were approved
4.	19.11.2014	Course curriculum for M.Sc. Environmental Sciences proposed by HOD, Botany and Plant Physiology was discussed and approved.
5.	17.1.2015	Syllabus for the Entrance Test for admission to Ph.D. programmes was approved.
2015-16		
1.	17.10.2015	Regarding implementation of the recommendations of the Expert Committee regarding courses/facilities for persons with disabilities (PwD)
2.	9.11.2015	The following courses by the Department of Zoology & Aquaculture to be revised as under: Zoo-510 Invertebrate Zoology 2+1 Sem-II Zoo-606 Rodentology 2+1 Sem-I
2016-17		
1.	23.7.2016	Fiftn Dean' Committee Report :-

		<p>a) Under student READY programme faculty of COBSH participated in the following topics:-</p> <p>i) Composting/vermi-composting</p> <p>ii) Micro-propagation of plants</p> <p>iii) Processing technology and value addition</p> <p>b) Regarding common courses, it was informed by Incharge Computer Section that Information & Communication Technology syllabus is covered under Ext 505: e-extension and HECM 511: ICT and media offered by agriculture extension, COA and EECM, COHS respectively. Most of the syllabus is also covered under COMP 502/FST 532.</p> <p>c) Agriculture Informatics would be designed if required/suggested by the competent authority.</p>
3.	26.7.2016	<p>Established IT clinic in Computer Centre. A register of the complaint received and attended shall be maintained.</p> <p>Establishment of Nano Technology Centre and Environmental Science Centre in the College.</p>
4.	3.11.2016	<p>It was emphasized that offices, labs. and surroundings of the college should be cleaned and the waste material such as broken furniture, unusable equipments etc. may be auctioned as per university rules.</p>
5.	19.9.2016	<p>It was decided that 'A Central Lab will be established for the College under the supervision of Department of MBB&B to provide research facilities to the students of all the departments'.</p>
6.	19.9.2016	<p>A committee of HODs (Chemistry & Biochemistry, Microbiology, Sociology, Math, Stat. & Physics and Zoology & Aquaculture) has been set up for purchase of books & E-resources.</p>
7.	25.10.2016	<p>It was stressed that the fifth Deans Committee Recommendations should be implemented and deviation/modification in the courses may be done up to 30% course wise and content wise.</p>
8.	3.11.2016	<p>HOD's of CFST, MBB&B and Microbiology were asked to take action regarding strengthening of Experiential learning units in the University, as mentioned at item No. 7 of Officers' Committee meeting held on 13.10.2016.</p>
9.	19.11.2016	<p>Starting Certificate Course (3 months) on Rural Development & Panchayati Raj in the Department of Sociology</p>
10.	21.9.2016	<p>The eligibility conditions for the discipline of M.Sc. Physics and Environmental Science will be as under:-</p> <p>Physics:- Bachelor degree with Physics as one of the subjects. The admission will be made on merit basis as for the discipline of Statistics and Sociology.</p> <p>Environmental Science:- B.Sc. (Botany, Zoology & Chemistry); B.Sc./B.Sc.(Hons) Biotechnology/ Biochemistry/ Microbiology)/B.Sc. (Hons.) Ag./B.Sc. Agri. Biotechnology.</p>
11.	3.12.2016	<p>Inclusion of Nanotechnology in M.Sc. and Ph.D research areas in the Department of MBBB.</p>
12.	2.1.2017	<p>Annual Prize Distribution: It was proposed to celebrate annual prize distribution function between 16th-18th Feb, 2017.</p>

2017-18		
1.	11.4.2017	ICAR guidelines regarding nomination for the award of ICAR Best Teacher should strictly be followed. All HODs should intimate the name of best teacher from their respective departments for the year 2014-15 as per the recommendations obtained from students/Alumni.
2.	23.8.2017	Digitization in the College: Use of e-mail and information supplied as soft copy. Applying leave, loan, status of CPF,GPF and pension has been made online.
3.	29.1.2018	The following courses by the Department of Zoology & Aquaculture were approved: Zoo 510 Invertebrate Zoology 3+1 Sem II Zoo-511 Avian Biology And Applied Ornithology 3+1 Sem II Zoo 606 Rodentology 3+0 Sem I Zoo-607 Advances In Ornithology 3+0 Sem I

6.5.1.4.: Anti-Ragging Cell: *In pursuance to the Judgment of the Hon'ble Supreme Court of India dated 08.05.2009 in Civil Appeal No. 887/2009, the University Grants Commission has framed "UGC Regulations on curbing the menace of ragging in higher educational institutions, 2009" which have been notified on 4th July, 2009 in the Gazette of India. Does the College follow this regulation and subsequent guidelines issued in the matter in letter and spirit? Give details.*

Yes, the college has Anti-ragging Committee which follows regulation and subsequent guidelines issued in the matter. This Anti-ragging committee is constituted by the Dean.

Anti-ragging Committee

A. Composition of the committee:

Teachers

Prof. Rajvir Singh, Dean, COBSH

Dr. D.S. Nandal, DSW

Dr. H.R. Singal, Professor, Department of Biochemistry

Dr. (Mrs.) Manju Singh Tonk, Professor, Department of Mathematics & Statistics

Dr. (Mrs.) Savita, Assistant Professor, Department of Botany & Plant Physiology

Professional Councillors

Dr. (Mrs.) Krishna Hooda, HOD, LHC

Dr. (Mrs.) Shikha Yashveer, Assistant Professor, Department of MBBB

Dr. Dharambir Singh, Assistant Professor, Department of Zoology & Aquaculture

PG Students

Urmila, 2016BS10D, Department of Zoology & Aquaculture

Manish Jangra, 2016BS24M, Department of Botany & Plant Physiology

Deepika, 2016BS15D, Department of Sociology

Surina Bhadu, 2015BS6D, Department of Biochemistry

Monika, 2016BS1M, Department of Biochemistry

Mohit Nain, 2016BS7D, Department of Mathematics & Statistics

Dinesh, 2016BS13D, Department of MBBB

Sachin 2016BS7M, Department of Microbiology

Non-teaching staff

A&AO/Superintendent, Dean, COBSH

Sh. Rajender Kumar, Assistant, Dean, COBSH
 Mrs. Santosh Kumari, PA to Dean, COBSH
 Mrs. Anita Rani, JSS, Dean, COBSH

Parents

Sh. B.K. Hooda, 9/24, Old Campus, CCSHAU, Hisar, F/o Ekta Hooda, Department of Math & Stat
 Sh. Rajinder Kumar, 12/163, New Campus, CCSHAU, Hisar F/o Sushila Devi, Department of Microbiology
 Sh. Dilbag Singh, H.No. 1217, Ashok Vihar, Azad Nagar, Hisar F/o Deepika, Department of Sociology
 Sh. O.P. Bhadu, H.No.11B/77, Old Campus, CCSHAU, Hisar F/o Surina Bhadu, Department of Biochemistry
 Sh. Satender Singh, H.No.184, Auto Market, Hisar F/o Varsha, Department of MBBS

B. Activities

1. The committee monitors the events involving ragging, enquire into and report to the Dean, COBSH and work out modalities of functioning, frequency of visits, meetings etc. The committee will check the ragging menace during the college hours in and around the college premises and also make surprise raids on hostels and other places vulnerable to incidents of ragging.
2. Anti-ragging Committee is functional and Ragging is banned in the University. The University has adopted the UGC Regulations on Curbing the Menace of Ragging in Higher Educational Institutions, 2009 as well as the directions of the Hon'ble Apex Court. The Haryana Prohibition of Ragging in Educational Institution Ordinance/Rule 2012 has also been adopted by the University w.e.f. 27.9.2012. Rules on Curbing the Menace of Ragging 2012 are at Chapter-IX of this Prospectus.
3. The application form for admission, enrolment or registration contains an undertaking by the students and parents, mandatorily in English and in Hindi and/or in one of the regional languages known to the parents/guardians of the applicant, as provided in the English language in Proforma II to these Rules, to be filled up and signed by the parents/guardians of the applicant to the effect that he/she has read and understood the provisions of these Rules as well as the provisions of any other law for the time being in force, and is aware of the prohibitions of ragging and the punishments prescribed, both under penal laws as well as under these Rules and also affirm to the effect that his/her ward has not been expelled and or debarred by any institution and further aver that his/her ward would not indulge, actively or passively, in the act or abet the act of ragging and if found guilty of ragging and/or abetting ragging, his/her ward is liable to be proceeded against under these Rules or under any penal law or any other law for the time being in force and such action would include but is not limited to debarment or expulsion of his/her ward.
4. The Dean/Principal shall punish the student found guilty of ragging after following the prescribed procedure.
5. The Anti-Ragging Committee of the University shall take an appropriate decision, in regard to punishment or otherwise, depending on the facts of each incident of ragging and nature and gravity of the incident of ragging established in the recommendations of the Anti-Ragging Squad.
6. The Anti-Ragging Committee may, depending on the nature and gravity of the guilt established by the Anti-Ragging Squad, recommend, to those found guilty, one or more of

the following punishments, namely;

- i) Suspension from attending classes and academic privileges.
- ii) Withholding/withdrawing scholarship/ fellow-ship and other benefits.
- iii) Debarring from appearing in any test/examination or other evaluation process.
- iv) Withholding results.
- v) Debarring from representing the institution in any regional, national or international meet, tournament, youth festival etc.
- vi) Suspension/expulsion from the hostel.
- vii) Cancellation of admission.
- viii) Rustication from the institution for period upto three years.
- ix) Expulsion from the institution and consequent debarring from admission to any other institution for a period of three years.
- x) Forfeiting campus placement opportunity or recommendations
- xi) Imposition of fine upto Rs. 25000/-

No instance of ragging has been reported during the last five years from the college.

6.5.1.5. Biological waste disposal facility: *Whether wastes (chemical, biological, radioactive, universal, and recyclable) are generated by a variety of research, clinical, service, maintenance, and cleaning operations at the College level? If yes, then mention the disposal mechanism being adopted as per the government guidelines.*

Yes, chemical. Biological and recyclable wastes are generated through research, service, maintenance, and cleaning operations.

Dean, COBSH constituted the committee to assess the ways of disposing waste in various departments of the College in BOS meeting held on 20.02.2014. Committee comprised of following members:

1. Dr. P. Kharb, Professor & Head, MBBS
2. Dr. Saleem Siddiqui, HOD, FST
3. Dr. Veena Jain, HOD, Biochemistry
4. Dr. Rajesh Gera, HOD, Microbiology
5. Dr. Renu Munjal, HOD, Botany and Plant Physiology

The Chemical safety, Biological safety regulations are followed. The College has Institutional Biosafety committee (IBSC) in place which takes care of safety aspects of recombinant DNA technology at University level. The Vice-Chancellor is Chairman of the committee and HOD, MBBS is Secretary of the IBSC.

6.5.1.6. Institutional Ethics Committee for Experiment on Animals: *Whether the institute/College is following CPCSEA guidelines and constituted an Institutional Animal Ethics Committee (IAEC), get their animals house facilities inspected and get their project cleared by CPCSEA and IAEC before commencing them? If Yes, the college should make statement that it is adhering all guidelines in the matter.*

The process for constitution of Institutional Ethics Committee has been initiated and is under process.

6.5.1.7. Committee for Prevention of Sexual Harassment of Women at Work Places: *Does the institution is adhering the sexual harassment of women at workplace (Prevention, Prohibition and Redressal Act, 2013) in letter and spirit. If yes, mention the constitution of sexual harassment committees and date of proceedings conducted in last five years in tabular form:*

Yes, a committee is constituted by the Dean for prevention of sexual harassment

Prevention of Sexual Harassment Committee

There is Internal Complaints Committee under Sexual Harassment of Women at Work Place which deals with such cases as and when reported.

Chairperson:

Prof . Rajvir Singh, Dean, COBSH

Members:

1. Dr. Neelam Yadav, Principal Scientist, MBBB
2. Dr. H.R. Singal, Professor, Department of Biochemistry
3. Dr. Sushila Singh, Asstt. Prof. , Department of Chemistry
4. Smt. Santosh Kumari, PA to Dean, COBSH

There is also Central Sexual Harassment Committee at University level as well. However, no complaint was received during the period under report.

Others:

1. **Landscape Committee:** Dr. J.K. Sandooja, in-charge for landscaping in and around college premises.
2. **Purchase of books & E-resources committee:** HODs (Biochemistry, Microbiology, Sociology, Mathematics & Statistics and Zoology & Aquaculture).

6.5.2 Faculty:**6.5.2.1. Faculty Strength: Mention the Faculty position (both in sanctioned and in-position) at the College.**

There are nine sanctioned posts of Professors/equivalent, 22 Associate Professors/equivalent and 109 Assistant Professor/equivalent in the college. Currently total faculty strength in the college is 63 including 29 Professor/equivalent, 03 Associate Professor/equivalent and 31 Assistant Professor/equivalent. Since 2012 till Feb, 2018, forty one Professors//equivalent and one Assistant Professor/equivalent have been superannuated from the college. Faculty of Basic Science and Humanities is also posted in College of Agriculture CCS HAU main campus, Bawal and Kaul. The faculty is involved in teaching, research and extension activities and also guides students.

Twenty eight posts of Assistant Professors/equivalent have been advertised and are expected to be filled very soon.

Designation	Sanctioned	In Position*	Vacant	As per Fifth Deans' Committee
Professor and equivalent	9	29	7	There is no UG programme in the college
Assoc. Professor and equivalent	22	3	20	
Asstt. Professor and equivalent	109	31	50	
Total	140	63	77	

*Includes personal promotees

Details of Department wise Faculty Strength

Designation	Sanctioned	In position*	Vacant
Professor and equivalent			
Biochemistry	2	2	1
Botany and Plant Physiology	1	4	1
Chemistry	1	2	1
FST	1	3	1
LHC	-	2	-
Math. and Stat	1	4	1
Microbiology	1	4	1
MBBB	-	3	-
Physics	-	1	-
Sociology	-	2	-
Zoology & Aquaculture	2	2	1
Computer Section	-	-	-
Total	9	29	7
Assoc. Professor and equiv.			
Biochemistry	3	1	3
Botany and Plant Physiology	1	-	-
Chemistry	3	-	3
FST	1	-	1
LHC	1	2	1
Math. and Stat	4	-	3
Microbiology	7	-	7
MBBB	1	-	1
Sociology	-	-	-
Zoology & Aquaculture	1	-	1
Computer Section	-	-	-
Total	22	3	20
Asst. Professor and equiv.			
Biochemistry	10	4	4
Botany and Plant Physiology	12	3	6
Chemistry	12	3	7
FST	7	2	2
LHC	6	1	1
Math. and Stat	11	3	5
Microbiology	14	4	6
MBBB	15	4	8
Physics	3	-	2
Sociology	8	2	4
Zoology & Aquaculture	6	2	3
Computer Section	4	2	2
Total	108	30	50

6.5.2.2. Faculty Profile:

S. No.	Name	Designation	Mobile No. and email	Specialization	Publications in number					
					Full paper	Conference/symposium	Books	Book chapters	Manual	Annual/research reports
Biochemistry										
1.	Dr. Veena Jain	Principal Scientist & Head	9416993463 veena.nicejain@gmail.com	Plant Biochemistry	94	-	1	9	3	5
2.	Dr. H. R. Singal	Professor	9416489005 Singalhr59@gmail.com	Enzymology	32	10	-	4	-	-
3.	Dr. L. K. Chugh	Sr. Scientist	9416485109 chughlk@yahoo.co.in	Plant Biochemistry Pearl millet quality	41	4	-	2	1	7
4.	Dr. Jayanti Tokas	Assistant Scientist	9729989988 jivandri@gmail.com	Food and Plant Biochemistry	36	45	1	7	1	6
5.	Dr. Nisha Kumari	Assistant Scientist	9468117723 nishaahawat21@gmail.com	Oilseeds Biochemistry	21	-	-	-	1	4
6.	Dr. Shiwani Mandhanika	Assistant Scientist	9466812468 smbiochem@gmail.com	Cotton Biochemistry	20	20	-	4	1	5
7.	Dr. Ajay Pal	Asstt. Professor	9466534456 ajaydrdo@rediffmail.com	Enzymology	48	-	1	6	1	-
Botany and Plant Physiology										
8.	Dr. Renu Munjal	Prof. & Head	9466018199, munjahlreenu66@gmail.com	Stress Physiology	49	7	1	23	-	-
9.	Dr. Jitender Kumar	Professor	9416371970, sandoojajk@gmail.com	Post harvest Physiology	94	3	-	3	2	-
10.	Dr. Neeraj Kumar	Principal Scientist	9255198544, neerajhau@yahoo.co.in	Stress Physiology	42	20	1	3	-	-
11.	Dr. K. D. Sharma	Principal Scientist	9416397543, kdtutti1966@gmail.com	Stress Physiology	72	21	1	19	1	-
12.	Dr. Sarita Devi	Asstt. Scientist	9416996353, devisaritaa@gmail.com	Stress Physiology & Phytoremediation	22	15	-	8	-	-
13.	Dr. Anita Kumari	Asstt. Scientist	9466331523, anitahsr@gmail.com	Stress Physiology	17	8	-	8	-	-

14.	Dr. Vinod Goyal	Asstt. Scientist	7011371330, goyal2973@gmail.com	Stress Physiology	16	20		2	2	
15.	Dr. Sunita Sheokand	Professor Retired a in 2018 (Consultant Faculty)	9416674592, sunitasheokand@hotmail.com	N2 fix, Stress Physiology and Phytoremediation	64	10	1	20	-	-
16.	Dr. U. K. Varshney	Retired as Principal Scientist in 2016 (Consultant Faculty)	9416397781, ukv1956@gmail.com	Ecophysiology	14	28	-	-	-	-
Chemistry										
17.	Prof. Rajvir Singh	Professor	9416397283 singhrajvir1962@gmail.com	Synthetic and natural product chemistry	80	-	-	-	1	-
18.	Dr. V. K. Madan	Principal Scientist	9416346333 vikku60@gmail.com	Phytochemistry	85	11	-	40	5	6
19.	Dr. Sushila Singh	Assistant Professor	870888600 singhsushila999@gmail.com	Natural Product & GHG's mitigation	17	-	-	-	4	-
20.	Dr. Anil Duhan	Assistant Scientist	9466051639 a.duhan@rediffmail.com	Analytical Chemistry	18	-	-	3	3	-
21.	Dr. Sushil	Assistant Scientist/Chemist	9416342952 sushilawati08@gmail.com	Agrochemical & Pesticide Residual Chemistry	12	10	-	-	1	5
Food Science and Technology										
22.	Dr. Rajbala Grewal	Director	9416252214 grewalrb@hau.ernet.in	Food Science & Nutrition	104	47	6	9	9	4
23.	Dr. Saleem Siddiqui	Professor and Head	9416397847 saleem@hau.ernet.in	Post Harvest Technology	140	17	-	12	3	3
24.	Dr. Gehlot	Professor	9416252185 rakagehlot@gmail.com	Fruit and Vegetables processing	87	6	-	-	-	-
25.	Dr. Rekha	Asstt. Professor	9467238876 rekhapoghat@gmail.com	Food Science & Technology	5	-	-	-	1	-
26.	Dr. Anju	Asstt. Professor	9034887002 anjugaina@gmail.com	Food Microbiology	15	6	-	5	1	-

Languages and Haryanvi Culture										
27.	Dr. Krishna Hooda	Professor	9416586171 Hod_lhc@gmail.com	Hindi literature	4	5	-	2	-	-
28.	Dr. Sushma Anand	Professor	9996000529 Anandsushma26@gmail.com	Hindi literature	1	5	-	-	-	-
29.	Dr. Aparna	Assoc. Professor	9416240941 aparnaviv@gmail.com	English literature	5	3	1	1	-	-
30.	Ms. Manju Mehta	Assoc. Professor	9255526303 manjunagpalmehta@gmail.com	English literature	-	2	-	-	2	-
31.	Dr. Poonam Mor	Asstt. Professor	9468186586 Poonam.mor3@gmail.com	English literature	9	4	-	3	2	-
Mathematics and Statistics										
32.	Dr. Urmil Verma	Principal Scientist & Head	9416926933 and urmilverma2017@gmail.com	Regression and Time series	44	6	-	1	2	-
33.	Dr. B K Hooda	Professor	9315385447 and bkhooda@gmail.com	Inference	13	11	-	-	5	6
34.	Dr. Manju Singh Tonk	Professor	9996210277 and manjntonk@gmail.com	Real and Complex analysis	4	2	-	-	1	-
35.	O.P. Sheoran	Professor	9416241326 opsheoran@hau.ernet.in	Multivariate Statistics	36	3	-	-	-	-
36.	Dr. Manoj Kumar	Assistant Professor	9416078701 and m25424553@gmail.com	Sampling Techniques	10	3	-	-	1	-
37.	Dr. Hemant Poonia	Assistant Professor	9468192071 and pooniahemant11@rediffmail.com	Fluid Dynamics	11	5	-	-	-	-
38.	Dr. Nitin Bhardwaj	Assistant Scientist	7289857340 and nitinbhardwaj.mdu@gmail.com	Reliability Theory	8	14	-	-	-	-
39.	Dr. D.R. Aneja*	Retired as Principal Scientist in 2017 (Consultant Faculty)	9813776060 and 19draneja57@gmail.com	Genetic Statistics	15	2	-	-	1	2
40.	Dr. Chander Bhan*	Retired as Professor in 2015 Consultant Faculty	9466918470 and	Nuclear Physics	-	-	-	-	-	-

41.	Mrs Kiran Kapoor (Consultant Faculty)	Retired as Assistant Professor in 2015	9416407232 and	Design of Experiments	-	-	-	-	-	-	-	-
42.	Dr Megha Goyal*	Teaching Associate	9255158432 and meggoel@gmail.com	Regression/ Time Series Analysis	11	4	-	-	-	-	-	-
Microbiology												
43.	Dr. Rajesh Gera	Prof & Head	9416961450 rajeshgera1967@gmail.com	Molecular Microbiology Biological Nitrogen Fixation	44	10	-	04	01	-	-	-
44.	Dr. Sneha Goyal	Principal Scientist	9416240932 snehgoyal@hau.ernet.in	Soil Microbiology	73	-	01	09	02	-	-	-
45.	Dr. S.S. Sindhu	Principal Scientist/ Adtl Dir. Research	9416650057 sinduss@hau.ernet.in	Soil Microbiology, Biological control, Microbial Genetics, Biotechnology of soil microorganisms, Plant - microbe interactions	61	59 abstracts/ 12 conferences	-	42	03	-	-	-
46.	Dr. Leela Wati	Principal Scientist	9416397853 lwkraj@gmail.com	Plant-microbe interaction, Fermentation, Biofuel	48	10	-	10	02	-	-	-
47.	Dr. D. V. Pathak	Principal Scientist	9416632846	Plant-microbe interaction,	-	-	-	-	-	-	-	-
48.	Dr. Rakesh Kumar	Asstt. Scientist	9813046403 sehrawatk@gmail.com	Biofertilizer production Molecular Microbiology Biocontrol	17	10	-	06	01	-	-	-
49.	Dr. Kamla Malik	Asstt. Scientist	9466263614 kamlamalik@rediffmail.com	Biofuel & Fermentation	20	26	-	14	-	-	-	-

50.	Dr. Seema Sangwan	Asstt. Scientist	9468210204 Seema_sangwan80@yahoo.co.in	Alcohol Fermentation and Biosurfactant production	10+2	05	-	06	-	-
51.	Mr. Jagdish Parshad	Asstt Scientist	9466480040 lect.jagdish@gmail.com	Agricultural Microbiology	07	02	-	-	-	-
Molecular Biology, Biotechnology and Bioinformatics										
52.	Dr. Pushpa Kharb	Professor and Head	+91-9416346306 hodmbbb@gmail.com	Plant Biotechnology	42	52	1	9	8	-
53.	Dr. Neelam R. Yadav	Principal Scientist	+91-8053013070 nryadav58@gmail.com	Plant Biotechnology	85	87	-	44	15	2
54.	Dr. Sudhir Kumar	Professor	+91-9466242051 sudhir@hau.ernet.in	Bioinformatics, Organic Chemistry	30	17	-	5	-	-
55.	Dr. Shikha Yashveer	Asstt. Professor	+91-9896104989 shikhayashveer@gmail.com	Molecular Biology & Biotechnology	11	04	-	16	7	-
56.	Dr. Neeru Singh Redhu	Asstt. Professor	+91-9466833480 redhuneeru95@hau.ernet.in	Bioinformatics	-	05	-	06	03	-
57.	Mr Anil Kumar	Asstt. Professor	+91-9416928750 anilpanwar@hau.ernet.in,	Bioinformatics	02	-	-	04	04	-
58.	Dr. Upendra Kumar	Asstt. Professor	+91-9411259621 baliyan.upendra@gmail.com	Molecular Biology & Crop Biotechnology	18	03	03	03	03	01
59.	Dr. Virendra K. Sikka	Emeritus Scientist Retired as Principal Scientist in 2015	+91-9466174044 lvksikka@gmail.com	Molecular Biology, Microbial Biotechnology	27	25	0	03	8	3
Physics										
60.	Dr. Paul Singh	Professor	9416355487 and psmehla@gmail.com	Nuclear Track Filters	-	-	-	-	-	-
Sociology										
61.	Dr. Vinod Kumari	Prof. & Head	94163-05511 vinodkumari2000@yahoo.com	Rural Sociology, Energy and Society and Women's health	45	20	01	01	06	06

62.	Dr. Satnam Kaur	Professor	98969-81359 satnamkaur9@gmail.com	98969-81359	38	35	01	-	31	02	
63.	Dr. Jatesh Kathpalia	Asstt. Scientist	94162-44846 kathpaliajatesh@gmail.com	94162-44846	25	07	-	11	04	05	
64.	Dr. Rashmi Tyagi	Asstt. Professor	98969-90800 rt64064@gmail.com	98969-90800	17	06	-	04	04	01	
Zoology and Aquaculture											
65.	Dr. Rachna Gulati	Professor & Head	9416266015 jdccshau@gmail.com rgulati@hau.ernet.in	9416266015	94	71	8	40	7	4	
66.	Dr. R.K. Gupta	Professor	9812096774 gupta_raj123@yahoo.com	9812096774	78	50	-	48	7	4	
67.	Dr. Dharambir Singh	Assistant Professor	9468073854 dharambir.titu@gmail.com	9468073854	16	05	-	-	05	-	
68.	Dr. Ravikant	Assistant Professor	9466264314 rkantazad@gmail.com	9466264314	13	01	04	04	03	--	
Computer Section											
69.	Ram Niwas	Assistant Professor	9416386708 rniwas@hau.ernet.in	9416386708	32	3	-	-	-	-	
70.	Ms. Sheetal Choudhary	Assistant Professor	9050551930 technicalcell@hau.ernet.in	9050551930	-	-	-	-	-	-	

* includes guest, contractual (Teaching Associate) and adjunct faculty

Retired Faculty during Period under Report:

S. No.	Name	Designation	Mobile No. and email	Specialization
Biochemistry				
1	Dr. U.N.Joshi	Principal Scientist Retired in 2015	9466131019 unjoshi2007@rediffmail.com	Plant Biochemistry and fodder quality
2	Dr. Shashi Madan	Principal Scientist Retired in 2017	9416471202 svmadan12@gmail.com	Stress biochemistry and wheat quality
Botany and Plant Physiology				
3	Dr. Sunita Sheokand	Professor Retired in 2018 (Consultant Faculty)	9416674592, sunitasheokand@hotmail.com	N ₂ fix, Stress Physiology and Phytoremediation
4	Dr. U.K. Varshney	Principal Scientist Retired in 2016 (Consultant Faculty)	9416397781, ukv1956@gmail.com	Ecophysiology
5	Dr. S.C. Goyal	Professor Retired in 2015	9416216888	Biodiversity and Taxonomy
6	Dr. Rajiv Angrish	Principal Scientist Retired in 2015	9416397742	Stress Physiology
7	Dr. H.R. Dhingra	Professor Retired in 2012	-	Reproductive Biology
8	Dr. K.S. Datta	Professor Retired in 2012	-	Stress Physiology
Chemistry				
9	Dr. Beena Kumari	Principal Scientist Retired in 2014	9255599909 beenakumari958@rediffmail.com	Agrochemical &Pesticide Residual Chemistry
10	Dr. M. Khaburridin	Principal Scientist Retired in 2017	9416325484 mkdeen@hau.ernet.in	Phytochemistry
Food Science and Technology				
11.	Dr. Rajendra Singh	Professor Retired in 2012	9416796608 drsaroha01@gmail.com	Food Microbiology
Languages and Haryanvi Culture				
12.	Dr. A.K. Bhatnagar	Professor Retired in 2014	9812135056	English
13.	Dr. Anita Bhardwaj	Professor Retired in 2015	9896180656	Hindi
14.	Dr. M.R. Haru	Professor Retired in 2015	9416475957	English

15.	Dr. Mira Tomer	Professor Retired in 2016	9416336028	Hindi
Mathematics and Statistics				
16.	Dr. D.R. Aneja	Principal Scientist Retired in 2017 (Consultant Faculty)	9813776060 and 19draneja57@gmail.com	Genetic Statistics
17.	Dr. Veena Manocha	Principal Scientist Retired in 2017	9896225245 veena.manocha@gmail.com	Linear Regression analysis and Econometric
18.	Dr. S.C. Gupta	Professor Retired in 2013	9264723798	Stochastic Process
19.	Dr. Chander Bhan	Professor Retired in 2015 (Consultant Faculty)	9466918470	Nuclear Physics
20.	Mrs. Kiran Kapoor	Assistant Professor Retired in 2015	9416407232	Design of Experiments
21.	Dr. R. S. Panwar	Professor Retired in 2015	9416509385	Applied Statistics
22.	Dr. K.K. Saxena	Professor Retired as in 2012	9215641400	Inference
23.	Dr. R.C. Hasija	Principal Scientist Retired in 2015	9416627668	Experimental designing
Microbiology				
24.	Dr. R. C. Anand	Principal Scientist Retired in 2016	9416993476	Biofertilizers and Biogas production
25.	Dr. Kamlesh Kukreja	Principal Scientist Voluntarily retired in 2016	9896686367	Bioremediation
26.	Dr. Sunita Suneja	Principal Scientist Retired in 2015	9416531930; sunejasunita@gmail.com	Plant Microbe interaction
27.	Dr. S. S. Dudeja	Principal Scientist Retired in 2013	9416043190	Biological Nitrogen Fixation & Molecular Microbiology
28.	Dr. Shashi Paroda	Principal Scientist Voluntarily retired in 2012	9896303488	Fermentation

29.	Dr. S.S. Dhamija	Principal Scientist Retired in 2012	9896011463	Fermentation
Molecular Biology, Biotechnology and Bioinformatics				
30.	Dr. Virendra K. Sikka	Principal Scientist Emeritus Scientist Retired in 2015	+91-9466174044 1vksikka@gmail.com	Molecular Biology, Microbial Biotechnology
31.	Dr. R. K. Jain	Principal Scientist Retired in 2017	9812110021	Plant Genetic Engineering
32.	Dr. S. Jain	Principal Scientist Retired in 2017	9466062460	Plant Biochemistry and Bioinformatics
33.	Dr. R.C. Yadav	Principal Scientist Retired in 2016	9416336394; rcyadavbiotech@yahoo.com	Plant Genetic Engineering
34.	Dr. Santosh Dhillon	Professor Retired in 2015	8395962348	Plant Biochemistry and Molecular Biology
35.	Dr. K. S. Boora	Principal Scientist Retired in 2015	9416489617	Crop Improvement and molecular Breeding
36.	Dr. V.K. Chowdhury	Principal Scientist Retired in 2014	8787306281	Plant Tissue Culture and Genetic Transformation
Sociology				
37.	Savita Vermani	Professor Retired in 2017	8199000468	Rural Sociology
38.	Deep Punia	Principal Scientist Retired in 2016	9416646290	Rural Sociology
39.	Sushila Dahiya	Professor Retired in 2016	9416489062	Psychology
Zoology and Aquaculture				
40.	Dr. Kanchan Monga	Professor Retired in 2016	9878695572	Spider diversity
41.	Dr. V.P. Sabhlok	Professor Retired in 2013	9416096796	Rodentology
42.	Dr. R.C. Sihag	Professor Retired in 2012	9416091013	Apiculture
Computer Section				
43.	Dr. D. S. Tonk	Professor Retired in 2016	9416091817	Networking and Computer programming

6.5.2.3. Credentials of the Faculty: *Whether the institution has employed competent faculty members qualified to accomplish the mission and goals of the institution? Give the highest qualification received by each faculty, related work experiences in the field, professional licensure and certifications, honors and awards, continuous documented excellence in teaching, or other*

demonstrated competencies and achievements that contribute to effective teaching and student learning outcomes.

The faculty of the college is highly qualified with international exposure in teaching as well research. The members of the faculty have won national and international awards, honours and recognitions, such as Commonwealth Fellowship, National Biotechnology Associate ship, Rafi Ahmed Memorial award, Hari Om Ashram Trust Award, DRDO Young Scientist Award, Henry Doubleday Research Fellowship, DAAD fellowship, Humboldt A. V. Fellowship, Rockefeller Fellowship , EC Fellowship, DBT overseas Fellowship, Japanese Government Fellowship etc.

- The faculty acts as expert paper setter and external examiner for several Universities in UG, PG and Ph.D programmes.
- The faculty members are using their expertise in their research work, guiding of students as well as in teaching.
- Several faculty members have brought patents to the university while several patent applications are in pipeline.
- Technologies have been developed and a few of these have been commercialized.
- The faculty has brought laurels to the university by bagging prestigious national and international awards like Rafi Ahmed Kidwai Award, Hari Om Ashram Award, Monsanto Beachell Award etc.
- They are using power point presentation, internet and interactive teaching by speaking and written assignments.
- The faculty has produced several manuals, e- books/ articles related to research and teaching in their respective disciplines.
- Several faculty members are on selection boards of other universities such as KUK, ARS, MDU, CDLU, PAU etc.
- Faculty attends refresher courses, seminars, symposia etc on regular basis.
- Faculty is also handling DST sponsored FIST and PURSE schemes.

Credentials of the faculty are given in the following table:

S. No.	Name Designation Highest qualification	Honours/Awards /Any Other Achievement*
1	Dr. Veena Jain Principal Scientist & Head Ph.D.	-
*		<ul style="list-style-type: none"> • Rafi Ahmed Memorial prize by the Govt. of India. (1982-83) • Post-doctoral Commonwealth Fellow at Nottingham University, Nottingham U.K. (1996-1997) • Sirohi Award for the best paper by Indian Society of Plant Physiologist (2008) • CSIR-JRF and SRF for doing Ph.D. (1985-89) • Best paper presentation award in 'Silver jubilee symposium on cotton production technology' held at CCSHAU, Hisar (2012) • Best poster award in 'Reorientation of Agricultural Research to ensure National Food security' held at CCSHAU, Hisar (2014)
2	Dr. H.R. Singal Professor, Ph.D.	<ul style="list-style-type: none"> • Hari Om Ashram Trust Award for the year 1988 • CSIR-JRF and SRF for doing Ph.D. (1982-86)
3	Dr. L.K. Chugh Sr. Scientist, Ph.D	<ul style="list-style-type: none"> • Recipient of certificates (9) of Merit/Appreciation awarded by HOD GPB)/Project Coordinator (PM • Recipient of awards (02) for poster presentations •

4	Dr. Jayanti Tokas Assistant Scientist Ph.D	<ul style="list-style-type: none"> Member of International Scientific, Technical Committee and Editorial Review Board on Bioengineering and Life Sciences, World Academy of Science, Engineering and Technology
5	Dr. Nisha Kumari Assistant scientist, Ph.D.	<ul style="list-style-type: none"> Best oral presentation in International Conference on Cotton in 2012
6	Dr. Shiwani Mandhania Assistant Scientist, Ph.D	<ul style="list-style-type: none"> Patent Filed in Cotton for Gossypol estimation
7	Dr. Ajay Pal Asstt. Professor, Ph.D	-
* <ul style="list-style-type: none"> DRDO Young Scientist Award-2010 AMI Young Scientist Award- 2011 in the area of Dairy and Food Microbiology DRDO-Technology Spin-off Award-2010 Best Seminar award-2006' at DFRL-DRDO, Mysore Best Paper Award' in '18th Indian Convention of Food Scientists and Technologists' at Hyderabad (ICFOST-2006 Best Research Paper Award-2010' & 2014' at DFRL-DRDO, Mysore First and Second Best Paper Award' in 'National Conference on Trends in Nanobiotechnology (NCTN-2016, 29-30th Nov., 2016)' at CCS HAU, Hisar. Research on Nanotechnology highlighted by Nature INDIA under the caption 'Antifungal nanoparticles boost maize growth' Incharge Central Lab. and organic analysis lab. 		
8	Dr. U.N.Joshi Principal Scientist Retired in 2015, Ph.D	<ul style="list-style-type: none"> Rafi Ahmed Memorial prize by the Govt. of India. (1982-83) ICAR Award for Team Research on Sorghum (1983-84) Nehru Award for P.G. Research (1991-92)
9	Dr. Shashi Madan Principal Scientist Retired in 2017, Ph.D	<ul style="list-style-type: none"> ICAR Award for Team Research on Wheat (1994-95)
10	Renu Munjal Prof. & Head, Ph.D	-
* <ul style="list-style-type: none"> Awarded National Biotechnology Associate ship from July 31, 2000 to July 30, 2001 Contributed for registration of <i>Wheat Genotype WH 730</i> for terminal heat tolerance with NBPGR, New Delhi. Collaborated in development of wheat varieties WH 1021, WH 1025, WH1080, WHD 943, WHD 948, WH 1105, WH 1124, WH 1124 and WH 1142 		
11	Sunita Sheokand Professor, Ph.D. Consultant Faculty	<ul style="list-style-type: none"> Awarded Commonwealth Fellowship at John Innes Centre, United Kingdom in 2000 Member of editorial board of Crop Research Journal
12	Jitender Kumar Professor, Ph.D	<ul style="list-style-type: none"> Recommended storage of Kinnow for 56 days at room temperature in modified atmosphere Recommended placing of Peach in egg tray with 1000 ppm KMnO₄ solution

13	Neeraj Kumar Principal Scientist, Ph.D.	<ul style="list-style-type: none"> Awarded Henry Doubleday Research Fellowship of Overseas Development Authority of United Kingdom (1992-96) Collaborated in the development of chickpea variety HC-5 for irrigated conditions
14	K.D. Sharma Principal Scientist, Ph.D.	-
* <ul style="list-style-type: none"> Best Poster Award in 2011 and 2013 Recommendation for development of seed priming technology to mitigate terminal stress in wheat Recommendation for management of terminal high temperature stress by AM fungi adopted NFSM Haryana 		
15	Sarita Devi Asstt. Scientist, Ph.D.	<ul style="list-style-type: none"> Awarded Post Doctoral Fellowship by UGC-2011
16	Anita Kumari Asstt. Scientist Ph.D	<ul style="list-style-type: none"> Awarded Post Doctoral Fellowship by UGC-2011 Contribution in development of <i>Brassica juncea</i> variety RH-725
17	Vinod Goyal Asstt. Scientist, Ph.D	-
* <ul style="list-style-type: none"> Young Scientist award given by KK Nanda foundation in National Seminar on Physiological and Molecular Approaches to Improve Plant Productivity, Hisar. Best paper award entitled “Repetitive Sequences in Plant Nuclear DNA-Types, Distribution, Evolution and Function. Genomics, Proteomics and Bioinformatics” given by the project for enhancing international impact of China STM Journals (PIIJ) of China. 		
18	U.K. Varshney (Consultant Faculty), Ph.D	<ul style="list-style-type: none"> Best teacher award in 2011
19	Prof. Rajvir Singh Professor, Ph.D.	-
* <ul style="list-style-type: none"> Best Teacher Award (ICAR) Distinguished Scientist award by the Society for Recent Development in Agric. 2009 Member expert of PG Board of studies in chemistry of MDU Rohtak for a period w.e.f. 08.03.2017 to 07.03.2019 Advisor/ member selection committee ASRB, ICAR New Delhi Advisor/ member selection committee ASRB, ICAR New Delhi One Patent filed 		
20	Dr. V.K. Madan Principal Scientist, Ph.D	-
* <ul style="list-style-type: none"> Contributed for the development of Asalio (<i>Lepidium sativum</i> L.) variety HLS-4 identified for release at National level particularly in Northern parts of the country Letter of appreciation University VC, CCS HAU 01/1993 Letter of appreciation University VC, CCS HAU 09/2005 Certificate of Merit University Director of Research, CCS 09/2007 HAU, Hisar A' Grade to Invited Lecture National World Herbo Expo-2004 01/2004 		

21	Dr. Sushila Singh Assistant Professor, Ph.D	-
22	Dr. Anil Duhan Assistant Scientist, PhD	-
* <ul style="list-style-type: none"> • Dr. V.D. Kashyap Memorial Gold Medal for best researcher in Ph.D. for the year 2009-10 in 24th Convocation of CCS Haryana Agricultural University Hisar (26 July, 2015) • Awarded Third prize (academics) in Ph.D. for the year 2009-10 • Best Paper Poster Award (5) 		
23	Dr. Sushil Assistant Scientist/Chemist, Ph.D	<ul style="list-style-type: none"> • Incharge, NABL accredited lab on Pesticide residue analysis
24	Dr. Rajbala Grewal, Professor , Ph.D.	-
* <ul style="list-style-type: none"> • Recipient of International Women Year Gold Medal • Best Paper and poster Presentation in four National Seminars • Presentation of Final project was adjudged 'Excellent' in 3rd International Post Graduate Course on Food Management held at Rehovot Campus, The Hebrew University of Jerusalem, Israel • Received Appreciation certificate from Nutrition Society of India, NIN, Hyderabad 		
25	Dr. Saleem Siddiqui, Professor , Ph.D.	<ul style="list-style-type: none"> • Awarded DAAD fellowship (1990-1992) • Indo-Hungarian Inter-Government Science and Technology Fellowship, 2000 • Additional charge of Dean, COBSH, March 2017-December, 2017
26	Dr. R.K. Gehlot, Professor , Ph.D.	-
27	Dr. Rekha, Assistant Professor, Ph.D.	-
28	Dr. Anju, Assistant Professor, Ph.D.	-
29	Dr. Krishna Hooda Professor, Ph.D.	<ul style="list-style-type: none"> • Authored Book 1, Edited Books-30 • Member expert, Dept. Of Hindi, MDU, Rohtak
30	Dr. Sushma Anand Professor, Ph.D.	<ul style="list-style-type: none"> • Editor, Haryana Kheti-
31	Dr. Aparna Assoc. Professor, Ph.D.	<ul style="list-style-type: none"> • Letter of appreciation University VC, CCS HAU 10/2017 • Organised 70 trainings as coordinator
32	Ms. Manju Mehta Assoc. Professor, M.Phil	<ul style="list-style-type: none"> • Corroordinated 10 trainings • Letter of appreciation University from Dean
33	Dr. Poonam Mor Asstt. Professor, Ph.D.	<ul style="list-style-type: none"> • Receptient of University Research Fellowship • K.D. Vashist Medal • Corroordinated 10 trainings • Letter of appreciation University from Dean

34	Dr. Urmil Verma Principal Scientist & Head Ph.D.	-
* <ul style="list-style-type: none"> • DAAD fellowship [(2003, 2006 & 2009) • INSA-DFG (2008) CIMMYT (2010) • INSA-DFG (2012, 2017) • A comparative study on model selection for sugarcane yield prediction in Haryana. Research Bulletin, pp. 1-101 (2009) • Autoregressive Integrated Moving Average Wheat Yield Modelling in Haryana. Research Bulletin, pp. 1-51 (2006) • Crop yield forecasting in Haryana: 1986 to 2010. Summary Report, pp.1-148 (2011) • Statistical Methods in Biosciences for Teaching and Research using SAS Procedures (2014) • Biometrics for Teaching and Research using SAS Procedure (2015) 		
35	Dr. B K Hooda Professor, Ph.D.	•
* <ul style="list-style-type: none"> • Common Wealth Academic Staff Fellowship Award, 2007 • Basic Statistical Manual for Undergraduate Students (2003) • Statistical Methods for Agricultural Students (2005) • Statistical Methods for Bioinformatics (2008) • Statistical Methods for Social Sciences (2009) • Bio-Statistics and Computers (2013) 		
36	Dr. Manju Singh Tonk Professor, Ph.D.	<ul style="list-style-type: none"> • Mathematics for Bioinformatics-I (2006) Asha Ahuja, Manju Tonk and Deepak Grover • Mathematics for Bioinformatics-II (2006)
37	Dr. Manoj Kumar Assistant Professor, Ph.D.	<ul style="list-style-type: none"> • Elementary Mathematics for students of Agriculture (2012)
38	Dr. Hemant Poonia Assistant Professor, Ph.D.	<ul style="list-style-type: none"> • An appreciation letter given by Honorable Vice-Chancellor, CCS HAU, Hisar on Teacher's day (05.09.2016) for delivering effective and interactive teaching • Best research paper awarded by IASET society
39	Dr. Nitin Bhardwaj Assistant Scientist, Ph.D.	-
40	Dr. Paul Singh Professor, Ph.D.	-
* <ul style="list-style-type: none"> • Physics Practical Manual for Agricultural Engineering students (1999) • A Comprehensive Physics Manual for Agri. Engg. Students (2003) • A Comprehensive Physics Manual for Home Science students (2004) • A manual on Experiments in Physical Chemistry for PG students (2006) • A Manual on Nuclear Radiations: Detection and Protection (2009) 		
41	Dr. D.R. Aneja* Retd Principal Scientist, Ph.D.	• -

* <ul style="list-style-type: none"> • Copyright of software ‘Statistical Package for Mating Design’ by National Research Development Corporation (NRDC), New Delhi. • Co-Principal Investigator of ICAR funded research project entitled “To obtain optimal plans for partial diallel crosses and to prepare software package for important mating designs”. • Elementary Statistics (2013) • Hooda, B.K. and Lajpat Rai and Aneja, D.R 		
42	Mrs Kiran Kapoor* Retd. Assistant Professor M.Sc.	<ul style="list-style-type: none"> • Introduction to Statistical Methods (2013) • B. K. Hooda, R. C. Hasija, M. Goyal & Kiran Kapoor
43	Dr. Rajesh Gera Prof & Head, Ph.D.	-
* <ul style="list-style-type: none"> • Post Doctoral Fellow at ICGEB, Tristy, Italy • Recommendation entitled “Use Biomix (Azotobacter, Azospirillum and PSB) as a seed inoculants @ 100 ml/acre along with recommended dose of fertilizer” for Bajra crop has been accepted in Agriculture Officers’ Workshop (held on 6and7th April 2012 at CCS HAU, Hisar) and included in Package of Practices – Kharif crops of the University. 		
44	Dr. Sneha Goyal Principal Scientist, Ph.D.	-
* <ul style="list-style-type: none"> • Post Doctoral fellow at Chiba University, Japan • Recommendation entitled “Soil application of Neem Cake @ 30g/spot one week before sowing + seed treatment with Gluconacetobacter diazotrophicus • Strain 35-47 for the management of root knot nematode, Meloidogyne spp. In bottle guard” included in Package of Practices- Rabi crops (2012-13) of the university. • Technology developed for paddy straw composting at farmers field 		
45	Dr. Leela Wati Principal Scientist, Ph.D.	<ul style="list-style-type: none"> • Developed protocol for conversion of paddy straw into ethanol
46	Dr. Rakesh Kumar Asstt. Scientist, Ph.D.	-
* <ul style="list-style-type: none"> • Foreign deputation to Ohio State University, Columbus, USA by NAIP, ICAR, Govt of India • Awarded with the project entitled “Molecular characterization of functional and uncultured bacterial community in semi-arid zone of Haryana” Funded by SERB-DST (Govt of India) worth Rs. 23.30 Lakhs 		
47	Dr. Kamla Malik Asstt. Scientist, Ph.D.	-
* <ul style="list-style-type: none"> • Awarded project entitled “Development of fermentation process for ethanol production from potato waste” by GFARP worth Rs. 9.5 Lakh • Best poster Award for paper entitled “enhanced ethanol production from paddy straw with fruit waste” during National Seminar on Reorientation of Agricultural Research to ensure National food Security in 2014 organized by CCS HAU, Hisar. • Best oral presentation award for paper entitled “Ecofriendly process of ethanol from paddy straw” presented during National seminar AGMET-2017 organized by CCS HAU, Hisar 		

48	Dr. Seema Sangwan Asstt. Scientist, Ph.D.	<ul style="list-style-type: none"> Received Young Scientist Award (2014) in the field of Industrial Microbiology given by Society for scientific development in agriculture and technology (SSDAT) in collaboration with Directorate of Rice Research, Hyderabad
49	Pushpa Kharb Professor and Head , Ph.D.	-
* <ul style="list-style-type: none"> Received ICAR sponsored Best Teacher Award of the University for 2004-05 The Rockefeller Foundation PDF on Rice Biotechnology, Texas A&M Univ.,(Nov.1997-Nov.99) Developed protocols for micro-propagation of several medicinal, horticultural and economically important crop plants. Studied molecular diversity in different genotypes of wheat, date-palm, jojoba etc. Developed SCAR markers for identification of sex at seedling stage in dioecious plants date-palm and Jojoba. Technology in date-palm has been licensed. Developed Bt chickpea and Bt pigeon pea for resistance against pod borer. Physically located transgenes on rice chromosomes by using the technique of FISH. Two Patents granted. Total seven patents filed 		
50	Neelam R. Yadav Principal Scientist, Ph.D.	-
* <ul style="list-style-type: none"> Awarded Post- Doctoral Fellowship sponsored by the Rockefeller Foundation, USA in Rice Biotechnology. The Rockefeller Foundation PDF on Rice Biotechnology, Michigan State University, USA (Oct.1992-Oct.94) First Women Scientist who was nominated by ICAR for Post Doctoral fellowship in Rice Biotechnology and awarded Post Doctoral fellowship by the Rockefeller Foundation USA in ‘ International program on Rice Biotechnology’. Commendation certificate from HAUTA, CCS HAU, Hisar for bringing research project on Genetic Improvement of Basmati rice from the Rockefeller Foundation of USA in 1996 Commendation Certificate from HAUTA, CCS HAU, Hisar for bringing research project on, “Development of Transgenic plants of Chickpea.” from Department of Biotechnology (DBT), N.Delhi. in 1996. Advisor award from Monsanto Beachell- Borlaug International Scholar program President (Dr. E.C. Runge) Five ongoing outside agency projects (ICAR, DBT, Gap filling State) Plant Tissue culture in horticultural, medicinal and crop plants. Plant genetic engineering in rice, cauliflower and cotton. Linkage mapping, QTL identification and marker assisted selection in wheat and mungbean. Molecular breeding in pearl millet for downey mildew resistance. Guar improvement using molecular approaches. Secretary, Institutional Biosafety Committee, CCS HAU 2016-17 DBT nominee in IBSC for CSSRI, Karnal, MDU, Rohtak Expert, Board of Studies, UIET, KUK, Kurukshetra 		

51	Sudhir Kumar Professor, Ph.D	-
* <ul style="list-style-type: none"> BOYSCAST Fellow (DST, New Delhi) – 1995-96 Started Bioinformatics PG programme (Coordinator 2004-07, HoS – 2007-14) Incharge, Computer Centre (1998-99) and Sys Admin (1999-2006) INSA Visiting Scientist (TIFR, Mumbai) – 2001 President, Mountaineering Club (2007-2010) 		
52	Shikha Yashveer Asstt. Professor , Ph.D	-
* <ul style="list-style-type: none"> Second award in poster presentation in the National Seminar on “Reorientation of Agricultural Research to Ensure National Food Security” held at CCS HAU, Hisar during 6-7th January, 2014. Received a “Certificate of Appreciation” for outstanding contributions in the organization of the National symposium on “Transgenic Crops in India: Progress and Challenges” organized by the Department of Molecular Biology, Biotechnology and Bioinformatics, CCS HAU, Hisar on March 16-17, 2016. 		
53	Neeru Singh Redhu Asstt. Professor M.Sc	-
* <ul style="list-style-type: none"> Certificate of Honor was awarded for the work done in organizing NCTN-2016 conference Received a “Certificate of Appreciation” for outstanding contributions in the organization of the National symposium on “Transgenic Crops in India: Progress and Challenges” organized by the Department of Molecular Biology, Biotechnology and Bioinformatics, CCS HAU, Hisar on March 16-17, 2016. Multimedia databases of crop diseases and of plant mites were prepared and being maintained on web server (URL = http://hau.ernet.in/cropdb and http://hau.ernet.in/mitesdb). A web-site having annotated data of rice has been prepared. 		
54	Mr Anil Kumar Asstt. Professor, M.Sc	<ul style="list-style-type: none"> <i>In silico</i> Protein Modelling and Gene annotation
55	Upendra Kumar Asstt. Professor , Ph.D.	-
* <ul style="list-style-type: none"> Awarded travel grant by Department of Science and Technology, Government of India to attend 12th International Wheat Genetic Symposium (12th IWGS) September 8-14, 2013, Pacifico Yokohama, JAPAN. Best paper presentation award in 12th International Wheat Genetic Symposium (12th IWGS) September 8-14, 2013, Pacifico Yokohama, JAPAN. Young Scientist Award (2015) given by Uttarakhand Council for Science & Technology, Govt. of Uttarakhand Visiting Fellow in Kihara Institute of Biological Research, Yokohama City University, Yokohama, Japan (September 6, 2013 to October 5, 2014) Developed protocols for micro-propagation of Kiwifruit, Moringa, Pomegranate, Gymnema, Mucuna, Orchids, Lily etc. 		

56	Virendra K. Sikka* Emeritus Scientist, Ph.D.	-
* <ul style="list-style-type: none"> • DAAD fellowship (1987-89) • Founding Faculty of Biotech Centre and Mol Biol. & Biotechnology Department at CCS HAU Hisar • Post Doctoral fellowship of the Rockefeller Foundation in Rice Biotechnology (1998-2000) • Life member, Society of Plant Biochemistry & Biotechnology, India. • Life Member, Association of Microbiologists of India. • Developed ecofriendly process for PHB towards biodegradable plastic • Developed rhizobia with higher hydrolytic enzyme activity capable of 300% more nodulations • Dr Ram Dhan Singh Gold Medal 1979 by Haryana Agri.Univ, Hisar 		
57	Vinod Kumari	-
* <ul style="list-style-type: none"> • UGC fellowship during Ph.D. Programme • Jawahar Lal Nehru Memorial Fund Award for Academic Excellence • Highest OGPA in College during M.Sc. and Ph.D. Programme • Convenor, adopted village of VOBS&H under Unnat Bharat Bhiyan & Adarsh Gram Yojana • Member expert of Board of Studies in Sociology of Baba Mast Nath University Asthal Bohar, Rohtak • Developed Instructional Material/Manual 		
58	Satnam Kaur Professor, Ph.D.	-
* <ul style="list-style-type: none"> • Awarded UGC Scientist `A` on the project "Contribution and potentials of Rural Women – A study of their integration in development" (1988-1993) • Awarded a Research Project on "Consumer Welfare and Protection in Rural Haryana – An Exploratory Study" by the Department of Consumer Affairs, Govt. of India, New Delhi (2005-2007). 		
59	Jatesh Kathpalia Asstt. Scientist, Ph.D.	<ul style="list-style-type: none"> • Developed Instructional Material/Manual
60	Dr. Rashmi Tyagi Asstt. Professor, Ph.D.	<ul style="list-style-type: none"> • Developed Instructional Material/Manual
61	Dr. Rachna Gulati Professor & Head, Ph.D.	-
* <ul style="list-style-type: none"> • Secretary, Board of Studies, COBSH • Member, RIC, • Member, Committee for various Gold medals for PG students • Member, Internal Complaints Committee under Sexual Harassment of Women at Work Place • Expert in State Level Science Exhibition at Govt. P.G. College, Hisar and Jat College • External expert, Academic Audit Committee, Synopsis evaluation Committee, MDU, Rohtak 		
62	Dr. R.K. Gupta Professor, Ph.D.	<ul style="list-style-type: none"> • Adviser, Union Public Service Commission, New Delhi. • Expert, Uttarakhand Public Service Commission, Haridwar

63	Dr. Dharambir Singh Assistant Professor, Ph.D.	<ul style="list-style-type: none"> Developed Instructional Material/Manual
64	Dr. Ravikant Assistant Professor , Ph.D.	*
* <ul style="list-style-type: none"> Letter of appreciation received from Director of Research for smooth conductance of “National Seminar on reorientation of agricultural research to ensure national food security; RARFS-2014” from January 6-7, 2014. Letter of appreciation received in : National symposium on transgenic crops in India: progress and challenges 16-17 march 2016 Letter of appreciation received for National mathematic day December 22th, 2015 Letter of appreciation received for National science day , Feb. 27-28, 2017 		
65	Dr O.P. Sheoran Professor(Statistics) Ph.D (Statistics)	<ul style="list-style-type: none">
* <ul style="list-style-type: none"> V.D. Kashap Gold medal during Ph.D. Developed Online Statistical Analysis Tool (OPSTAT) Developed Statistical Package for Mating Designs Providing Internet facilities to the university campus Providing Wi-fi facility to Student in their hostel and various colleges of the university Implementation of State Government Initiative of File Tracking System Implementation of Aadhar Enabled biometric System (In Process) Statistical Analysis and Short trainings on statistical analysis for PG students. Need based software development Provide IT support to all the faculty members, Employee and Students which includes training programmes under computer literacy mission on the Campus. Organised refresher course on Computer Application for scientists of SAU’s in collaboration with AAREM, DHRM every year. 		
66	Ram Niwas Assistant Professor (CS)MSc Statistics, MSc. Comp. Science, M. Phil., NET	<ul style="list-style-type: none"> Developed Instructional Material/Manual

*Consultant faculty

6.5.2.4. Technical and Supporting Staff (No.): *Whether the College has appointed (in place) sufficient technical/laboratory/farm staff to cater the need of practical and field experiments. Mention department wise distribution of technical, supporting and field staff in the tabular form.*

In all the ten departments and computer section, 29 technical, 23 supporting and 15 field staff are in positions. The supporting (11) and technical staff (03) positions are also filled on contractual basis for smooth functioning of office, teaching and research activities.

Department	I. Technical	II. Supporting Staff	III. Field Staff
Biochemistry	04	01	01
Botany and Plant Physiology	05	04	07
Chemistry	01	-	-
Food Science and Technology	01	04	03
Languages and Haryanvi Culture	02	-	-
Mathamatics and Statistics	02	02	-
Microbiology	05	03	02
MBBB	03	02	02
Sociology	-	03	-
Zoology and Aquaculture	03	03	-
Computer Section	03	01	-
Total	29	23	15

6.5.3. Learning Resources:

6.5.3.1 College Library: *Location of the library, Present staff position (in place), Availability of the following in library, Wi-Fi, No. of books and other reading materials, No. of periodicals and research journals, No. of internet points with number of computers, Seating capacity in library, Employing the latest technology in library sciences, Stocking arrangements of books, Collection of volumes on different subjects, Latest publications in the fields of relevant subjects, Automation and user services through computer, Opening hours, Subscription of journals of national and international repute, national dailies, magazines etc.*

There is no library at college level however there are Departmental Library. Each Department has a library with good collection of books and theses which are accessible to students and faculty. In departmental libraries of the College, there are 1164 books, 1286 M.Sc. theses and 499 Ph. D theses.

- CCS Haryana Agricultural University has a Nehru Library which has a Library Advisory Committee (a policy making body) which decides the guidelines for its smooth functioning.
- The Committee comprises Vice-Chancellor as its Chairman and University Librarian as its Member-Secretary. All the Deans/Directors, Registrar, Comptroller, Principal- College of Agriculture, Kaul and President of HAUTA are its ex-officio members, while one HOD, one faculty member and one PG student from each College are nominated by the Vice-Chancellor for two academic years.
- Students are encouraged to consult the library which is well equipped with a large number of books and other facilities like Krishi Prabha, CeRa and video conferencing. It is the hub of academic and research activities of the University; housed in a centrally located elegant building.

- It provides information support to teachers, scientists, extension specialists, students, and other members drawn from non-teaching staff and general public.
- **The Nehru library has 91306 books related to subjects of COBS&H.**
- **The Nehru library subscribes 38 journals related to Basic Sciences.**
- The total area of the library is 97,700 Sq.ft. and the total seating capacity is 650.
- Library regularly conducts training programmes for faculty and students and gets feedback. Suggestions are incorporated in creating better facilities to its users.
- Videoconferencing facility and multimedia service are other important facilities provided to Library users. Entire collection of library has been made bar-coded for automated circulation activities.
- Library security has been monitored by CCTV Security System.
- Implementation and maintenance of Anti-Plagiarism software (Turnitin)
- Implementation of IUMS/ERP modules for the Digitization of University Work.

6.5.3.2 Laboratories, Instructional farm, Workshops, Dairy Plant, Veterinary Clinic, Hatchery, Ponds etc.: *Clearly mention about laboratories, instructional farm, workshop, dairy plant, veterinary clinic, hatchery, ponds etc facilities available in the college with its numbers, space, speciality to conduct practical/hands on training.*

In addition to UG and PG laboratories, there are specialized research laboratories in each department for conducting research in specific areas. The information regarding these laboratories in the various departments of the college is as under -

Departments	Name and Number	Speciality to conduct practical /hands on training
Biochemistry	07	
	Industrial Biochemistry Lab. (Lab No. 417)	Immobilization of microbial enzymes for industrial applications
	Enzymology Lab (Lab No. 417)	Isolation, purification and immobilization of microbial enzymes
	Protein Purification Lab (Lab No. 414)	Purification and characterization of agriculturally important enzymes
	Molecular Biochemistry Lab (Lab No. 414A)	Differential expression and proteome studies
	Stress Biochemistry Lab (Lab No. 432)	Understanding mechanism(s) of resistance against abiotic stresses in field crops
	Post-harvest Biochemistry Lab (Lab No. 432)	Improvement of shelf-life of fruits and other field crops
	Quality Lab (Lab No. 424)	Evaluation of food and fodder crops for quality traits and anti-nutritional factors
Botany and Plant Physiology	05	
	Nodulation and N ₂ – Fixation Lab (Lab No. 334)	N ₂ -fixation mechanism (leghaemoglobin, nitrogenase activity and oxidative metabolism) under abiotic stress condition in different nodules

	Phytoremediation (Lab No. 320)	Identification of salt and heavy metal hyperaccumulator plants
	Stress Physiology Lab (Lab No. 329)	Identification of physiological markers (MSI, RSI, Photosynthetic efficiency, Photochemical Quantum Yield, CTD, Pollen viability) under different abiotic stresses
	Environmental Science Lab (Lab No. 331)	Physiological changes in response to agricultural pollutants and strategic research for environment and climate resilient sustainable agriculture
	Plant Tissue Culture Lab (Lab No. 317)	Available for micro-propagation of medicinal and ornamental plants
Chemistry	03	
	Organic Lab (02)	Synthesis and characterization of organic compounds and isolation of active principles from different plant material
	Inorganic Lab	Synthesis and characterization of inorganic compounds and isolation of active principles from different plant material
Food Science and Technology	7 (5 labs and 2 pilot plants)	
	Fruits & Vegetables Processing Lab (Lab No. 1)	Used by PG and professional elective students for their research and teaching. Preparation of products
	Food Chemistry Lab (Lab No. 3)	Used by PG and professional elective students for their research and teaching.
	Instrumental Analysis Lab (Lab No. 4)	Used by PG and professional elective students for their research and teaching.
	Food Microbiology Lab (Lab No. 5)	Used by PG and professional elective students for their research and teaching.
	Cereal Technology Lab (Lab No. 7)	Used by PG and professional elective students for their research and teaching.
	Pilot Plant of Fruits & Vegetables Processing (Lab No. 6)	Preparation of products related to fruits and vegetables
	Spray dryer pilot plant (Lab No. 2)	Drying and packaging of the products
Mathematics and Statistics	01	Used by UG/PG and professional elective students to develop teaching material and other assignment work.

	Computer Lab (Lab No. 15)	Used by UG/PG and professional elective students to develop teaching material and other assignment work.
Microbiology	07	
	Molecular Microbiology Lab (Lab No. 202)	Molecular characterization of PGPRs
	Biocontrol lab (Lab No. 207)	Development of biocontrol for various pests and diseases of crops
	Plant-microbial Interaction lab (Lab No. 217)	Studying interactions of microbes with plants
	Bioremediation lab (Lab No. 222)	Development of strategies for bioremediation of polluted soils
	Soil Microbiology Lab (Lab No. 225)	Studying microbes and their role in soil
	Fermentation Lab (Lab No. 229)	Different aspects of fermentation
	Bio Energy lab (Lab No. 234)	Biogas, biofuels are being developed in this lab
Molecular Biology, Biotechnology and Bioinformatics	08	
	Plant Tissue Culture and Genetic Engineering laboratory (No. 127-131)	All experiments of Plant Tissue Culture and Genetic transformation are conducted in the lab
	Molecular Biology Labs I and II (Two; No. 109, 110)	Experiments related to molecular biology, genetic diversity and molecular breeding are conducted in the lab
	Microbial Biotechnology Laboratory (No. 138)	Experiments related to microbes are conducted in the lab
	Molecular Breeding/Experiential Laboratory (No.123)	Experiments related to molecular markers are conducted in the lab & For UG students
	DNA Isolation Laboratory (Lab No. 115)	Genomic DNA Isolation is conducted in the laboratory
	Technology Incubation Laboratory /Molecular Breeding (Lab No. 117)	For Technology validation and technology transfer and molecular breeding
	High Performance Computing Laboratory	Experiments requiring high computation are conducted in this lab
Physics	-	-
Zoology and Aquaculture	06	
	Acarology Lab (Lab No. 311)	Mite and biocontrol agent rearing, quantitative, qualitative loss estimation, mite extraction, etc

	Sanitized Aquarium room (Lab No. 310)	For experiments on fish and related material
	Rodentology Lab (Lab No. 307)	Management studies on rodents, microbial studies
	Taxonomy, Physiology and Ecology Lab (Lab No. 306)	experiments on Earthworms, taxonomy physiology, practicals
	Biotechnology Lab (Lab No. 305)	Biotechnological work
	Vermi-fish Lab (Lab No. 302)	Earthworm rearing, microscopic studies, etc.
Computer Section	01	
	Network Lab	Installation of Local Area Network equipments and Servers
Total	45	

Farm area/net houses/green houses Facilities with College

Departments	Number	Facility
Biochemistry	08 Net house	Growing crops for biochemical characterization
Botany and Plant Physiology	1 Green House, 7 Net house	Evaluation of plants for physiological evaluation
Microbiology	5 Net house	For evaluation of microbial strains
Molecular Biology, Biotechnology and Bioinformatics	7 Net house	Growing crops for molecular breeding and morpho-physiological evaluation
Zoology and Aquaculture	4 Net house	For earthworm and plant mite rearing
Total	32	

Any other information which is not covered in the infrastructure may be added preferably in tabular form

Departments	Facility
Botany and Plant Physiology	Botanical Garden

The college has a botanical garden covering an area of 10.5 acres having rich plant biodiversity of nearly 600 species that includes ornamental foliage plants, seasonal flowering plants, bamboos, ferns, cacti and succulent plants, medicinal and aromatic plants, chrysanthemums, roses, aquatic plants, climbers, shrubs, and trees. These have been collected and maintained for imparting knowledge to students as well as related scientists. The department of botany and plant physiology has done pioneering work in conserving the indigenous local species of plant and also introduction of exotic species (approximately 600) from other places. Flower shows is organized every year.

Annual Chrysanthemum Show, Botanical Gardens



Microbiology

Biofertilizers Production Unit

The Department of Microbiology has been producing biofertilizers for the last 40 years as per the demand of farmers and other farm agencies. The biofertilizers produced are:

- *Rhizobium* biofertilizer (Rhizoteeka) for nitrogen fixation in different pulses and legumes like moong, urd, arhar, soybean, pea, gram, berseem and ground etc.
- *Azotobacter* biofertilizer (Azoteeka) for nitrogen fixation in different crop plants including vegetables, flowers and fruits etc.
- PSB biofertilizer (Phosphoteeka) for solubilization of insoluble/ fixed P in the soil for all crop plants.
- Biocontrol bioinoculants (Bioteeka) *Azotobacter chroococcum* strain HT-54 for control of molya disease in wheat and barley; and *Gluconoacetobacter diazotrophicus* controlling root knot nematode in cotton

Molecular Biology, Biotechnology and Bioinformatics

Three transgenic greenhouses

The transgenic greenhouses are used by the department to conduct experiments on development of transgenics of crops of agricultural importance. The facilities are also used by post graduate students for their approved thesis work.

Zoology and Aquaculture

Museum (Room No. 316)

The Museum housed preserved specimen of invertebrate and vertebrate phyla belonging to different orders. Stuffed animals, skeletal systems, display boxes, models, charts etc are also displayed in the museum. It is used for taxonomy practical by undergraduate and post graduate students.

6.5.3.3 Student READY/ In-Plant Training / Internship / Experiential Learning Programmes:

Clearly mention about the implementation of Student READY/In-plant training/ Internship/Experiential Learning programmes and learning outcomes as per the guidelines of ICAR. Profit sharing mechanism (amount) shall be mentioned for each ELP unit sanctioned by the ICAR for the college.

There is one experiential learning unit in the College of Basic Sciences and Humanities and one experiential learning unit in Centre of Food Science and Technology. The Status of Experiential learning programme is as follows-

1. Experiential learning unit in the College of Basic Sciences and Humanities:

Title: Production of medicinal & Aromatic plants through Tissue Culture & Production of Biofertilizers

Number of students trained: No UG students

Income/Revenue generated: Nil as no intake of UG students in this unit

Expertise gained: The infrastructure developed is being used for research on micro propagation. Cost-efficient protocols have been developed for large-scale micro propagation of several medicinal plant species including *Aloe vera*, ashwagandh, *Catharanthus*, *Dioscorea*, *Glycyrrhiza*, ker, stevia and safedmusli.). Micropropagated plants were successfully transferred and evaluated under the field conditions.

Status of EL Unit:

- The infrastructure is also used for conducting biotechnology trainings in summer for developing human resources in biotechnology.
- PG. students of the department are using the created facilities for their research work.

2. Experiential learning unit in Centre of Food Science and Technology:

Title: Processing of fruits, vegetables and some other food items.

Number of students trained: No UG students

Income/Revenue generated: Nil, as no intake of UG students

Expertise gained: PG Students were trained to develop value added food products from fruits, vegetables, cereals, pulses and oilseeds through practical demonstrations and hands on practice. Efforts were made for building entrepreneurship spirit and business management competence among PG students.

Status of EL Unit: Likely to start processing from next session if the students get registered for this module in the next session.

6.5.1.3 Curricula Delivery through IT (smart class rooms/interactive board etc.): *Whether the College is using smart class rooms/interactive board etc. for teaching and practicals. Number of class rooms upgraded as smart class rooms should be mentioned.*

The College of Basic Sciences and Humanities has robust ICT infrastructure comprising more than one hundred computers, one smart class room/interactive board for teaching, lecture rooms with computer facility, Wi-Fi facilities, CCTV cameras, etc. The faculty members of the college use ICT in teaching, practical, office and research purposes. Every department has one Seminar Room with computer, LCD projector and internet connection. All faculty members have computer printer and internet connection in their offices. The office of every department has computer facility with internet connection. There is Wi-Fi facility for faculty, staff and students. This infrastructure provides opportunities for the use of ICT in quality teaching, research and extension. Faculty members use power point presentations, YouTube and CD ROM in teaching all courses at UG, PG and Ph.D. level.

- Two hundred Desktops are available in the college with specifications of: i3, i5 and i7 Core, 500 GB/1TB HDD and 2 GB/4 GB RAM.
- All the computers are connected through LAN for better connectivity.
- Computers are well equipped with recent software such as Microsoft office, SPSS, SAS and Turnitin to improve writing skills of students and assist them in checking plagiarism of research thesis.
- For proper maintenance and upgradation of the computers, Rs. 40, 0000/- is sanctioned to the college.
- In College every node is connected with internet and free of cost Wi-Fi facility is available in the hostel rooms.
- The university is going to implement IUMS/ERP system for the data management shortly.
- Regular courses of computers and special trainings on use of ICT are provided to teachers/students.
- Students are given seminars and lectures in smart class rooms enabled with LCD Projector and internet.
- Several departments have separate Computer Lab for students. Every faculty member and offices of the college has their own PCs connected with internet facility.

Type of ICT Application used in curricula:

- The Department of Biochemistry uses power point presentations, white board, YouTube and CD ROM in teaching all courses at UG, PG and Ph.D. level.
- The Department of Botany & Plant Physiology uses power point presentations, white board, YouTube and CD ROM in teaching all courses at UG, PG and Ph.D. level.
- The Centre of Food Science and Technology uses power point presentations, white board, e manuals
- The Department of Chemistry uses power point presentations, white board, YouTube and CD ROM
- The Department of Languages and Haryanvi Culture uses power point presentations, white board
- The Department of Mathematics, and Statistics uses power point presentations, white board, CD ROM, e manuals etc
- The Department of Molecular Biology, Biotechnology and Bioinformatics uses power point presentations, white board, YouTube and CD ROM in teaching all courses at UG, PG and Ph.D. level.
- The Department of Microbiology uses power point presentations, white board, YouTube and CD ROM in teaching courses.
- The Department of Sociology use ICT in teaching and practical. There is one Seminar Room with computer, LCD projector and internet connection. All faculty members have computer printer and internet connection in their offices. There is Wi-Fi facility for faculty, staff and students. This infrastructure provides opportunities for the use of ICT in quality teaching, research and extension. Faculty members use power point presentations, YouTube, emails and CD ROM in teaching all courses at UG level. Students also use online books.
- The Department of Zoology and Aquaculture uses power point presentations, white board, in teaching all courses at UG, PG and Ph.D. level **use of CeRA, digital library**, YouTube videos, digital camera, emails, WhatsApp group also during PG and Ph.D. courses. One UG Lab is also equipped with LCD projector.

6.5.4 Student Development: *Student Development at the College directs its educational efforts at fostering the intellect and character of students by integrating in-class and co-curricular experiences. To accomplish this, the college provides a wide range of educational experiences through programs and activities that complement and support the academic experience in the classroom.*

6.5.4.1 Student Intake and attrition: *The information about student intake and attrition, for the college as a whole but separated in UG, PG and Ph.D categories shall be provided in tabular form for last five year.*

Degree program	Actual students admitted in last five years						Attrition (%)					
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
M.Sc.	32	41	43	44	36	59	6.25	17.1	4.7	15.9	2.8	1.7
Ph. D.	32	34	31	26	24	31	-	1.9	-	11.5	8.3	3.2

Note: Figures in parentheses are the number of attrition

6.5.4.2 Average number of students in Theory and Practical Classes: *Mention the degree programme-wise number of students sitting in a class for theory and practical, separately in tabular form.*

- The college offers courses to students of this college in different disciplines. These courses are open to students of different departments of other colleges as well.
- The number of students varies in each course.
- Some of the courses being compulsory for different disciplines of the college and other colleges, the strength of students vary 40-100.
- Courses taken under minor subject are in high demand and number of enrolments is more.
- Ph.D. courses (600 series) are generally taken by students of the department and vary 2-10 students in such course.
- Batches in Practical courses vary 1-3, each batch has about 20-25 students.

6.5.4.3 Admission process:

- The College ensures publicity and transparency in the admission process through advertisement in the local dailies, National dailies, Websites, and conducting common entrance tests through centralized University system.
- The admission process for the college is transparent. Prior advertisement regarding admission process is published in the national dailies news paper and also on the university web portal. There is an entrance examination for the admission and OMR sheets are being checked using software to avoid any kind of bias and omissions. There is strict observation during the entrance examination including photographs of candidates, thumb impression and signature. The doubtful case, if any, is debarred from admission.
- Process of admission is through Common entrance examination for all the masters' courses except Statistics, Sociology and Physics. In the field of Statistics, Sociology and Physics, admission is based on merit in qualifying examination.
- The minimum cut off marks in the Common Entrance Test for the M.Sc. programmes are 40% for General Category and 38% marks for Scheduled Caste candidates.

Strategies adopted to increase/improve access for following categories of students

- Distribution of seats for admission against the seats meant to be filled in with candidates having Haryana Resident Certificate at Master's level programmes shall be as under:
 - (i) Scheduled Castes 20%
 - (ii) Backward Classes Block –A (BCA) 16%
 - Block –B (BCB) 11%
- Roster for Master's programmes is followed. Roster points for reservation for different categories in a block of 100 seats in each college would be as under :
 - Scheduled Castes (20%)
 - Backward Classes: Block-A (16%) and Block-B (11%)
 - Person with Disability (3%)
 - General Category: Rest of the points would belong to the general category.
- One additional seat in each college is created for SC, BCA, BCB & Person with Disability (PwD) category if candidate (s) of these categories are available. Admission against this seat be made on the basis of inter se merit amongst the candidates of the relevant category. Admission to Ph.D. programme in one discipline giving representation to above category will be restricted to not more than 50% of the prescribed seats for Haryana Residents.

PG Programmes – At a glance (2017-18)

Programme	Disciplines	Eligibility	Number of seats
M. Sc.	Biochemistry	B.Sc. (Botany, Zoology and Chemistry), B.Sc./B.Sc. (Hons.) Biotechnology/Biochemistry/ Microbiology/ B.Sc. (Hons.) Ag.	4+1*
	Bioinformatics	Bachelors degree in any discipline of science	3+1*
	Chemistry	B.Sc. (Hons.) Ag./ B.Sc. with Chemistry as one of the subjects	5+0*
	Microbiology	B.Sc. (Botany, Zoology and Chemistry), B.Sc./B.Sc. (Hons.)Biotechnology/ Biochemistry/ Microbiology/ B.Sc. (Hons.) Ag.	5+2*
	Molecular Biology and Biotechnology	B.Sc. (Botany, Zoology and Chemistry), B.Sc./B.Sc. (Hons.)Biotechnology/ Biochemistry/ Microbiology/ B.Sc. (Hons.) Ag./B.Sc. Agri. Biotechnology	5+2*
	Plant Physiology	B.Sc. (Botany, Zoology and Chemistry), B.Sc./B.Sc. (Hons.)Biotechnology/ Biochemistry/ Microbiology/ B.Sc. (Hons.) Ag./B.Sc. Agri. Biotechnology	3+1*
	Physics	B.Sc. (Hons.) / B.Sc. with Physics as one of the subject	4+0*
	Sociology	B.Sc. (Hons.) Ag./ B.A./ B.Sc. (Home Science)/ B.V.Sc. (those possessing B.A. degree will be awarded M.A. degree in Sociology on qualifying Master's Programme)	6+0*
	Statistics	B.Sc. Statistics/ B.Sc./ B.Sc. (Physics, Chemistry and Mathematics), B.Sc. Bioinformatics/ B.Sc. Computer Science/ B.Tech./ B.Sc./ B.Sc. (Hons.) Ag.	5+2*
	Zoology	B.Sc. (Hons.) Ag./ B.Sc. with Zoology as one of the	6+0*

		subjects	
	Food Science and Technology	Bachelor's degree in Science/Agri./ Home Science/Agri. Engineering/ FST/Food Tech.	2+1*
	Environmental Science	B.Sc. (Botany, Zoology & Chemistry); B.Sc./B.Sc. (Hons.)Biotechnology/Biochemistry/Microbiology/B.Sc. (Hons.) Ag./B.Sc. Agri. Biotechnology.	3+1*
Ph.D.	Biochemistry	M.Sc. Biochemistry/ Ag. Biochemistry/ Plant Biochemistry	2+ 0*
	Chemistry	M.Sc. Chemistry	2+0*
	Microbiology	M.Sc. (Microbiology/ Ag. Microbiology)	3+1*
	Molecular Biology and Biotechnology	M.Sc. Molecular Biology and Biotechnology/ Biotechnology/Ag.Biotechnology/ Genetic Engineering/ M.Sc. in Biosciences/ Plant Sciences/ Life Sciences with specialization in Biotechnology	3+1*
	Plant Physiology	M.Sc. Plant Physiology / Crop Physiology/ M.Sc. Botany/ Biosciences/ Plant Sciences with specialization in Plant Physiology	2+1*
	Sociology	M.Sc. (Sociology/ Rural Sociology), M.A. Sociology	3+0*
	Statistics	M.Sc. (Statistics/ Mathematical Statistics/ Applied Statistics/ Ag. Statistics)	2+0*
	Zoology	M.Sc. (Zoology)	3+0*
	Food Science and Technology	M.Sc.(Food Science & Technology)	2+0*

*Seats filled through ICAR

Mechanism of admission:

- Prospectus is made available on university website i.e. <http://hau.ernet.in> for submission of on-line application forms.
- There is Common Entrance Test for M.Sc.as well as Ph.D. in all the disciplines in the college.
- Admission is based on Merit in the Common Entrance Test. The minimum cut off marks in the Common Entrance Test for the above M.Sc. programmes are 40% for General Category and 38% marks for Scheduled Caste candidates (there will be no negative marking) to get admission in Master's Programme as per qualification.
- Eligibility for ICAR nominees for Ph.D. degree is for (a) In-service candidates from State Agricultural Universities/ICAR Institutes. (b) The Candidates who have qualified ICAR-SRF (PGS) examination.
- The minimum qualifications for admissions of fresh as well as in-service candidates shall be 60% marks (where OGPA is not given) or a grade point average of 6.5 (10.00 basis) at Master's level in the subject concerned from a recognized University.
- As per Govt. policy and guidelines received, there is reservation in admission policy, fee concession, granting fellowship, free books, free trainings, Computers etc.
- The Result of Entrance Tests/Agriculture Aptitude/Common Entrance Test is displayed on University website <http://hau.ernet.in>. Candidates are advised to visit this website.
- Attendance in person at the time of Counselling is compulsory.

- Admission Committee for the Post Graduate programmes will be as under: Dean, Postgraduate Studies Chairperson Concerned Dean(s)/Director Member Registrar or Asstt. Registrar (Acad.) Member Admission Committee will verify the eligibility of the candidates for particular programme before Counselling.
- Thereafter, he/she is allowed provisional admission on the basis of merit, as per rules and subject to availability of seats.
- The candidates admitted shall have to pay fee there and then and register themselves on due date (s) failing which they will forfeit their claim of admission.

Fee payment mechanism

The fees can be paid on line using a portal available at the website.

Registration procedure

- Registration for the first semester of the programme is part of admission and is governed by admission rules.
- Registration for subsequent semesters takes place on the date notified in academic calendar.

Academic schedule

1. Academic calendar is provided at the start of the semester.
2. Every student is required to attend at least 75% of the lectures delivered and practicals conducted separately.
3. Final examination is held as per schedule given in the academic calendar
4. HOD ensures that a major advisor is assigned to each post-graduate student within one month after admission, in consultation with the post-graduate faculty of the Department in which the student is doing his/her major work.
5. The Advisory Committee for each student is approved by the Dean, PGS on the recommendations of the Advisor through the Head of the Department, Dean of the College, in the same semester.
6. The Major Advisor guides the student in planning the programme of his/her studies and in the choice of courses. He/she will also help in determining the credit load which the student can safely and conveniently carry in each semester and advises regarding the addition and withdrawal of courses. He/she keeps in touch with the academic progress of the student.
7. The CCS HAU team/individual student is allowed to participate in authorized tournaments, declamation and other contests of national level, state level and inter-University level will be given benefit of attendance to the extent of maximum of two participations with a total duration of 10 days in a semester.
8. In the Ph.D. programme, besides the examination and other exercises, there are also be the following examinations: (i) Preliminary examination (Written and Viva-voce) (ii) Final examination (Viva-voce)
9. The M. Sc. theses are evaluated by an Examining Committee constituting Student's Advisory Committee and One external examiner appointed by the Dean, PGS.
10. The Ph. D. thesis is evaluated by two external examiners of different institutions. The final oral examination conducted by an Examining committee constituting Student's Advisory Committee and one external examiner from other institutions out of the two to whom the thesis were sent for evaluation.
11. The student(s) who have normally completed 75% of the course work can apply for overseas pre-doctoral fellowships and are permitted for research in foreign country.
12. The students with first position in OGPA are given certificates in Prize Distribution Function organized by the college.

6.5.4.4. Conduct of Practical and Hands on training:

College of Basic Sciences and Humanities lay emphasis on practical component of post graduate courses. It motivates students, help them to develop important skills and improve their understanding of theory through practical experience. These courses besides imparting theoretical knowledge also provide practical skills and hands-on-training as per the curriculum requirements. As per 4th Deans' Committee Recommendations courses are offered by all departments for Under Graduates of College of Agriculture, IC College of Home Science and College of Agriculture Engineering and Technology. Courses with practical components provide practical skills and hands-on training as per the curriculum requirements.

The **Department of Biochemistry** provides practical skills and hands on trainings in separation of biomolecules using GLC and HPLC, Radioisotopy, Purification of enzymes, Extraction of DNA/RNA using ELISA, Western blotting, Fluorescent antibody test, Polymerase chain reaction. Students are also exposed to techniques related with carotenoids estimation, trypsin and chymotrypsin inhibitor activities in seeds, Estimation of sugars, proteins, vitamins in fruits. Two courses, viz., Techniques in Biochemistry and Advanced Techniques in Biochemistry are 100 per cent practical oriented. Undergraduates are exposed to preparation of solutions and buffers, quality and quantity determination of sugar and proteins, Paper chromatography and TLC.

In the Department of **Botany & Plant Physiology**, students study the various methods for studying the plant water status, effect of abiotic stresses (salt, water, high and low temperature) on plant growth and development and role of hormones under abiotic stresses. The Students study the bioassays for different plant growth hormones (Auxins, Cytokinin, Gibberellins, ABA, Ethylene and their physiological effects in plants. Students get acquainted with study of different growth and yield parameters in different crops. Students learn the procedure for extraction of chlorophyll content, photosynthetic activity, stomatal conductance, computer applications in plant physiology, crop productivity and modelling. Students get acquainted with various methods of testing seed viability, vigour and nutrient sufficiency and deficiency levels. Undergraduate students conduct experiments on physiological processes like imbibition, osmosis, transpiration, respiration, photosynthesis. Students were acquainted with the structure, types and modifications of root, stem, leaves and flowers.

Centre of Food Science and Technology train the students to develop value added food products from fruits, vegetables, cereals, pulses and oilseeds through practical demonstrations and hands on practice. Efforts are made for building entrepreneurship spirit and business management competence among the students. After doing experiments with their own hands, students acquaint with properties, role of various constituents in foods, interaction and changes during processing, importance of various foods and nutrients in human nutrition, different groups of micro-organisms associated with food, their activities, destruction and detection in food. The Centre also has the facilities to acquaint the Students with basic principle of Food Engineering and its Processes, with importance of various foods process, their evaluation, food quality parameters and control systems, food standards, regulations, specifications. The Centre also acquaints the students with packaging methods, packaging materials, packaging machineries, modern packaging techniques etc.

The **Department of Chemistry** has the facilities to conduct experiments on Infrared, Mass spectrometry, pH metry, conductivity, refractometry, chromatography, viscosity, Complex preparation, Complexometric titrations, Magnetic properties, Quantitative analysis, Synthetic preparation, Compounds Identification etc. Students are able to Gas layer chromatography for pesticides estimation Analytical Techniques for active pesticides and pesticide formulation. Students are able to understand Organic compounds preparation, Dyes preparation and Intermediates identification. The courses helped the students in Identification of radicals, removal of colour stains from cloths, detection of elements and organic functional groups. Students got basic knowledge about the Titration by EDTA method, BOD

and COD in water sample, Chromatographics analysis and Organic functional groups.

Students are benefitted by the courses offered in the **Department of Languages and Haryanvi Culture**. The undergraduate students are given some imaginary situations to practise conversation to overcome their hesitation in speaking. Keeping in view their spoken English; the students were able to recognize the different phonetic symbols and the sounds they represent. Students were able to read and comprehend the different newspapers and magazines with ease. The students were benefitted by having the magical mixture of grammar, vocabulary and phonetics. Students were given the guidelines for facing interviews and mock interviews were also conducted so that they could get confidence for appearing in interviews. They could learn pronunciation of English words because now they knew the proper use of dictionary. Keeping in mind the need of the hour, the students were taught how to speak in front of audience which definitely brought positive change in them. They were prepared for group discussion which is very important criteria for the selection process in jobs.

By performing practical exercises, students taking courses of **Department of Mathematics, and Statistics** acquainted with the basic concepts of statistics and mathematics applicable in agriculture and its allied fields. Problems based on AP, GP and binomial expansion, Matrices, Inverse of Matrices and solution of system of equations, differentiation and Integration equip the students to carry out scientific studies. The courses also helped in conducting basic, applied and adaptive research in statistics and promoted the application of advanced statistical techniques through the use of latest computing techniques for data management and analysis using different software packages. The Computer section offers four practical oriented courses which are taken as minor or supporting courses. These practical courses helped the student to become familiarize with computers, different softwares, hardwares etc.

The Department of Molecular Biology, Biotechnology and Bioinformatics has the facilities for preparation of buffers and reagents, estimation of proteins; RNA and DNA, SDS-PAGE of proteins, DNA isolation, purification and characterization, DNA restriction analysis, Polymerase chain reaction, preparation of growth media for bacterial culture, Gel electrophoresis- agarose and PAGE (nucleic acids and proteins), Isolation of plasmid DNA from bacteria, Recombinant DNA construction, Inoculation, subculturing and plant regeneration, Anther and pollen culture; embryo rescue; protoplast isolation, and culture, Gene transfer and selection of transformed tissues/plants, Immunoassays including ELISA; western blotting, Dot blot analysis; Southern hybridization; Molecular markers (RAPD, SSR, AFLP etc) and their analysis; Case study of SSR markers (linkage map, QTL analysis etc); SNP identification and analysis; Proteomics (2D gels, mass spectrometry, etc.); RNAi (right from designing of construct to the phenotyping of the plant); Yeast 1 and 2-hybrid interaction.

Practicals on Bioinformatics help the students to gain expertise on use of INTERNET and W.W.W. Students are able to perform searches on MEDLINE, CD-ROM; bibliographic databases; RASM OL, M OLM OL, M X, VRML etc, use of molecular model packages and visualization tools. The courses also provide information on Gene Information Resources: GenBank, EMBL, Protein Information Resources: Swiss-Prot, BLOCKS, Gene Prediction Tools: GENSCAN, GRAIL; Structural Databases: PDB, CSD, RELIBASE, REBASE, File Format Converter; Tools: BABEL, ReadSeq, NCBI Resources; Visualization tools – RasMol, QMol, SwissPDB, Pymol, Modeling Tools: MODELLER, SwissPDB, Geno3D, Docking Tools: Chimera, Dock, AutoDock, GRAMM, Hex, Argus Lab.; Proteomics Tools: EXPASY, CDART, 3D-Structure Optimization Tools, Sequence Analysis Tools: BLAST, FASTA, EMBOSS, TCOFFEE, Phylogenetic Analysis; Tools: Phylip, NTSYS, CLUSTALW/CLUSTALX, BIOEDIT.

The Department of Microbiology offer practical and hands on training in ten M.Sc courses out of 12 courses. By conducting practicals with their own hands, students are able to isolate, characterize and maintain different microorganisms, Students will be familiar to the different

techniques used for characterization of metabolites, cell size and growth behavior of microbes. Students are able to apply modern techniques like gene transfer, electroporation, plasmid isolation and their application to construct microbe with desired traits. Students are able to enumerate microbial activity in different kinds of soils, isolate and develop new microbial products of commercial use. Students got basic knowledge about the microbiology lab, staining techniques and media preparation, culture and isolation of bacteria, algae & fungi of agriculture importance, staining techniques and media preparation, production of biofertilizers. Students are also able to understand the biological aspects of viruses, role of microbes in environment, its pollution abatements and standards of environment pollution.

The Department of Sociology conducts field study-cum-institutional visits, prepare field projects for analyzing the problems of agriculture and rural society and make theme based group which help students to understand the concepts and proper methodology. Assignments for e.g. functioning of Gram Panchayat, caste system, jajmani system, Mahatma Gandhi National Rural Employment Gaurantee Scheme, education system etc. are given to students so that they gain exposure. Students are also exposed to application of computers in social research. Undergraduate Course is based on participatory process with the teacher playing the role of facilitators, the learners centered approach adopted by the teacher includes activities designed as interactive and experimental with the resulting emphasis on learning by doing the exercises such as: group discussion, case study, exercise/game, self –analysis by students about their styles and behaviour, role play and participants presentations.

All the M.Sc Courses of the **Department of Zoology and Aquaculture** have practical portion which increased students' knowledge about biochemical and cytological techniques, mounting the specimen, histology, tissues, organ systems, skeleton, morphological and behavioural characters of organisms, developmental stages, regeneration and metamorphosis in animals. Students are able to recognize different organisms belonging to invertebrates and vertebrate phyla. Students benefitted by conducting experiments with their own hands. (They are able to recognize and identify different organisms belonging to invertebrates and vertebrate phyla.) Students collected the insects and other invertebrates from different habitats and preserve the organisms. Students are able to prepare seven types of keys to identify class, orders and species. Due to man engineered activities, our environment is being degraded and many wild species are becoming extinct. Basic aspects and implications of these changes are disseminated among the students. Students are able to extract mites from stored grains, plants, soil, animals and house dust, observe damage symptoms. Students are able to culture different species of plant mites, stored mites earthwarms and entomopathogenic fungi for management of mites.

Training Programmes Organised:

Department of Molecular Biology, Biotechnology and Bioinformatics:

Sr. No	Name of the event	Type (Sports/Cultural/Fair/Exhibition/Others)	Level (International/National/State/Other)	Venue	Date
1	A three week training on Crop Improvement through Genomics	Training	National	Dept.	June 18 - July 9, 2013
2	A six week training on Biotechnological Tools for Improvement in Agricultural Production	Training	National	Dept.	June 18 – July 30, 2013

3	One to six month training on Project cum Practical training in Plant/ Microbial Biotechnology	Training	National	Dept.	Open throughout the year
4	A three week training on Genomic, molecular and tissue culture approaches for genetic improvement and value addition in plants and microbes	Training	National	Dept.	June 17 - July 7, 2014
5	A six week training on Biotechnological and molecular tools for improving crop productivity and nutritional quality	Training	National	Dept.	June 17 – July 28, 2014
6	Molecular Strategies towards Improving crop Productivity- Three weeks	Training	National	Dept.	June 17 to July 6, 2015
7	Biotechnological approaches for complementing conventional plant improvement methods-	Training	National	Dept.	June 17 to July 28, 2015
8	Three weeks training course on Integrating molecular and recombinant DNA technologies in crop breeding programs for food and nutritional security	Training	National	Dept.	June 22 to July 12, 2016
9	Six weeks hands on practical training course on Plant tissue culture and Molecular approaches for supplementing plant breeding efforts”	Training	National	Dept.	June 22 to August 2, 2016.
10	Western Blotting, 2D Electrophoresis & Real Time PCR in collaboration with Bio Rad India	Training	University level	Dept.	August, 29-30, 2016
11	Three weeks training: Use of Biotechnology & Bioinformatics Tools for Genome Analysis-	Training	National	Dept.	July 17 to August 7, 2017
12	Six weeks training: Plant Tissue Culture, Genomics and Computational Tools for	Training	National	Dept.	July 17 to August 28, 2017

Crop Improvement					
13	Seminar on “Surface Plasmon Resonance and its application” for faculty and students (Key speaker: Metrohm India Limited)	Lecture	College Level	College Committee Room	27th April, 2017
14	Seminar on “Molecular Cytogenetics assisted pre-breeding for quality improvement in wheat” delivered by Dr Sandeep Malik, Professor from GBPUAT	Lecture	University level	Dept.	3 rd April 2017

Food Science and Technology:

Sr. No	Name of the event	Activity	Level	Venue	Date	No. of Participants
1.	Processing of Fruits and Vegetables for ST and ST Youths	Training	State	CFST	March 12-18, 2013	25
2.	Processing of Fruits and Vegetables for ST and ST Youths	Training	State	CFST	June 04-10, 2014	25
3.	Processing of Fruits and Vegetables for ST and ST Youths	Training	State	CFST	March 07-13, 2015	25
4.	Processing of Fruits and Vegetables for ST and ST Youths	Training	State	CFST	March 16-22, 2016	25
5.	Processing of Fruits and Vegetables for ST and ST Youths	Training	State	CFST	Feb 20-27, 2018	25

Computer Section:

Three Refresher course on “Advances in Computer Application” in Collaboration with Academy of Agricultural Research and Education Management, DHRM and Computer Section, COBS&H in the year 2014, 2015 and 2016.

Two Trainings organised on “Short Training on Statistical Analysis for Research Scholar” in collaboration with Directorate Student Welfare and Computer Section the year 2016-17

One Training organised on “Advanced Excel Skills” for MBA Students in collaboration with Directorate Student Welfare and Computer Section the year 2017-18

One Training organised on “Short Training on Statistical Analysis for Research Scholar” in collaboration with Directorate Student Welfare and Computer Section the year 2017-18

Short Training on Statistical Data Analysis for Research Scholar (3) & Advanced Excel Skills (1)

Trainings conducted by Computer Section**Trainings conducted by MBBB & FST****Sociology**

One refresher course organized by the Department of Sociology with collaboration of DHRM entitled “Methods in Social Science Research-Recent Advances” from May 20 to June 9, 2014

Conferences/ Seminars etc. organised:

Title of the event	Agency	Level	No. of Faculty/ students	Name of the Organizer
Transgenic Crops in India: Progress and Challenges' on March 16-17, 2016	Society for Plant Biochemistry and Biotechnology.	National	100 Approx.	Dr. R.C.Yadav, Department of MBBS
National Conference on Trends in Nanobiotechnology, November 29-30, 2016	DST/ CCS HAU	Natl./ Intl.	200 Approx.	Dr. Neelam R.Yadav, Department of MBBS
State Level Biosafety Capacity Building Workshop on March 14, 2018	Biotech Consortium India Limited (BCIL)	State	260 Approx.	Dr. Pushpa Kharb, Department of MBBS

Conferences on Transgenics and Nanotechnology:



Science Day Celebrations:



Workshop on Biosafety Capacity Building:



Dr. Ambedkar Jayanti Celebrations



6.5.4.5. Examination and evaluation process: *The evaluation of students' performance is a central task of College administration. A brief report on examination and evaluation process for UG, PG and PhD be given separately mentioning external/internal components. System of evaluation should clearly be mentioned for UG, PG and Ph.D.*

The evaluation of P.G. students is internal. Academic performance of the students is reviewed annually on the basis of their performance in different courses and general conduct. Students whose performance is below prescribed standard (less than 6.5 for PG) are dropped out after one year and are informed that improvement in the future semester is necessary to obtain the minimum scholastic standards.

- The course work to be taken in M.Sc. or Ph.D. programme is designed for the individual student considering the research mandate of the department as well as state and national priorities in agriculture.
- Monitoring is done through Mid-term and final exams and practical exams.
- Speaking assignments are also given.
- Performance reports or semester reports are provided to student and the major advisor.
- Once the programme of work is finalized, the student has to clear the course.
- The students also submit the synopsis of the proposed research work in M.Sc. and Ph.D. This is first approved by advisory committee and then presented in the department as synopsis seminar.
- The improvements are done in accordance with the suggestions received. The synopsis is further evaluated by a concerned teacher and after addressing to his comments, submitted to Dean, Post Graduate Studies for approval.

PG and Ph.D. Programs:

Examination system and evaluation: For theory, mid-term and end-term internal examinations are conducted. Two sets of question papers for each course are set for mid-term and end-term each and are submitted to the concerned HOD. For both mid-term and end-term date sheet is prepared at college level and examinations are conducted centrally. On the day of examination HOD selects one question paper for each course for distribution among students. Practical is also conducted internally by the course instructor. For practical courses only, practical exams are conducted by the course teacher and one more teacher nominated by the HOD. Evaluation of both theory and practical is internal. Weightage for theory and practical examinations is given below:

Credit hours (Theory & Practical)	Weightage/Marks		
	Mid-Term	End-Term	Practical
1 + 0	40	60	-
1 + 1	20	30	50
2 + 1	25	45	30
2 + 2	20	30	50
3 + 1	30	45	25
3 + 2	25	35	40
2 + 0	40	60	-
3 + 0	40	60	-
1 + 2	10	20	70

Comprehensive examination (Written and Viva-Voce/Oral): In PhD, after completion of 75% course work separately in major and minor subjects, written comprehensive exam is conducted. In major subject two papers are conducted and in minor subject one paper is conducted. Paper setting and evaluation is internal. Qualifying marks is 60%. Viva Voce/Oral comprehensive exam is conducted by external examiner and grading is satisfactory/ unsatisfactory.

Thesis evaluation:

Evaluation steps	Master's program	Doctoral program
i) Submission	After thesis seminar	<ul style="list-style-type: none"> • After thesis seminar • One research paper should have been accepted and second submitted or one patent filed out of thesis work

ii) Evaluation	External (One examiner)	External (Two examiners)
iii) Viva Voce	By Advisory Committee and one external examiner	By Advisory Committee and one external examiner
iv) Assessment	Satisfactory/Unsatisfactory	Satisfactory/Unsatisfactory

Grading: For PG and Ph.D. programs grading is done on a 10 point scale.

- (i) Minimum passing grade in a course: 6.00
- (ii) Minimum OGPA to continue and to obtain degree: 6.50

6.5.4.6. NCC/NSS units

Since the college does not run undergraduate programme, NCC and NSS Units are not operational.

6.5.4.7. Language laboratory: *It is required of any Student to have a good command of the language for communication purposes with clarity and accuracy being vital for effective and efficient communication. What helps one to acquire such proficiency in a language is the process and the method of learning that language. In this regard mention which of these type of conventional, lingua phone, computer assisted language laboratory and multimedia Hi-Tech language laboratory are being used for language teaching in the college:*

Students are motivated to improve spoken English. In addition to routine teaching methods, teachers use smart classrooms, group discussions and internet use (YouTube) so that students have good command of the language. The college magazine published also gives a very good platform to improve language expression among students. LCD, audio visual aids, cassette recorders and computers are used by the faculty for effective teaching. Professional courses, experts lectures, seminars, workshops, conferences etc. are organized from time to time. The college has been making special drives to improve the communication skills of the students by organizing declamation contest, Quizzes etc. Spectrum PG magazine is released bi-yearly by university.

6.5.4.8. Cultural centre: Does the college has cultural center to empower student leaders to explore, celebrate and educate the campus community about the diversity among them. Does the college offers inclusive and reflective space, multi cultural programming and support services that encourage positive interaction, academic persistence and growth among students, faculty and staff.

Cultural Forum

- | | | |
|-----|---|-------------------------------|
| 1. | Dr. Manju Singh Tonk, Professor, Math. & Stat. | President |
| 2. | Dr. Krishna Hooda, Professor, LHC | Vice- President |
| 3. | Dr. Seema Sangwan, Asstt. Professor, Microbiology | Secretary |
| 4. | Dr. Rashmi Tyagi, Asstt. Professor, Sociology | Joint Secretary |
| 5. | Dr. Poonam Mor, Asstt. Professor, LHC | Joint Secretary |
| 6. | Dr. Ajay Pal Singh, Asstt. Professor, Biochemistry | Treasurer |
| 7. | Dr. Manju Mehta, Assoc. Professor, LHC | Convener, Literary Activities |
| 8. | Ms. Neeru Redhu, Asstt. Professor, MBBB | Member, Literary Activities |
| 9. | Dr. Anju Sehrawat, Asstt. Professor, CFST | Member, Literary Activities |
| 10. | Dr. Jatish Kathpalia, Asstt. Professor, Sociology | Convener, Cultural Activities |
| 11. | Dr. Subhas, Asstt. Professor, Sociology | Member, Cultural activities |
| 12. | Dr. Hemant Poonia, Asstt. Professor, Math and Stat. | Member, Cultural Activities |
| 13. | Dr. Rajesh Gera, Principal Scientist, Microbiology | Convener, Hospitality |
| 14. | Dr. Shikha Yashveer, Asstt. Professor,., MBBB | Member, Hospitality |

15.	Dr. Ravikant, Asstt. Professor, Zoology & Aquaculture	Member, Hospitality
16.	Dr. Rashmi Tyagi, Asstt. Professor, Sociology	Convener, Function Arrangement
17.	Dr. O.P. Sheoran, Professor, Computer Section	Member, Function Arrangement
18.	Dr. Rekha, Asstt. Professor, CFST	Member, Function Arrangement
19.	Dr. Anita, Asstt. Professor, Bot & Plant Physiology	Member, Function Arrangement
20.	Dr. Kamla Malik, Asstt. Professor, Microbiology,	Convener, Decoration
21.	Dr. Sarita, Asstt. Professor, Bot. & Plant Physiology	Member, Decoration
22.	Dr. Jayanti Tokas, Asstt. Scientist, Biochemistry	Member, Decoration

Activities:

The following table gives a glimpse of cultural and related activities of the college during the period under report

Sr. No.	Function	Dates (Duration)	Competitions/ lectures*
1	Chrysanthemum Flower Show	Dec.31, 2012 – Jan. 01, 2013	On-the-spot drawing and painting competition and rangoli competition
2	Chrysanthemum Flower Show	January 3-4, 2014	On-the-spot drawing and painting competition and rangoli competition
3	Mars Orbiter Mission (MOM)	Sept. 24, 2014	lecture by Dr. R. S. Hooda, Chief Scientist at HARSAC
4	World Food Day	October each year (2014-16)	Poster making, Slogan writing, food quiz and paper reading
5	139 th Birth Anniversary of Sardar Patel	31.10.2014	declamation contest in Hindi & English
6	Swachh Bharat Abhiyan	November 1-7, 2014 till date	Cleanliness drive
7	The chrysanthemum flower show	22.01.2015 to 24.01.2015	more than hundred school and college children participant for different contest
8	Earth Day	April 22, 2015	Dr. Himanshu Pathak, Professor, Centre for Environmental Sciences and Climate Resilient Agriculture, IARI, New Delhi delivered key note address
9	National Mathematics Day-2015	22nd December, 2015	Quiz, Poster making etc
10	Utsav 2016	12-18 January, 2016	Group discussion
11	Science Conclave	February 16-17, 2016	-

*

Prof. Ramesh Chand, Member Niti Ayog, Dr. S. Seetha (Program Director, ISRO; Indian Space

Program), Sh. M.P. Kulshrestha (Senior Tech Director, NIC, Hisar; Information Technology), Dr. Neeraj Dilbaghi (GJUS&T; Nanotechnology), Dr. R.K. Jain (Dean COBSH, CCSHAU; Science for change), Dr. A. K. Dikshit (IARI, New Delhi; chemistry), Dr. Raj Malhotra (KPSC, Kurukshetra; Science Demo), Prof S.K. Chakravarti (Faridabad,; Physics), Dr. Ramesh Hooda (Chief Scientist, HARSAC; Remote sensing) and Sh. Ranjay Sharan (Project Director, GHAVP, Gorakhpur; Nuclear energy) and Prof. Mayank Vahia (TIFR, Mumbai; Astronomy and Astrophysics) were eminent speakers.

Exhibition, model competition

12	International Matribhasa Diwas	March 3, 2016	Dr. Ram Naresh Mishra, Central University, Mahendargarh, the key speaker declamation contest, singing & poem contests
13	National Symposium on 'Transgenic Crops in India: Progress and Challenges'	March 16-17, 2016	Five Technical Sessions
14	Teachers' Day	5th September, 2016	Padamshri Dr. J. B. Chowdhury was Speaker
15	Chrysanthemum Flower Show	December 24-25, 2015	On-the-spot drawing and painting competition, mehndi-rachao contest and rangoli competition
16	Van Mahotsav	27th July, 2015	tree plantation programme was conducted
17	World Food Day	October 22, 2016	Three technical lectures by Dr. R. K. Gupta, Director, ICAR-CIPHET, Ludhiana, Dr. R. K. Malik, Ex- Director (Research) NDRI, Karnal, Prof. Narpinder Singh, President, AFSTI, Mysore
18	National Conference on Trends in Nanobiotechnology" (NCTN-2016)	November 29-30, 2016	Five Technical Sessions
19	Chrysanthemum Flower Show	21-22 December, 2016	On-the-spot drawing and painting competition, mehndi-rachao contest and rangoli competition
20	Dr. B.R. Ambedkar Remembrance	20-21st January, 2017	Dr. R.B. Langyan, IAS (Retd.) was keynote speaker
21	National Science Day	27-28 February, 2017	Quiz, Declamation contest, Poster making, working models More than 300 college students and 68 specially abled school children participated in various competitions
22	Chrysanthemum Flower Show	December 23-24, 2017	On-the-spot drawing and painting competition, mehndi-rachao contest and rangoli competition
23	Agriculture Education Day	25.11.2017	Organized Slogan Writing Competition
24	Dr. B.R. Ambedkar	13.4.2018	Key Note address by Dr. K.P. Singh

The following students got prizes in the college, state and national events -

Year	Name of Students
2012	<ul style="list-style-type: none"> Sushil I prize in Quiz Participation on World Food Day, October, 2012
2013	<ul style="list-style-type: none"> Sunil Kumar H C First Prize, in Quiz Participation on World Food Day, October, 2013 Sushil Second Prize, in Quiz Participation on World Food Day, October, 2013 Akanksha Jain First Prize- Solo Dance (Classical) in Youth Festival, 2013 Neha wadhwa Second prize- Solo Dance (Classical) in Youth Festival, 2013 College Procession in Youth Festival, 2013 - First Prize - Charul Chaudhary, Isha Kaushik Haryanvi Skit - Third Prize – Rahul (College Freshers Party)
2014	<ul style="list-style-type: none"> Solo Song (Western) - First Prize- Madushika Keshani Ransingha (UTSAV -II, 2014) Group Dance (General) - Second Prize- Madushika Keshani Ransingha (UTSAV - II, 2014) College Procession- First Prize - Rahul, Priyanka and Harshitha T. (UTSAV -II) Itisha won 1st prize in solo dance and choreography, solo dance folk in Inter College youth festival held at CCSHAU (2014) Jyoti Yadav won 2nd prize in general group dance in Inter College youth festival held at CCSHAU (2014). Itisha won 1st prize in solo dance and 2nd prize in group dance, debate in Inter zonal Youth festival, MDU, Rohtak Itisha won 1st prize in National Quiz Competition
2015	<ul style="list-style-type: none"> Rahul Kumar Meena was selected by Government of India for Study Tour to London School of Economics, United Kingdom (U.K.) w.e.f. 24th to 31st October, 2015 on the occasion of 125th Birth Anniversary of Dr. Ambedkar. Jyoti Yadav was awarded “A” grade in Adventure Course held at NIM, Uttarkashi (28oct- 11 Nov, 2015), Won silver medal in lecturette competition at NIM, Uttarkashi and was the member of winning team in Cross Country Race, NIM, Uttarkashi.
2016	<ul style="list-style-type: none"> Surina Bhadu, Inter-college Badminton tournament/Second Position, October 2016 Surina Bhadu , 3 km Cross Country/ Third Position, October 2016 Surina Bhadu, 5 km Intercollege Cross Country/ Third Position, October 2016 Surina Bhadu, Mixed Doubles District Badminton Tounament/ First Position , October 2016 awarded by Hisar District Badminton Association Himani, Intercollege Badminton tournament/Second Position, November 2016 Ravi Mehndiratta was awarded First Prize in Youth fest, 2016 held at CCSHAU, Hisar for Debate, Elocution, Group Discussion and Extempore. Rahul Kumar Meena was awarded First Prize in quiz competition held at COBS&H, CCSHAU, Hisar, on the occasion of teachers’ day 5 September 2016. Disha Kamboj Got first prize in group dance during youth festival UTSAV 2016, held at CCS HAU, Hisar. Divya got 1st prize in Youth Fest 2016 for English Poem Recitation

	<ul style="list-style-type: none"> • Divya got 2nd Prize in Youth Fest 2016 Group Dance. • Rinku got 2nd prize in Youth Fest 2016 for Poem Recitation • Rinku got 1st prize in Youth Fest 2016 in Declamation • Arvind won 3rd prize in 13th National Youth Parliament Competition held at CCSHAU on 11.9.2016 • Jyoti Yadav won 1st prize for group discussion in Inter College Youth Festival (UTSAV- 2016) held at CCSHAU, Hisar (2016). • Tanu , IInd Prize in Prerak Prasang, Matribhasha Diwas, 3.3.16 • Sudha Bishnoi, * Consolation prize in Poster Making on Matribhasha Diwas, 3.3.16 • Jyoti Yadav won consolation prize in speech competition (Hindi) held in COBS&H, CCSHAU, Hisar on “Matrabhasha Diwas”. • Positions in Youth Festival 2016 <ol style="list-style-type: none"> 1. College Procession- First Prize – Sachin, Sumit, Nidhi, Harsha, Akanksha Jain 2. English Debate-- First Prize – Nidhi Dalal 3. English Poetry-- First Prize – Harsha Rohilla 4. Group Discussion- First Prize – Nidhi Dalal 5. Group Dance (Folk) - First Prize- Akanksha Jain 6. Group Dance (General) - Second Prize- Akanksha Jain 7. Mime - Second Prize- Sachin & Sumit <p>World Food Day 2016</p> <ol style="list-style-type: none"> 1. Slogan Writing – 2nd Prize Priyanka 2. Food Quiz – 3rd Prize Sumit and Rahu
<p>2017</p>	<ul style="list-style-type: none"> • Tanu, Consolation prize in Bharat Ratan DR. B.R. Ambedkar Remembrance Programme, 20-21.1.17 • Sukhbir, Karuna, Shakshi, Poonam, Deepak and Akshya got 1st Prize in Talent Search Programme

The University organizes sports Day and Cultural events where the faculty and staff participate and win prizes.

Students’ participation in Co-Curricular Activities:





6.5.4.9 Personality Development: *Personality development programme is aimed at increasing employability of the students. Whether the college has provisions for inclusion of functional grammar in standard English, speaking skills, reasoning, group discussions interview skills, personal interviews, quantitative ability, verbal ability, mock tests and some special sessions to promote the personality development in the students?*

The college provides overall personality development and encourages innovation, communication and other skill for better performance in today's competitive world. The following programmes and efforts are undertaken for personality development-

Skills Development Resources		
Resume Making	Email Writing	Language Fluency
Vocabulary Skills	Public Speaking	Group Discussion (Hindi English)
Leadership Skills	Communication Skills	Personality Development (Hindi English)
Dress for Interview	Interview and its types	Mock Interview
SSB Interview	Check your Trainability	Check Your Employability
Evaluate Your Personality	Interview Behaviour and Body language (Hindi English)	
Phone Etiquettes	Self Confidence	Indian Agriculture
Interview's Questions and Answers (Hindi English)		Download YouTube Video
Internship-A Pathway for Job Offer		

- **Workshops on “Personality Development & Communication Skills”** are also conducted from time to time for personal enrichment like power of positive thinking, interpersonal relationships and stress management..
- **Personality Development trainings** are also conducted by the Directorate Students' Welfare in collaboration with the Department of Languages and Haryanvi Culture.
- **Visit for PG students** to national laboratories.
- P.G. students are exposed to Computers and softwares.
- Students are encouraged to publish their findings. This helps in their writing and expression skills.
- The students are included in Organizing committees for Seminar, conferences etc. This gives them enough exposure to improve organizational and career related skills.
- The students are taken to educational trips,
- Classroom presentations, participation in national and international seminars, workshops give them confidence in Group discussion, Personal interview and socialization. It also encourages leadership, multiple intelligence and critical thinking.

6.5.5. Physical facilities

6.5.5.1. Hostels: *Clearly mention the number of hostels available for the College students for boys and girls, separately with its total capacity, students per room accommodated in each hostel, mess facility, drinking water, indoor games specially for girls, cleaning of hostel premises, transport facility, emergency medical facility etc.*

Hostel Facilities:

- The accommodation is provided in 13 hostels (5 for Men, 7 for Women and 1 for PG married students) are situated at the main campus Hisar. Depending upon availability, the hostel accommodation is provided.
- For girl students' accommodation is provided in Gangotri, Yamnotri, Godavari, Narmada and Women Scholar hostels. M.Sc. students share rooms (double occupancy) while Ph.D. students are provided single accommodation.
- Similarly, for Boys students' accommodation is provided in different hostels of the university.
- There are 104 hostellers and 84 non-hostellers in the college.
- The hostel residents are provided R.O. water, TV, Magazines, newspapers and indoor games for recreation. The selected hostels have tennis courts also.
- All the hostels are cleaned and maintained regularly.

- The Hostels are equipped with the facilities such as Wi-Fi, LCD TV with dish antennae, solar water-heating system, gas connection, furniture, EPABX phone facility and water coolers with purifier system are provided.
- All Mess of hostels are running on cooperative basis.

Transport Facility:

It is provided on case to case basis as and when required. The vehicles can be requested from the transport office of the university for visits under different courses and educational tours.

Students' Counselling and Placement Cell:

- The Counselling & Placement Cell of the Directorate of Students Welfare in association with the Department of Employment, Haryana, has set up a University Employment Information and Guidance Bureau, which provides information to the students on job opportunities, competitive examinations, scholarships /fellowship etc.
- It also conducts trainings/coaching classes for the entrance examinations and explores job opportunities in the public and private sectors and arranges the campus interviews.
- Besides, the Cell also brings out a fortnightly news letter 'Career Bulletin' for students of the University to keep them abreast of information on job opportunities, admissions, scholarships, fellowships etc. in India & abroad.

Medical Services**Medical assistance to students: health centre, health insurance etc.**

- There is a well-equipped 50 bed Hospital in University campus at Hisar. Round the clock medical aid is provided to the students, University Employee & their dependants and other trainees/visitor.
- The Hospital has Senior Medical Officer, 4 Medical Officer, Dentist, Nursing Sister (one each) and 4 staff nurses. Round the clock medical aid is provided to the students, University Employee & their dependants and other trainees/visitors.
- Casualty services are run round the clock. Special Immunization Clinic, T.B.Clinic, Diabetic and Antenatal Clinic is run once every week. For Chronic disease patient's medicines for two weeks are being provided and supervised. The outdoor/emergency patients are attended by the Senior Medical Officer and Medical Officers and Indoor facility is also available in the hospital round the clock.
- The Dental Surgeon also provide the service of RCT+ Dental surgical procedure of the patient and dental unit has been made Air-conditioned for better care facility of the patients X-rays of the employees and their dependents of CCSHAU/LUVAS are being done in the department of Vet. Clinics. Facility i.e. ICU, X-Rays of Dental and lab tests are performed in the Campus Hospital.
- There is Amartya Shiksha Yojana & Personal Accident Policy for which Rs 100/- is charged at the time of admission (as in Prospectus), which covers accidental insurance of Rs. 1,00,000/-.

6.5.5.2 Examination Hall: *Mention the availability of number of examination halls, its capacity etc. for the college.*

The college has three lecture halls and two seminar rooms which are used as examination halls. The examination hall has seating capacity of 80 students while seminar rooms used as two examination halls have seating capacity of 40 students each.

6.5.5.3. Sports and recreation facilities

Giri Centre for Students' Welfare and Activities

- The Giri Centre for students' welfare and activities is an outstanding feature of this University with sports and other activities.
- It has two indoor Badminton Courts with a seating capacity for 600 spectators, two indoor squash courts, hobby rooms, two multi-purpose indoor gymnasiums with a reasonable seating capacity. Grounds / courts / tracks /links are available in the University Sports Complex.
- A synthetic track of international standard has also been provided in the Athletic Stadium.
- Volleyball grounds have light arrangements for playing at night. Hockey, Football and Cricket grounds are well maintained.
- The Directorate of Students' Welfare is also responsible for promotion of all co-curricular activities such as Sports, NCC, NSS, Mountaineering and adventure, Graphic Arts, Literary, Music, Dance, Dramatics etc.
- For promotion of these activities, regular classes and various trainings/ workshops are arranged from time to time.
- A full fledged chapter of SPIC MACAY is also functioning in the University.
- The college organizes Talent Search programmes, sport activities and cultural programmes regularly
- The Directorate of Students' Welfare is also responsible for promotion of all co-curricular activities such as Sports, NCC, NSS, Mountaineering and adventure, Graphic Arts, Literary, Music, Dance, Dramatics, NIS etc.
- For promotion of these activities, regular classes and various trainings/ workshops are arranged from time to time.
- A full fledged chapter of SPIC MACAY is also functioning in the University.

6.5.5.4. Auditorium: *Does the college has auditorium? Mention its year of construction, sitting capacity and how frequently being used for the College functions.*

The auditorium of the college was constructed in 1976 which is used for college functions such as holding large scale meetings, conferences, seminars, workshops, Fresher's Day etc. It has seating capacity of 315 persons. The auditorium is air conditioned and has state of art sound system, podium etc. The auditorium is used regularly and on an average one event is organized on monthly basis.

6.5.5.5. Exhibition Hall / Museum (description of events): *Does the college have the Exhibition Hall/Museum? Mention about its use and special events being conducted in these units.*

The college has Exhibition Hall space used from time to time for following activities-

- Display of Teaching, Research, Extension and Extra co curricular activities of college
- Technologies developed, publications and showcase of work done

6.5.6. Research Facilities

6.5.6.1. Postgraduate laboratories and Equipments: *Clearly mention the department wise PG laboratories and equipment housed in individual laboratory in the Colleges along with any other research unit.*

There are Nine PG labs 37 specialize labs in the college

Name of the Department	No. of P.G. Labs	Major Equipments Housed in each PG Lab
Botany and Plant Physiology	1	Oven, Double Distillation Unit, Balance, Seed Germinator, EC and pH Meter
	Research Labs / Units	Major Equipments Housed in Research Labs / Units
	Nodulation and N ₂ -fixation Lab	Deep freezer, Micro cooling centrifuge, Balance, EC meter, PH meter, Distillation Unit, Gel Documentation, PCR, Spectrophotometer, Oven, Fridge, IRGA
	Environmental Science Lab	Seed Germinator, Plant Growth Chamber, KEL + Microblack Digestion system, KEL + Digestion system Acid Neutralizer scrubber, Refrigerated Centrifuge
	Stress Physiology Lab	Refrigerated Centrifuge, Oven, Hydro plus automatic double water distillation system, Leaf area meter, Chlorophyll fluorescence meter, Chlorophyll concentration meter, Growth Chamber
	Phytoremediation	Spectrophotometer, Osmometer, Pressure Chamber, Water Bath, Centrifuge, EC meter, pH meter, Balance, Orbital Shaker, Deep Freezer, Fridge, Hot air oven,
	Plant Tissue Culture	Clonal propagation
Chemistry	1	Electronic balance, Spectrophotometer, pH meter, water bath, Orbital shaker, Centrifuge, Incubators, Mikrokjeldahl, water distillation unit, Muffle furnace
	3 Research Labs	Centrifuge, pH meter, Water Bath, Spectrophotometer, Orbital shaker, Soxhlet Apparatus, Magnetic stirrer, Hot Air Oven, Refractometer, BOD Incubator, Digital conductivity meter, Rotor centrifuge
Biochemistry	1 PG lab	Balance, Agarose electrophoresis, Refrigerator, Centrifuge, Vortex mixer, , UV-VIS Digital Spectrophotometer, Water Bath etc.
	7 Research Labs	GLC with Accessories, pH meter, Vortex shaker, Ultra low Freezer, Refrigerated Water Bath, Incubator shaker, Electronic Balances, Shaking water Bath, Thermocycler, Fruit Pressure Tester, Refrigerated Centrifuge, Incubator, Electrophoresis (vertical and horizontal), UV-VIS Spectrophotometer, Conductivity meter,
Food Science and Technology	-	All specialized labs are used for practicals
Mathematics and Statistics	1	Interactive Podium, computer systems
Microbiology	PG lab	Autoclave, BOD Incubators, LAF, Microscopes, Hot air oven etc.

	Seven research labs	Laminar flow cabinets, Orbital shaking incubators, Spectrophotometers, Microscopes, PCR machine, Gel documentation unit, Gas Liquid Chromatography, Autoclaves, Growth chambers, Deep freezers, Centrifuge, Weighing Balance, Hot air oven, Flame photometer, Shaking water bath, Refrigerators etc.
MBBB	3 PG labs	@-D Gel electrophoresis Unit Gel Documentation System Gradient Thermal Cycler PCR Machine Ultra Low Temp. Freezer Horizontal -40 Deep Freezer 262 Ltr. Ice Flaking Machine (MAC) Double distillation Unit RT PCR
	9 Research Labs / Units	Vertical Gel Electrophoresis Apparatus Mega Gel Electrophoresis System with accessories 2- D Gel Electrophoresis Complete (IEF-100) Chrome Deluxe Dual Cooled Vertical Electrophoresis unit Liquid Nitrogen Container 20 Lit. Three Block PCR Thermal cycler with accessories Mega Gel Electrophoresis Gradient Thermal Cycler PCR Machine Electrophoresis High Through Submarine gell Unit Liquid Nitrogen Container 34 Lit. Mega Gel Electrophoresis Horizontal electrophoresis submarine unit Power Supply Gel Documentation System Gradient Thermal Cycler PCR Machine Refrigerated Centrifuge with accessories -40 Deep Freezer Liquid Nitrogen Container 34 Lit. Liquid Nitrogen Container 34 Lit. Ice Flaking Machine NSW Refrigerator Samsung 384 Well PCR Orbital Shaking Incubator
Zoology and Aquaculture	1 PG lab	Microscopes, Display Units, Hot air Ovan
	6 Research Labs	Electrophoresis Units (SDS-PAGE, Agarose), Power Pack, Microtome, Elisa Reader, Laminar Flow, Spectrophotometer, Digital Precision Weighing Balances, pH Meter, Stereozoom microscopes, Compound Microscopes, Trinocular Microscope, BOD, Deep Freeze, Refrigerators, Water Bath, Distillation Plant, Shaker, Centrifuge, Hot Air Oven, Incubators, etc.

Computer Section	Two	Servers (5)
		1. HP Prolaint DL580G5 (1) (Web Server)
		2. HP Prolaint DL580G4(2) (Application Server)
		3. IBM Server Xseries 235 (2) (Radius Server and Spam Server)
		Firewall: Cyberoam CR1500ia 10.6.5
		Controllers: WLC2800 Juniper Make (2)
		Router: Juniper Make (1)
		Core Switches: QFX5100 Juniper Make (3)
		Network Switches (PoE) for wi-fi Ex3300 Juniper Make (18)
		Network Switches for LAN 75 (Entrasys, DLink and HP)
		Access Points (Wi-fi)Juniper Make (190)
		Network access points 1400 Approximately
Desktop Computers for Labs and staff 67		

List of Major Equipments:

Sr. No.	Name of equipment	Location/Lab
Biochemistry		
1.	GLC	Stress Biochemistry Lab (Lab No. 432)
2.	Tulaman Balance	Post- harvest Lab (Lab No. 434)
3.	Double beam UV visible Spectrophotometer	Enzymology Lab (Lab No. 415)
4.	Thermocycler	Stress Biochemistry Lab (Lab No. 432)
5.	Refrigerated Centrifuge with Accessories	Industrial Biochemistry Lab (Lab No. 417) Stress Biochemistry Lab (Lab No. 432) Post- harvest Lab (Lab No. 434)
6.	Electrophoresis	Industrial Biochemistry Lab (Lab No. 417) Post- harvest Lab (Lab No. 434)
7.	UV-VIS Spectrophotometer	PG Lab (Lab No. 421), Stress Biochemistry Lab (Lab No. 432), Industrial Biochemistry Lab (Lab No. 417), PG Lab (Lab No. 421),
8.	Electronic balance	Industrial Biochemistry Lab (Lab No. 417), PG Lab (Lab No. 421), Stress Biochemistry Lab (Lab No. 432), Enzymology Lab (Lab No. 415)
9.	Portable Soil & Water Analyzer	Enzymology Lab (Lab No. 415)
10.	Refrigerated water bath	Enzymology Lab (Lab No. 415)
11.	pH meter	Industrial Biochemistry Lab (Lab No. 417), PG Lab (Lab No. 421), Stress Biochemistry Lab (Lab No. 432), Enzymology lab (Lab No. 415)
12.	Agarose gel elctrophoresis	PG Lab (Lab No. 421)

13.	Table centrifuge	Industrial Biochemistry Lab (Lab No. 417), PG Lab (Lab No. 421), Stress Biochemistry Lab (Lab No. 432), Enzymology Lab (Lab No. 415)
14.	Refrigerator	Industrial Biochemistry Lab (Lab No. 417), PG Lab (Lab No. 421), Stress Biochemistry Lab (Lab No. 432), Enzymology Lab (Lab No. 415), Post-harvest Lab (Lab No. 434)
15.	Incubator shaker	Industrial Biochemistry Lab (Lab No. 417)
16.	Deep freezer	Enzymology Lab (Lab No. 415)
17.	Trans-illuminator	Stress Biochemistry Lab (Lab No. 432)
18.	Vacuum pump	Post- harvest Lab (Lab No. 434)
19.	Vortex shaker, magnetic stirrer	Industrial Biochemistry Lab (Lab No. 417), PG Lab (Lab No. 421), Stress Biochemistry Lab (Lab No. 432), Enzymology Lab (Lab No. 415), Post-harvest Lab (Lab No. 434)
Botany and Plant Physiology		
1.	Chlorophyll Meter	Lab No.329
2.	Seed Germinator	Lab No. 334
3.	Centrifuge	Lab No.329
4.	Power Supply	Lab No.329
5.	Computer	Lab No. 320
6.	Double beam UV-Visible spectrophotometer	Lab No.329
7.	Chlorophyll concentration meter	Lab No.329
8.	Refrigerated centrifuge	Lab No.329
9.	IRGA	Lab No. 320
10.	Orbital Shaker	Lab No.334
11.	BT-UVS-SBA-1 spectrophotometer	Lab No.334
12.	Water Bath	Lab No. 320, 334
13.	Vapour Pressure Osmometer	Lab No. 320
14.	Deep Freezer	Lab No. 320, 329, 334
15.	KEL + Microblack Digestion system	Lab No. 331
16.	KEL + Digestion system Acid Neutralizer scrubber	Lab No.329
17.	Hot air oven	Lab No. 331
18.	Growth Chamber	Lab No.329
19.	Hydro plus automatic double water distillation system	Lab No. 320
20.	Pressure Chamber	Lab No.329
21.	Microscopes	Lab No. 319
22.	Refrigerators	Lab No. 320, 334
23.	Hot plate	Lab No. 334
24.	Distillation Unit	Lab No. 320,329,334
25.	Sony Projector	Seminar Room
26.	Hot Air Oven	Lab No. 320, 329,334

27.	Vortex Mixer	Lab No. 329
28.	PH Meter, EC Meter,	Lab No. 320, 329,334
29.	Microwave	Room No. 325
Chemistry		
1.	Centrifuge 16000RPM	Organic Chemistry Lab (Lab No. 409) Organic Chemistry Lab (Lab No. 407)
2.	pH meter	Organic Chemistry Lab (Lab No. 409) Organic Chemistry Lab (Lab No. 407)
3.	Water Bath	Organic Chemistry Lab (Lab No. 407) Organic Chemistry Lab (Lab No. 409) UG Chemistry Lab (Lab No. 413 B)PG Chemistry Lab (Lab No. 413A)
4.	Spectrophotometer	Organic Chemistry Lab (Lab No. 407)
5.	Electronic Balance	Organic Chemistry Lab (Lab No. 407) Organic Chemistry Lab (Lab No. 409) UG Chemistry Lab (Lab No. 413 B) PG Chemistry Lab (Lab No. 413A)
6.	Circulating Water Bath	Organic Chemistry Lab (Lab No. 407) Organic Chemistry Lab (Lab No. 409) UG Chemistry Lab (Lab No. 413 B)PG Chemistry Lab (Lab No. 413A)
7.	Soxhlet Appratus Magnetic stirrer	Organic Chemistry Lab (Lab No. 409) Organic Chemistry Lab (Lab No. 407) Organic Chemistry Lab (Lab No. 409)
8.	Hot air oven	Organic Chemistry Lab (Lab No. 407) Organic Chemistry Lab (Lab No. 409)
9.	Refractometer	PG Chemistry Lab (Lab No. 413A)
10.	BOD Incubator	Organic Chemistry Lab (Lab No. 409)
11.	Muffle furnace	PG Chemistry Lab (Lab No. 413A)
12.	Digital conductivity meter	Organic Chemistry Lab (Lab No. 407)
13.	Rotor centrifuge	Organic Chemistry Lab (Lab No. 407)
Food Science and Technology		
1.	Orbital Shaking Incubator	Cereal Technology Lab (Lab.7)
2.	Fat Analyzer System	Cereal Technology Lab (Lab.7)
3.	Protein Analyzer System	Cereal Technology Lab (Lab.7)
4.	Water Activity Meter (Lab.Swift)	Cereal Technology Lab (Lab.7)
5.	Farinograph,	Cereal Technology Lab (Lab.7)
6.	Rheofermentometer,	Cereal Technology Lab (Lab.7)
7.	Rapid visco-analyser	Cereal Technology Lab (Lab.7)
8.	Junior mill,	Cereal Technology Lab (Lab.7)
9.	Texture analyser	Cereal Technology Lab (Lab.7)
10.	Soxhlet Extraction unit	Cereal Technology Lab (Lab.7)
11.	Sewain Making Machine	Cereal Technology Lab (Lab.7)
12.	Tissue Terror Homogenizer	Instrumental analysis Lab (Lab.4)
13.	Noodle Making Machine	Cereal Technology Lab (Lab.7)
14.	Food Extruder Lab. Model	Cereal Technology Lab (Lab.7)
15.	Revolving Research Centrifuge	Cereal Technology Lab (Lab.7)

16.	Papad Making Machine	Cereal Technology Lab (Lab.7)
17.	BOD Incubator	Fruits and vegetables Processing lab. (Lab.1)
18.	Multimedia Projector	Seminar Room
19.	Analytical Balance	Cereal Technology Lab (Lab.7)
20.	Micro Processor Spectrophotometer	Cereal Technology Lab (Lab.7)
21.	Revolutionary Research Centrifuge	Fruits and vegetables Processing lab. (Lab.1)
22.	Grit Making Machine	Cereal Technology Lab (Lab.7)
23.	Packaging Machine with N Flux	Cereal Technology Lab (Lab.7)
24.	Coating Pan	Cereal Technology Lab (Lab.7)
25.	Flaking Machine	Cereal Technology Lab (Lab.7)
26.	Display Chamber (Panasonic Showcase)	Cereal Technology Lab (Lab.7)
27.	Interactive Podium with mike	Seminar Room
28.	Modular Compact Rheometer	Cereal Technology Lab (Lab.7)
29.	Balance Mettler	Instrumental analysis Lab (Lab.4)
30.	Vertical Autoclave	Food Microbiology Lab (Lab.5)
31.	Spectrophotometer	Instrumental analysis Lab (Lab.4)
32.	Water Bath NSW-133	Instrumental analysis Lab (Lab.4)
33.	Water Distillation with chilling unit	Food Chemistry Lab (Lab.3)
34.	Refrigerator Whirlpool	Food Microbiology Lab (Lab.5)
35.	Spectrophotometer	Instrumental analysis Lab (Lab.4)
36.	HP Desktop	Office
37.	Freeze Dryer (Lypholizer)	Instrumental analysis Lab (Lab.4)
Microbiology		
S. No.	Name of equipment	Location/Lab
1	Flesh Gel System	Biofertilizers Prod Unit
2	Spectrophotometer	Biofertilizers Prod Unit
3	Gas Chromatography	Biofertilizers Prod Unit
4	Autoclave	Biofertilizers Prod Unit
5	Electric Balance	Biofertilizers Prod Unit
6	Autoclave	Biofertilizers Prod Unit
7	Conductivity Meter	Biofertilizers Prod Unit
8	Oven	Biofertilizers Prod Unit
9	Battery	Biofertilizers Prod Unit
10	UPS	Biofertilizers Prod Unit
11	Refrigerators and ACs	Biofertilizers Prod Unit
12	Handycam	Biofertilizers Prod Unit
13	Water purification System	Biofertilizers Prod Unit
14	LAF	Biofertilizers Prod Unit
15	LAF	Biofertilizers Prod Unit
16	LAF (Verticle)	Biofertilizers Prod Unit
17	Microscope	Biofertilizers Prod Unit
18	Microscope with PC and Camera	Biofertilizers Prod Unit

19	Spectrophotometer and Flame photometer	Biofertilizers Prod Unit
20	BOD	Biofertilizers Prod Unit
21	Rotary Shaker	Biofertilizers Prod Unit
22	Spectrophotometer	Biofertilizers Prod Unit
23	Elisa Reader	Biofertilizers Prod Unit
24	Filling Sealing machine	Biofertilizers Prod Unit
25	Fermentor	Biofertilizers Prod Unit
26	Gel Documentation system	Biofertilizers Prod Unit
27	Autoclave	Biofertilizers Prod Unit
28	Autoclave	Biofertilizers Prod Unit
29	Spinwin	Biofertilizers Prod Unit
30	Rockymax	Biofertilizers Prod Unit
31	Spinex vortex shaker	Biofertilizers Prod Unit
32	Centrifuge	Biofertilizers Prod Unit
33	Microcentrifuge	Biofertilizers Prod Unit
34	Deep Freezer	Biofertilizers Prod Unit
35	PCR	Biofertilizers Prod Unit
36	pH Meter	Biofertilizers Prod Unit
37	BOD	Biofertilizers Prod Unit
38	Heating plate	Biofertilizers Prod Unit
39	Gel Electrophoresis system	Biofertilizers Prod Unit
40	Automated cell counter	Biofertilizers Prod Unit
41	Cross flow protein purification system	Biofertilizers Prod Unit
42	Plant Growth Chamber	Biofertilizers Prod Unit
43	Autoclave	Lab-225
44	Microscope with accessories	Lab-225
45	Gel documentation system	Production
46	Autoclave (2)	Lab-222
47	Orbital incubator shaker	Lab-237
48	Autoclave	Production
49	Cooling centrifuge	Lab-225
50	BOD incubator and plant growth chamber	Lab-202
51	BOD incubator	Lab-225
52	Microscope	Lab237
53	Autoclave	Lab-237
54	COD	Lab-237
55	Spin with Micro centrifuge	Lab-202
56	Autoclave	Lab-225
57	Electronic balance	Lab-237
58	Gel documentation system	Lab-202
59	UV Vis spectrophotometer	Lab-237

Molecular Biology, Biotechnology and Bioinformatics		
1.	Vertical Gel Electrophoresis Apparatus	Lab. No. 109, 117,124,130
2.	Mega Gel Electrophoresis System with accessories	Lab. No.109,130
3.	2- D Gel Electrophoresis Complete (IEF-100)	Lab. No.124
4.	Chrome Deluxe Dual Cooled Vertical Electrophoresis unit	Lab. No.109
5.	Three Block PCR Thermal cycler with accessories	Lab. No.109
6.	Mega Gel Electrophoresis	Lab. No. 130
7.	Gradient Thermal Cyclers PCR Machine	Lab. No. 130
8.	Mega Gel Electrophoresis	Lab. No.109
9.	Gel Documentation System	Lab. No.110, 117
10.	Gradient Thermal Cyclers PCR Machine	Lab. No.109
11.	Refrigerated Centrifuge with accessories	Lab. No.110
12.	-40 Deep Freezer	Lab. No.110
13.	T-100 Thermal Cyclers PCR Machine	Lab. No.124
14.	Horizontal Electrophoresis Submarine Unit	Lab. No. 117, 124
15.	Gel Documentation System	Lab. No.117, 124
16.	Gradient Thermal Cyclers PCR Machine	Lab. No.124
17.	Ultra Low Temp. Freezer Horizontal	Lab. No.124
18.	-20 Deep Freezer	Lab. No.117
19.	-40 Deep Freezer 262 Ltr.	Lab. No.124
20.	Ice Flaking Machine (MAC)	Lab. No.124
21.	Ice Flaking Machine NSW	Lab. No. 130
22.	Refrigerator Samsung	Lab. No. 130
23.	384 Well PCR	Lab. No. 130
24.	Orbital Shaking Incubator	Lab. No.110, 117
25.	Gene gun(Bio Rad p1000)	Lab No. 130
26.	Electroporation unit (btx600)	Lab No. 130
27.	Hybridization Oven	Lab No 130
28.	Sonicator	Lab No. 130
29.	Cooling Water bath	Lab No 131
30.	UV spectrophotometers	Lab No. 131
31.	Refrigerated centrifuge	Lab No. 124, 130
32.	Real time PCR	Lab No 124
33.	Stromicroscope	Lab No 109, 131
34.	2-D Electrophoresis	Lab No 124, 131
35.	ELISA Reader	Room No 121

Zoology & Aquaculture		
1	Sony Cyber Shot Camera	Vermi-fish Lab (Lab No. 302)
2	ELISA (micro plate) Reader	Vermi-fish Lab (Lab No. 302)
3	Washer	Vermi-fish Lab (Lab No. 302)
4	Microscope(Premaster Binocular)	Vermi-fish Lab (Lab No. 302)
5	Deep Freeze	Vermi-fish Lab (Lab No. 302)
6	SOCS Plus Solvent extraction system	Vermi-fish Lab (Lab No. 302)
7	Digital electronic balance	Vermi-fish Lab (Lab No. 302)
8	Power supply Lab mate	Vermi-fish Lab (Lab No. 302)
9	Mini vertical electrophoresis complete	Vermi-fish Lab (Lab No. 302)
10	Interactive Podium with mike	Seminar Room (Room No. 313)
11	BOD	Acarology Lab. (Lab No. 311)
12	Autoclave	Rodentology Lab (Lab No. 307)
13	Electronic precision balance	Rodentology Lab (Lab No. 307)
14	Laminar Flow	Rodentology Lab (Lab No. 307)
15	BOD incubator	Rodentology Lab (Lab No. 307)
16	UV VIS Spectrophotometer	Rodentology Lab (Lab No. 307)
17	Electrophoresis unit Mini	Rodentology Lab (Lab No. 307)
18	Electrophoresis chambers Mini	Rodentology Lab (Lab No. 307)
19	Trinocular microscope	Rodentology Lab (Lab No. 307)
20	Carl Ziess Microscopy Camera+ Camera Adapter	Rodentology Lab (Lab No. 307)
	Power supply for Gel Apparatus	Rodentology Lab (Lab No. 307)
21	Sony digicam	Rodentology Lab (Lab No. 307)
22	Electronic precision balance	Acarology Lab. (Lab No. 311)
23	BOD incubator -NSW	Biotechnology Lab (Lab No. 305)

6.5.6.2. Research Contingency

Name of the Department	Research Contingency in Rs.						
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18 (Till date)	G. Total
Botany and Plant Physiology	922685	1225600	3816893	2157500	3086955	826290	1,20,35,923
Chemistry and Biochemistry	488715	2011000	2366260	1814000	2066450	1125279	9871704
Food Science and Technology	1634009	696172	4976948	1219693	1462184	815343	10804349
Mathematics and Statistics	24100	28300	35090	78970	118900	63500	348860
Microbiology	598150	839910	377450	772430	1745840	1171380	5505160

Molecular Biology, Biotechnology & Bioinformatics	28,58,750	32,29,150	49,10,325	32,32,000	6,28,57,564	54,37,160	82524949
Sociology	88500	85000	130000	123300	315000	57600	799400
Zoology & Aquaculture	2112290	4438240	500844	705890	4336053	2780252	14873569

Whether it meets the students' demand: Yes

6.5.7 Outcome/ Output

- The college develops learning outcomes through students' feed back
- The institution monitors and communicates the progress and performance of students during the course/programme through Dean, PGS and Registrar.
- All P.G. courses have practical as well as research component.
- All the M.Sc. and Ph.D. programmes offered by the college have compulsory research component and there is a students' placement cell.
- The students' performance and learning outcomes are used for planning and overcoming barriers of learning as feed back of the students is taken into consideration and courses are revised as per Dean Committee report.
- The institution monitors and ensures the achievements through placement of students in different organization.
- The institution and individual teachers use assessment/ evaluation as an indicator for student performance.

6.5.7.1 Student Performance in JRF/SRF/NET/ARS and other National Examinations:

A. Students who cleared NET/ARS/GATE or any other examination:

A total of 136 students cleared NET/ARS/GATE etc. Details are in **Annexure COBSH I**.

B. Students who got fellowships other than university merit fellowship (Student Academic Award)

A total of 74 students received fellowships/ Scholarships during the period under report as listed below :-

Fellowships						
2012	2013	2014	2015	2016	2017	Total
17	18	9	10	12	8	74

See **COBSH II**

6.5.7.2 Student Placement Profile: *Provide detailed information in tabular form about student performance in ARS/and other national examinations/State level examinations or equivalent. Year wise placement profile shall be provided.*

A. Students Placement:

One hundred and fifty four were placed as ARS scientists, Scientists, Lecturer, Asstt. Professor, Research Associate, SRF and private jobs. The details are listed in individual SSRs for programmes of the departments. A summary of Students placements is given in **Annexure COBSH –III**.

6.5.7.3 Awards/Recognitions/Certificates: Provide information on awards/recognitions/certificates in tabular form for last five years separately for students and faculty.

Awards/Recognitions/Certificates received by students:

Dr. S.R. Vyas Gold Medal (Best student in M.Sc. Microbiology based on OGPA)

Sr. No.	Year	Students' Name
1	2012-13	Adarsh Sharma
2	2013-14	Subha Sheoran
3	2014-15	Sneh lata
4	2015-16	Rakhi Dhankhar
5	2016-17	Kamalpreet Kaur

V.D. Kashyap Gold Medal:

Ms. Rekha Rani, Ph.D. student of Department of Molecular Biology, Biotechnology and Bioinformatics got **V.D. Kashyap Gold Medal** in 2012.

International Awards:

- Monsanto-Beachell Borlaug Fellowships awarded to Ms Laxmi Tomar and Nitika Sandhu (Ph.D. students)
- BBSRC-DFID predoctoral award to Ms. Richa Singh and Jyoti Taunk
- Ms. Meenu Gupta (2009BS37D) was awarded Commonwealth fellowship.
- International Student Travel Award to Ms Rakshita (2014BS14D)
- International Student Travel Award to Suman Chaudhary and Rinku Dhankar by HCST

Prize winners for position (Ist, IInd and IIIrd) in class:

M.Sc. Students-

Sr. No.	Name	Admn. No.	Deptt.	Position
2012-13				
1.	Chhavi Dawar	2010BS138M	Bioinformatics	1 st
2.	Gunjan	2010BS95M	Chemistry	2 nd
3.	Jyoti Poonia	2010BS96M	Chemistry	3 rd
2013-14				
1.	Ms. Vicky	2011BS116M	Bioinformatics	1 st
2.	Ms. Pinki	2011BS82M	Chemistry	2 nd
3.	Ms. Sukriti Nehra	2011BS83M	Chemistry	3 rd
2014-15				
1.	Ms. Satya Shree Jangra	2012BS1M	Chemistry	1 st
2.	Ms. Snehlata	2012 BS12M	Microbiology	2 nd
3.	Mr. Manohar Lal	2012BS8M	Plant Physiology	3 rd
2015-16				
1.	Mr. Susheel Gulati	2013BS1M	Chemistry	1 st
2.	Ms. Prabha Singh	2013BS37M	Plant Physiology	2 nd
3.	Ms. Rakhi	2013BS9M	Microbiology	3 rd

2016-17				
1.	Ms. Ekta Hooda	2014BS17M	Statistics	1 st
2.	Ms. Parveen Kumari	2014BS1M	Chemistry	2 nd
3.	Ms. Harsha Rohilla	2014FST37M	FST	3 rd
4.	Ms. Monika Kakkar	2014FST43M	FST	3 rd

Ph.D. Students:

Sr. No.	Name	Admn. No.	Deptt.	Position
2012-13				
1.	Mr. Yogesh Kumar	2006BS20D	Chemistry	1 st
2.	Ms. Sachin Kumari	2009BS50D	Chemistry	2 nd
3.	Ms. Deepika	2009BS47D	Chemistry	3 rd
2013-14				
1.	Ms. Priyanka Dagar	2010BS51D	Chemistry	1 st
2.	Ms. Mangla	2010BS45D	Microbiology	2 nd
3.	Mr. Anil Kumar	2010BS50D	Chemistry	3 rd
2014-15				
1.	Ms. Isha	2011BS6D	Chemistry	1 st
2.	Ms. Anju Kharb	2011BS14D	MBB	2 nd
3.	Ms. Neha Wadhwa	2011BS2D	Biochemistry	3 rd
2015-16				
1.	Mr. Sudhakar Rao Dommalapati	2012BS9D	Biochemistry	1 st
2.	Ms. Chhavi Jatwani	2012BS22D	Zoology	2 nd
3.	Ms. Reema Rai	2012 BS23D	Zoology	3 rd

Students' Awards in cultural activities:**2012**

1. Sushil I prize, Participation in Quiz Participation on World Food Day, October, 2012
2. Neha Wadhwa 1st Prize in Solo Dance in Youth Festival, 2012

2013

3. Sunil Kumar H C First Prize in Quiz Participation on World Food Day, October, 2013
4. Sushil Second Prize in Quiz Participation on World Food Day, October, 2013
5. Akanksha Jain, First Prize in Solo Dance (Classical) in Youth Festival, 2013
6. Akanksha Jain and Jyoti Bishnoi, Second Prize in Group Dance (Folk) in Youth Festival, 2013
7. Students of College of Basic Sciences & Humanities First Prize in College Procession in Youth Festival, 2013
8. Rahul Third Prize Haryanvi Skit (College Freshers Party)-2013

2014

9. Solo Song (Western) - First Prize- Madushika Keshani Ransingha (UTSAV -II, 2014)
10. Madushika Keshani Ransingha Second Prize in Group Dance (General) (UTSAV-II, 2014)
11. Students of College of Basic Sciences & Humanities First Prize in College Procession- First Prize - (UTSAV -II, 2014)
12. Itisha, 1st prize in solo dance and choreography, solo dance folk in Inter College youth festival held at CCSHAU (2014)

13. Itisha, 1st prize in solo dance and 2nd prize in group dance, debate in Inter zonal Youth festival, MDU, Rohtak
14. Itisha, 1st prize in National Quiz competition 2014
15. Jyoti Yadav, 2nd prize in general group dance in Inter College youth festival held at CCSHAU (2014).

2015

16. Rahul Kumar Meena was selected by Government of India for Study Tour to London School of Economics, United Kingdom (U.K.) w.e.f. 24th to 31st October, 2015 on the occasion of 125th Birth Anniversary of Dr. Ambedkar.
17. Jyoti Yadav was awarded “A” grade in Adventure Course held at NIM, Uttarkashi (28oct- 11 Nov, 2015), Won silver medal in lecturette competition at NIM, Uttarkashi and was the member of winning team in Cross Country Race, NIM, Uttarkashi.

2016

18. Students of College of Basic Sciences & Humanities First Prize in College Procession- First Prize - Youth Festival 2016
19. Nidhi Dalal, First Prize in English Debate in Youth Festival 2016
20. Harsha Rohila First Prize in English Poetry in Youth Festival 2016
21. Nidhi Dalal, First Prize in Froup Discussion in Youth Festival 2016
22. Akanksha jain, First Prize in Group Dance (Folk) in Youth Festival 2016
23. Akanksha jain, Second Prize in Group Dance (General) in Youth Festival 2016
24. Sachin & Sumit, Second Prize in Mime in Youth Festival 2016
25. Priyanka, Second Prize in Slogan Writing in World Food Day, 2016
26. Sumit and Rahul, 3rd Prize in Food Quiz in World Food Day, 2016
27. Ravi Mehndiratta, First Prize for Debate, Elocution, Group Discussion and Extempore in Youth fest held at CCSHAU, Hisar- 2016.
28. Rahul Kumar Meena, First Prize in quiz competition held at COBS&H, CCSHAU, Hisar, on the occasion of teachers’ day 5 September 2016.
29. Disha Kamboj, first prize in Group Dance during youth festival UTSAV 2016, held at CCSHAU, Hisar.
30. Naveen got Ist prize in Quiz on Teachers’ Day Celebration on 5.9.16
31. Mamata got IInd prize in Slogan Writing (English) on Teachers’ Day Celebration on 5.9.16
32. Deepankar got IInd e in Slogan Writing (English) on Teachers’ Day Celebration on 5.9.16
33. Ekta got I priz in Group discussion Utsav 2016 held on 12-18.1.16
34. Divya got 1st prize for English Poem Recitation in Youth Fest 2016
35. Divya got 2nd Prize Group Dance in Youth Fest 2016.
36. Rinku got 2nd prize for Poem Recitation in Youth Fest 2016
37. Rinku got 1st prize in Declamation in Youth Fest 2016
38. Arvind, 3rd prize in 13th National Youth Parliament Competition held at CCSHAU on 11.9.2016
39. Jyoti Yadav, 1st prize for group discussion in Inter College Youth Festival (UTSAV- 2016) held at CCSHAU, Hisar (2016).
40. Biswabiplab Singh (2015BS33M), second position in Solo song competition (General) in Youth Festival at OUAT, Bhubaneshwar, Odisha. UTSAV-2016.
41. Biswabiplab Singh (2015BS33M), third prize in group song competition in All India Inter agricultural Youth Festival at OUAT, Bhubaneshwar, Odisha.2016
42. Biswabiplab Singh (2015BS33M), fourth prize in Patriotic song competition in All India Inter agricultural Youth Festival at OUAT, Bhubaneshwar, Odisha.2016
- 43.

2017

44. Tanu, Consolation prize in Bharat Ratan DR. B.R. Ambedkar Remembrance Programme, 20-21.1.17
45. Tanu, IInd Prize in Prerak Prasang prize in Bharat Ratan DR. B.R. Ambedkar Remembrance Programme, 20-21.1.17
46. Jyoti Yadav won consolation prize in speech competition (Hindi) held in COBS&H, CCSHAU, Hisar on “Matrabhasha Diwas”.
47. Sudha Bishnoi* Consolation in Declamation on Bharat Ratan DR. B.R. Ambedkar Remembrance Programme on 20-21.1.17

Awards in sports activities:

Name of the award/ recognition	Level (International/ National/ State/ University/ Other)	Awarding agency	Month/ Year	Name of the recipient
Inter-college Badminton tournament/ Second Position	University	CCS HAU	November 2016	Surina Bhadu
3 km Cross Country/ Third Position	University	CCS HAU	October 2016	Surina Bhadu
5 km Intercollege Cross Country/ Third Position	University	CCS HAU	October 2016	Surina Bhadu
Mixed Doubles District Badminton Tounament/ First Position	District	Hisar District Badminton Association	September 2016	Surina Bhadu
All India Inter- Agricultural Sports Meet/ Second Position in Badminton	National	CCS HAU	March 2017	Surina Bhadu
All India Inter- Agricultural Sports Meet/ Second Position in 4 X 100 m relay race	National	CCS HAU	March 2017	Surina Bhadu
Maha khumbh (khelo India)/ Second Position	District	Haryana Government	September 2017	Surina Bhadu
Intercollege Badminton tournament/ Second Position	University	CCS HAU	November 2016	Himani

Inter-college Athletic meet, 1500 meter race/ 1 st position	University	CCS HAU	January 2017	Anu Kumari
Discuss Throw 1 st Position	University	CCS HAU	2018	Agrim

Participation of students in Conferences/ Seminars/ Workshops etc.:

There were 87 M.Sc. student participation and 311 Ph.D. Student participation. Several students participated in multiple events. The details are provided in **Annexure COBSH IV and V.**

Faculty achievements:

A. Awards/Recognitions/Certificates received by faculty:

- Dr. Urmil Verma, Principal Scientist was awarded INSA-DFG in 2012 and 2017.
- Dr. Seema Sangwan, Asstt. Scientist received Young Scientist Award (2014) in the field of Industrial Microbiology given by Society for scientific development in agriculture and technology (SSDAT) in collaboration with Directorate of Rice Research, Hyderabad.
- Dr. Neelam R. Yadav, Principal Scientist was awarded Advisor award from Monsanto Beachell- Borlaug International Scholar program President (Dr. E.C. Runge) 2016.
- Dr. K.D.Sharma, Veena Jain, Nisha Ahlawat, Kamla Malik, Ajay Pal, Upendra Kumar, Neelam Yadav, Pushpa Kharb, Shikha Yashveer and L.K. Chugh received oral and poster presentation awards in different Conferences/ symposium.
- Dr. Hemant Poonia received an appreciation letter given by Honorable Vice-Chancellor, day (05.09.2016) for delivering effective and interactive teaching.
- Dr. L.K.Chugh received appreciation letter from Project Coordinator for quality research in Bajra in 2016.

B. Patents and Technology developed:

i) Patents Granted

Sr. No.	Name of the patent	Name (s)	No. and Date	Type (National/Intl)
Patents Granted				
1	A process of preparation of tissue culture medium for enhancing <i>in vitro</i> plantlet regeneration in Air Yam plant using bacterial culture supernatant	P. Kharb, K. Dahiya, V. Yadav, P. Batra, N. Narula, S. Dhillon and V.K. Chowdhury	Patent No. 248511/2011)	National
2	A novel process of genetic transformation in chickpea using <i>Agrobacterium</i>	P. Kharb, P. Batra, and V.K. Chowdhury:	252590/2012	National

3	Development of low cost liquid formulation of native strains of <i>Bacillus thuringiensis</i> effective against <i>Helicoverpa armigera</i> using agro-industrial byproducts.	Kamla Chaudhary, H. Dhingra and K. S Boora	253532/2012.	National
---	---	---	--------------	----------

ii) Patents applied

1. R.C. Yadav, Teena Rani, NR Yadav 2012. An efficient method for transformation of tomato variety Hisar Arun (patent application filed).
2. N.R. Yadav, Sandeep Yadav, RC yadav, HP Yadav 2012. Simple and cost efficient method for identification of pearl millet hybrids for purity assessment Application No. 4051/DEL/2012.
3. S. Dhillon, Chetan K. Choudhary, K.S.Boora, Pushpa Kharb and R.Dhillon. 2013. SCAR marker based identification of sex in *Simarouba glauca DC*. Application submitted to NRDC, New Delhi.
4. K. P. Singh, Dimiter Dimitrov, Anu Puri, Anuj Nehra 2017. "Graphene oxide-polycarbonate track-etched nanosieve platform for sensitive detection of human immunodeficiency virus envelope glycoprotein" Indian patent Application No. 201711002764, Filing Date: 24/01/ 2017.
5. Pushpa Kharb, Rakshita Singh and Parveen Batra. 2018. An efficient method for transformation in pigeon pea. Application No. 201811012099.
6. Shiwani Mandhaniania 2018. A method for removal of gossypol from cotton seed" Application No.: 20181100492.
7. Pushpa Kharb, Rakshita Singh and Upendra Kumar. 2018. An efficient method for transformation in monocots. Application No. 201811012100

Technologies Transferred

Sr. No.	Technologies	Industry
1	An MoU for Pilot Scale PHB production signed towards commercialization of the technique. (2010-11)	DKS Incorporated, Hisar.
2	An MoU has been signed on 31-03-2010 for the licencing of liquid biofertilizers production technology	M/S MicroBAC India West Bengal (Kolkatta)
3	An MoU has been signed on 15-09-2010 for the licencing of liquid biofertilizers production technology	M/S Bhart Biocon Ltd. Jhunagarh Lane, Chattisgarh
4	An MoU has been signed on 12-11-2012 for the licencing of liquid biofertilizers production technology	M/S Y.S. Sons Agrotech, Baddi, HP
5	An MoU has been signed on 25-04-2013 for the licencing of Food products Technology developed by Department of Food Science and Technology under CFST	DKS Incorporate, Hisar for Brahma Biscuits and two variants of value added fruit beverages

6	An MoU has been signed on 08-05-2013 for the licencing of Food products Technology developed by Department of Food Science and Technology under CFST	Kamboj Foods Pvt. Ltd., Indri, Karnal for Brahmi Biscits (signed on May 8, 2013).
7	An MoU has been signed on 26-06-2014 for the licencing of SCAR Marker based Identification of Sex in Date Palm	Sardar Patel Institute of Research and Training in Biotechnology, Vallabh Vidyanagar, Gujarat
8	An MoU for three months certificate course in Sociology	HIRD, Nilokheri, Haryana

C. Reserch Projects of faculty from outside Agency:

The faculty received 26 research projects from agencies like ICAR,DBT,DST,UGC etc. This is in addition to state funded reseerach projects in each department. Details are provided in **Annexure COBSH -VI**

D. Publications of the Faculty: The faculty has published 773 Research papers, 13 books, 53 book chapters and 19 manuals. These are listed in **Annexure COBSH VII.**

E. Participation of Faculty in Conferences/ Seminars/ Workshops etc.:

The faculty members attended a number of conferences, workshops, trainings and seminar as given in **Annexure COBSH VIII.**

6.5.7.4. Employability

What are the set of achievements such as skills, understandings and personal attributes that make College students more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy?

- The Counselling and Placement Cell of the Directorate of Students Welfare in association with the Department of Employment, Haryana, has set up a University Employment Information and Guidance Bureau, which provides information to the students on job opportunities, higher education, competitive examinations, scholarships /fellowship etc.
- It conducts trainings/coaching classes for the entrance examinations and explores job opportunities in the public and private sectors and arranges the campus interviews. This has helped the students to go for higher studies. About 61% students of our college opt for Ph.D.
- A fortnightly news letter 'Career Bulletin' brought about by the cell of the University helps the students to be abreast of information on job opportunities, admissions, scholarships, fellowships etc. in India and abroad.
- University website also informs trainings, interview schedules and skill development courses.
- The Directorate of Student Welfare organizes various coaching classes for competitive exams regularly covering in Banking, Defence sector, ICAR- JRF/SRF, CSIR-NET/JRF etc.
- Seminars workshops are organized for international fellowships such as Monsanto Beachell-Borlaug International Scholarship programme.
- The Counselling and Placement Cell also guides and provides relevant information for financial assistance to students for setting up their own ventures and encourage entrepreneurship.
- Science Forum of the University provides chance to students for interaction with CEO/ other officers/ Alumni. Students also interact with eminent personalities during their visit and know the areas of possible future research.

- A number of students are being benefitted and get opportunity to work in the international laboratories.
- College of Basic Sciences and Humanities has two Experiential Learning (EL) units—one experiential learning unit in the College of Basic Sciences and Humanities and one experiential learning unit in Centre of Food Science and Technology. –‘ Production of medicinal & Aromatic plants through Tissue Culture & Production of Biofertilizers’ and ‘Processing of fruits, vegetables and some other food items’. The first programme trains to develop Cost-efficient protocols for large-scale micro propagation of several medicinal plant species including *Aloe vera*, ashwagandh, *Catharanthus*, *Dioscorea*, *Glycyrrhiza*, ker, sadabahar, stevia and safedmusli.). The infrastructure is also used for conducting biotechnology trainings in summer for developing human resources in biotechnology.
- PG. students of the department are using the created facilities for their research work.
- The second programme provides hands on trainings to students and help them to develop value added food products from fruits, vegetables, cereals, pulses and oilseeds through practical demonstrations. It also help them to develop competence, capability, capacity building, acquiring skills, expertise and confidence to start their own enterprise and turn “Job Creators instead of Job Seekers”. This EL helps in building entrepreneurship spirit and business management competence among the students.
- Exchange/collaborative program for teaching and research with other Agricultural universities/institutes provides a platform for student mingle with experts of other organizations. At present university has MoU with PAU, Ludhiana; Tech. Institute of Textile and Sciences, Bhiwani; Centre for Plant Biotechnology, Hisar; Haryana Space Applications Center, Hisar, Govt. of Haryana; CIMMYT, New Delhi; Central Soil Salinity Research Institute, Karnal ; Sugarcane Breeding Institute, Coimbatore; ICAR-Directorate of Mushroom Research, Chambaghat, Solan (HP); Director of Wheat Research, Karnal; ICAR-Central Institute of Post harvest Engineering & Technology, Ludhiana.

6.5.8. SSR of the College must have the SSR of all its Degree Programmes (following section 6.4), then the report of the Colleges shall be considered.

6.5.9. Certificate (Applicable when SSR is submitted for Programmes & College).

I, the Dean Prof. Rajvir Singh, hereby certify that the information contained in Sections 6.4 and Section 6.5.1 to 6.5.7.4 are furnished as per the records available in the college and degree awarding university.



Signature of the Dean of the college with Date & Seal

6.5.10. Each college shall submit SSR as mentioned in 6.5.8. It shall be prerequisite for the SSR of the Agricultural University.



PROGRAMMES



1. **M.Sc. Biochemistry and Ph.D. Biochemistry**
2. **M.Sc. Plant Physiology and Ph. D. Plant Physiology**
3. **M.Sc. Chemistry and Ph.D. Chemistry**
4. **M.Sc. Food Science & Technology and Ph.D. Food Science & Technology**
5. **M.Sc. Statistics and Ph.D. Statistics**
6. **M. Sc. Microbiology and Ph. D. Microbiology**
7.
 - a. **M.Sc. Molecular Biology and Biotechnology**
 - b. **Ph.D. Molecular Biology and Biotechnology**
 - c. **M.Sc. Bioinformatics**
8. **M.Sc. Sociology and Ph.D. Sociology**
9. **M. Sc. Zoology and Ph.D. Zoology**
10. **Languages and Haryanvi Culture**
11. **Computer Section**

PROGRAMME - 1



M.Sc. Biochemistry
and
Ph.D. Biochemistry



6.4 About the Department

The Department of Biochemistry runs excellent teaching programs at M.Sc. and Ph.D. degree levels. Annually, the department offers 4 UG courses and 23 PG courses in biochemistry discipline. The current areas of research in Biochemistry are: plant biochemistry, enzymology, biochemistry of fruits during ripening and post-ripening, molecular biology, biochemical and molecular mechanism(s) of abiotic stresses and nanotechnology for plant growth and protection. The department has successfully completed a number of research projects funded by other agencies (ICAR, DBT, CSIR etc). The research findings from the various research programs in Biochemistry have been presented in the National and International conferences/symposia and also published in the form of a large number of research papers in reputed journals. Apart from the various research programs being carried out in the department, its faculty is extending support to other departments of the university in interdisciplinary co-ordinated research programs particularly in the areas of Biotechnology and Molecular Biology, Microbiology, Agronomy and Genetics and Plant Breeding. In recognition of the excellent research activities in the department, many of its faculty members and students have been offered national scientific awards and visiting fellowships.

The Department has a team of highly qualified and experienced faculty who has shown excellence both at the national and international levels.

Objectives of the Department

- To impart quality education to the UG and PG students of different colleges of the University and to develop human resource specialized in various aspects of basic and applied Biochemistry
- To carry out biochemical studies in relation to improvement of field, vegetable and fruit crops
- To synthesize and characterize nano-materials for plant growth and protection

6.4.1. Brief History of the Degree Programme: *Clearly mention in which year the degree program was initiated along with its objective and accomplishments*

M.Sc. and Ph.D. Degree programme in Biochemistry were initiated in the year 1970.

Objectives of initiating M.Sc. programme:

M.Sc. Biochemistry programme was initiated with the following objectives:

- To produce quality human resource in the discipline of Biochemistry
- To develop technologies that can contribute towards employment generation and increased avenues for self employment
- To provide training and specialization to students in following research areas
- Biochemical and molecular evaluation of varieties for quality improvement and anti-nutritional factors
- Biochemistry and molecular biology of abiotic stresses in plants
- Biochemistry of fruits and vegetables during ripening and post ripening
- Manipulation of metabolic pathways at molecular level to increase shelf life of fruits
- Manipulation of metabolic pathways for reserve biosynthesis and utilization
- Enzyme engineering and functional genomics/proteomics
- Bioactive principles of agro-industrial products and by-products

Accomplishments of M.Sc. programme:

- Till date the Department of Biochemistry has produced 201 M.Sc. students. During the period under report 23 students completed their Master's degree (**Annexure BIOCHEM I**). Eight M.Sc. students are on roll (**Annexure BIOCHEM II**).
- The Department has well developed infra structure for the M.Sc. programme with seminar rooms and well equipped laboratories.
- Eleven students participated in conferences and symposia (**Annexure BIOCHEM III A**) and published 16 research papers (**Annexure BIOCHEM III A**)
- Two students have been placed in public and private sector jobs (**Annexure BIOCHEM III B**).
- Three students have been availing national level scholarships from ICAR (NTS & POSE). (**Annexure BIOCHEM IV**) and two students (Ms. Snehvarit & Anamika) cleared NET Exam. Most of the other students are getting merit fellowship/ stipend from the University.

Objectives of initiating Ph.D. programme:

Ph.D. Biochemistry programme was initiated with the following objectives:

- To produce quality human resource in the discipline of Biochemistry
- To provide training and specialization to students in following research areas
- Biochemistry and molecular biology of abiotic stresses in plants
- Biochemistry of fruits and vegetables during ripening and post ripening
- Manipulation of metabolic pathways at molecular level to increase shelf life of fruits
- Immobilization of industrially important enzymes
- Manipulation of metabolic pathways for reserve biosynthesis and utilization
- Enzyme engineering and functional genomics/proteomics
- Bioactive principles of agro-industrial wastes
- Biochemical and molecular evaluation of varieties for quality improvement

Accomplishments of Ph.D. programme:

- The Department of Biochemistry has produced 92 Ph.D. students till now. Since 2012-13 to February 2018, 16 students have completed their Ph.D. degree and 6 students are on roll. (**Annexure BIOCHEM I & II**).
- Sixteen students participated in conferences and symposia (**Annexure BIOCHEM III A**). Most of the students attended and participated in more than one symposium/ conference. Ph. D students published 20 research papers and (**Annexure BIOCHEM III A**)
- Five students have been availing national level scholarships like INSPIRE DST, CSIR JRF, UGC etc and most of the other students got fellowships/ stipend from university. (**Annexure BIOCHEM IV**)
- Nine students have qualified NET, GATE and other national level exams (**Annexure BIOCHEM V**)
- Ten students have been placed in public and private sector jobs (**Annexure BIOCHEM III B**)

6.4.2. Faculty Strength: *The faculty strength of the Degree Programme need to be given cadre-wise, both sanctioned and in-place (under the table mentioned below). Clearly mention the number of permanent faculty appointed for the Degree Programme, part time faculty being deputed from the other departments (in such case mention the name of these departments). If the Degree Programme is also taking the help of Research staff, extension staff, contractual*

faculty, guest faculty, adjunct faculty or any other arrangement being made to complete the curriculum, it should be clearly mentioned in the report.

S.No.	Designation	Sanctioned	In Place*	Vacant	As per Fifth Deans' Committee
1.	Professor and equivalent	2	2	1	There is no UG programme in the college
2.	Associate Professor and equivalent	3	1	3	
3.	Assistant Professor and equivalent	10	4	4	

* The faculty under Professor and also includes personal promotees.

Note: All the faculty of this programme is assigned the responsibilities for the multiple programmes. Two posts of Assistant Professor have been advertised. Two members of faculty have retired during the period of report.

Faculty Profile:

The faculty attends various seminars, conferences, workshops at national and international levels regularly. Faculty of the department published more than 112 research papers in journals of national and international repute, 6 book chapters and three authored books in last five years. The faculty has handled a number of projects funded by other agencies.

Other Achievements of the Faculty:

- Dr. Shiwani Mandhania has filed a patent (Application No.: 201811004928) on "A method for removal of gossypol from cotton seed" during 2018.
- Dr. L.K. Chugh and team of Bajra Section was awarded appreciation certificate by the Project Director (Pearl Millet) for the best AICRP Centre for the period 2013-18 on 24.3.2018 during Annual Group Meeting of Pearl Millet.

6.4.3. Technical and Supporting staff: The position of the technical and supporting staff of the Degree Programme including farm and field workers need to be mentioned for both sanctioned and in-place.

S. No.	Designation	Sanctioned	In place
1.	Office staff	4	
	Assistant	1	1
	Clerk	1	-
	PA/Steno	1	-
	Messenger	1	-
2.	Lab staff	5	
	Lab Assistant	2	2
	Lab Attendant	1	-
	Any other (SLA)	2	2

3.	Field staff	1	
	Beldar	1	1

Note: All the staff is assigned the responsibilities for the multiple programmes.

6.4.4. Classrooms and Laboratories: *Mention the number of class rooms and functional laboratories available for the degree programme and justify if it is sufficient to meet the course curricula requirement. Lists major equipments, laboratories, farm facilities, workshops and other instructional units being utilized for the award of the Degree Programme may be given. Mention theory and practical batches for the Degree Programme.*

S. No.	Laboratories	Activities
1	Net houses (08)	Growing seedlings/plants for research work of students and faculty members
2	UG Lab (01) No. 3, IATTE Building	Conductance of undergraduate practical classes
3	PG Lab (01) No. 421	Conductance of postgraduate practical classes
4	Industrial Biochemistry Lab No. 417	Immobilization of microbial enzymes for industrial applications
5	Enzymology Lab No. 415	Isolation, purification and immobilization of microbial enzymes
6	Protein purification Lab No. 414	Purification and characterization of agriculturally important enzymes
7	Molecular Biochemistry Lab No.414A	Differential expression and proteome studies
8	Stress Biochemistry Lab No. 432	Understanding mechanism(s) of resistance against abiotic stresses in field crops
9	Post harvest Biochemistry Lab No. 434	Improvement of shelf-life of fruits and other field crops
10	Quality Lab No. 424	Evaluation of food and fodder crops for quality traits and anti-nutritional factors

The facilities in the department are sufficient to meet the requirements of the course curricula.

List of equipments in the department:

S. No.	Name of equipment	Location/Lab
1.	GLC with Accessories	Stress Biochemistry Lab (Lab No. 432)
2.	Tulaman Balance	Post- harvest Lab (Lab No. 434)
3.	Double beam UV Visible Spectrophotometer	Enzymology Lab (Lab No. 415)
4.	Thermocycler	Stress Biochemistry Lab (Lab No. 432)
5.	Refrigerated Centrifuge with Accessories	Industrial Biochemistry Lab (Lab No. 417) Stress Biochemistry Lab (Lab No. 432) Post- harvest Lab (Lab No. 434)

6.	Electrophoresis	Industrial Biochemistry Lab (Lab No. 417) Post- harvest Lab (Lab No. 434)
7.	UV-VIS Spectrophotometer	PG Lab (Lab No. 421), Stress Biochemistry Lab (Lab No. 432), Industrial Biochemistry Lab (Lab No. 417), PG Lab (Lab No. 421),
8.	Electronic Balance	Industrial Biochemistry Lab (Lab No. 417), PG Lab (Lab No. 421), Stress Biochemistry Lab (Lab No. 432), Enzymology lab (Lab No. 415)
9.	Portable Soil & Water Analyzer	Enzymology lab (Lab No. 415)
10.	Refrigerated Water bath	Enzymology lab (Lab No. 415)
11.	pH meter	Industrial Biochemistry Lab (Lab No. 417), PG Lab (Lab No. 421), Stress Biochemistry Lab (Lab No. 432), Enzymology lab (Lab No. 415)
12.	Agarose Gel Elctrophoresis	PG Lab (Lab No. 421)
13.	Table Centrifuge	Industrial Biochemistry Lab (Lab No. 417), PG Lab (Lab No. 421), Stress Biochemistry Lab (Lab No. 432), Enzymology lab (Lab No. 415)
14.	Refrigerator	Industrial Biochemistry Lab (Lab No. 417), PG Lab (Lab No. 421), Stress Biochemistry Lab (Lab No. 432), Enzymology lab (Lab No. 415), Post- harvest Lab (Lab No. 434)
15.	Incubator Shaker	Industrial Biochemistry Lab (Lab No. 417)
16.	Deep-freezer	Enzymology Lab (Lab No. 415)
17.	Trans-illuminator	Stress Biochemistry Lab (Lab No. 432)
18.	Vacuum Pump	Post- harvest Lab (Lab No. 434)
19.	Vortex Shaker, Magnetic Stirrer	Industrial Biochemistry Lab (Lab No. 417), PG Lab (Lab No. 421), Stress Biochemistry Lab (Lab No. 432), Enzymology lab (Lab No. 415), Post- harvest Lab (Lab No. 434)

Theory and Practical Batches

Year	Theory			Practical		
	UG	M.Sc.	Ph.D.	UG	M.Sc.	Ph.D.
2012-13	2 Courses with one batch each	10 Courses with one batch each	8 Courses with one batch each	2 Courses with two batches	2 Courses with one batch each	1
2013-14	2 Courses with one batch each	10 Courses with one batch each	8 Courses with one batch each	2 Courses with two batches	2 Courses with one batch each	1
2014-15	2 Courses: One with one batch and other with two batches	10 Courses with one batch each	8 Courses with one batch each	2 Courses: one with two batches and other with three batches	2 Courses with one batch each	1
2015-16	2 Courses: One with one batch	10 Courses with one	8 Courses with one	2 Courses: one with two	2 Courses with one	1

	and other with two batches	batch each	batch each	batches and other with three batches	batch each	
2016-17	2 Courses: One with one batch and other with two batches	10 Courses with one batch each	8 Courses with one batch each	2 Courses: one with two batches and other with three batches	2 Courses with one batch each	1
2017-18	2 Courses: One with one batch and other with two batches	10 Courses with one batch each	8 Courses with one batch each	2 Courses: one with two batches and other with three batches	2 Courses with one batch each	1
Total		60	48		12	

6.4.5. Conduct of Practical and Hands-on-Training: *It is important to have a sound grasp of the theory that underlies any professional degree. But there are some skills that can only be learned through hands-on –practice. It is important that much of the learning material in any given course should be provided in a way that allows students to get as involved as possible to increase their knowledge and abilities. Clearly mention how far students are getting desired practical and hands-on-training as per the curriculum and meeting above mentioned requirements.*

Degree programme/ Courses	Practicals/Hands-on-training	How far students are getting desired practical and hands-on-training as per the curriculum (bullet form)
For B.Sc. 2 courses	Biochem 100/102 Qualitative and quantitative tests for carbohydrates, lipids, proteins, amino acids and vitamin-C; determination of pH, analysis of proximate constituents in food	<ul style="list-style-type: none"> • Quality analysis and quantification of carbohydrates • Tests for proteins and their amounts, • Quality tests for lipids and their quantity • pH determination
	Biochem 101 Preparation of solutions and buffers, use of pH meter, colour reactions of carbohydrates, proteins, amino acids and lipids, quantitative determination of sugars and proteins; qualitative separation of sugars and amino acids by paper chromatography; separation of lipids and photosynthesis pigments by TLC, protein denaturation by heat and pH; simple enzyme assays.	<ul style="list-style-type: none"> • Preparation of solutions and buffers • Quality and quantity determination of sugar and proteins • Paper chromatography • TLC • Enzyme assays

M.Sc. 9 courses	<p>BIOCHEM 505</p> <p>Determination of absorption maxima; extraction and estimation of carbohydrates, amino acids, proteins and nucleic acids. Separation of carbohydrates and amino acids by paper chromatography; separation of lipids by thin layer and column chromatography; separation of proteins by ion exchange and gel filtration chromatography. Extraction, purification and characterization of enzymes; electrophoretic techniques to separate proteins and nucleic acids. Centrifugation: Cell fractionation; application of GLC, HPLC, FPLC in separation of biomolecules; use of radioisotopes in metabolic studies.</p>	<ul style="list-style-type: none"> • Extraction and estimation of carbohydrates, amino acids, proteins and nucleic acids • PC of carbohydrate • TLC of lipids • Gel filtration of protein • Purification of enzymes • Radioisotopy • Biomolecules' separation using GLC and HPLC
	<p>BIOCHEM 506</p> <p>Preparation of buffers and reagents. Serological tests such as bacterial slide agglutination, latex agglutination and agar gel immunodiffusion. Immunoassays including ELISA, western blotting, and fluorescent antibody test. Hybridoma technique for production of monoclonal antibodies. Recombinant protein antigen-production and immunization of laboratory animals. Extraction of DNA/RNA from pathogenic microorganisms, PCR, genotyping, diagnosis, etc.</p>	<ul style="list-style-type: none"> • Preparation of buffers • Agglutination test • ELISA • Western blotting • Fluorescent antibody test • Extraction of DNA/ RNA • Polymerase chain reaction
	<p>BIOCHEM 509</p> <p>Estimation of starch, lipid/oil, phenols in plant tissue/sample, Estimation of carotenoids, Estimation of trypsin and chymotrypsin inhibitor activities in seeds, Estimation of vitamin C in fruits; Reducing and non reducing sugar in fruits; estimation of protein contents; estimation of dietary fibre, determination of limiting amino acids; estimation of phytate/oxalate.</p>	<ul style="list-style-type: none"> • Estimation of starch, oil and phenols • Trypsin and chymotrypsin inhibitors in legumes • Vitamin C in orange • Sugar in fruits • Dietary fibres in cereals
Ph. D. 6 courses	<p>BIOCHEM 604</p> <p>Isolation and purification of protein from microbial/plant/animal source;. Electrophoretic separation of protein; determination of molecular weight of protein using PAGE/ gel filtration method. Experiments on DNA: isolation, agarose gel electrophoresis and restriction analysis of DNA. Isolation of chloroplast and mitochondria by differential centrifugation and their purification by density gradient centrifugation. Isolation and purification of enzymes, isozymic analysis and enzyme immobilization</p>	<ul style="list-style-type: none"> • Purification and characterization of protein and enzymes • Electrophoretic techniques • Gel filtration • Agarose gel electrophoresis • Restriction analysis of DNA • Isolation of plant organelles

6.4.6. Supervision of students in PG/Ph.D. programmes: *Number of students being supervised by Faculty in case of Masters/Ph. D Programme (as per ICAR/UGC guidelines). Mention the realistic figure number of qualified faculty in relation to the intake of students, as per the guidelines in the matter.*

Supervision of M.Sc. students in PG programme offered by the Department:

Year	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	12	6	2:1
2013-14	8	6	1.3:1
2014-15	9	6	1.5:1
2015-16	8	5	1.6:1
2016-17	10	5	2:1
2017-18	8	4	2:1

Details of Ph.D. programmes offered by the Department:

Year	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	9	6	1.5:1
2013-14	12	6	2:1
2014-15	16	6	2.6:1
2015-16	15	5	3:1
2016-17	13	5	2.6:1
2017-18	6	4	1.5:1

(Annexure BIOCHEM-I)

6.4.7. Feedback of stakeholders (Students, parents, industries, employers, farmers etc.): *Mention the feedback mechanism (duly supported by the documents) from different stakeholders of the degree programme. What action the University has taken in last five years to address the issues raised in the feed back?*

Alumni feedback is invited on the basis of following criteria.

- Delivery of courses contents
- Teaching methodology
- Student teacher interaction
- Punctuality of the teacher

Feedback from the students is obtained to evaluate the quality of teaching. On these suggestions, courses are periodically revised. These courses are then approved by DAC and BOS, COBSH for inclusion in the course curricula

6.4.8. Student intake and attrition in the programme for last five years: *Year wise information on sanctioned strength, actual intake and attrition in the last five years of the Degree Programme, in the tabular form, shall be provided*

Name of the Degree Programme	Actual student admitted in last five years						Attrition (%)					
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
M.Sc.	4	2	5	4	3	5	Nil	Nil	Nil	Nil	Nil	40.0
Ph. D.	5	4	2	4	-	2	Nil	Nil	Nil	50	Nil	Nil

(Annexure BIOCHEM-II)

6.4.9. ICT Application in Curricula Delivery: *The ICT is now integral part of the teaching programme. ICAR has also been promoting the use of ICT in teaching and practical. Mention whether the Degree Programme is meeting the expectations. If there is any shortfall, it shall be clearly mentioned.*

Yes, the faculty members of the department of Biochemistry use ICT in teaching and practical. There is one Seminar Room with computer, LCD projector and internet connection. All faculty members have computer printer and internet connection in their offices. There is Wi-Fi facility for faculty, staff and students. This infrastructure provides opportunities for the use of ICT in quality teaching, research and extension. Faculty members use power point presentations, YouTube and CD ROM in teaching all courses at UG, PG and Ph.D. level.

6.4.10. The information pertaining to 6.4.1 to 6.4.9 shall be provided for each one of UG, PG and PhD Degree Programmes, separately, and to be presented College-wise.

6.4.11. Since the accreditation of Programmes is related to the All India Admission from ICAR and also having weightage for College accreditation, therefore the data presented in the section 6.4 is liable to the verification at any stage.

6.4.12. Certificate (Applicable when SSR is submitted for Programme)

I, the Dean, **Prof. Rajvir Singh**, hereby certify that the information contained in the Section 6.4.1 to 6.4.9 are furnished as per the records available in the college, and degree awarding university.



Signature of Dean of the College with Date & Seal



PROGRAMME - 2



M.Sc. Plant Physiology
and
Ph. D. Plant Physiology



6.4. About the Department

The department was carved out from the Department of Botany and Plant Pathology in 1970 with eminent scientist and academician in chair like late dynamic Prof. O. P. Garg and Prof. T. M. Varghese who nurtured it with their academic excellence and vision. The department offers M.Sc and Ph. D. degrees in Botany as well as in Plant Physiology. The department also caters to the requirements of UG and PG programs of College of Agriculture and College of Home Science. The department has so far produced 138 M.Sc. and 80 Ph.D. scholars some of them occupying high positions at the national level. At present, there are 5 M. Sc. students and 8 Ph. D students. Most of our students are getting fellowship from CSIR (UGC), INSPIRE (DST), VIED (Vietnam) and University Grant Commission (UGC).

The department is having a highly trained and talented faculty that consists of two Professors, one Principal Scientist and three Plant Physiologists and one consultant faculty (Botany) Sr. Botanist-cum-Superintendent Botanical Garden. In addition, there are two Principal Scientists posted in various related departments of College of Agriculture. Most of the faculty members have visited foreign countries to attain advanced expertise in various fields of botanical and plant physiological research. The faculty has written 20 books and 3 Practical Manuals. Research work carried out by the PG students and faculty has been published in the form of approximately 470 research and review papers. Our teachers / scientists bagged 29 research projects from various agencies like ICAR, CSIR, DBT, New Delhi, PURSE (DST), New Delhi, DST (Haryana), INSID, Ministry of water Resources, New Delhi, Potash Research Institute of India (PRII, Gurgaon), CIMMYT, Mexico and funding worth of several lakhs have been sanctioned to this department.

The department has a Botanical Garden sprawled over an area of 10.5 acre with rich biodiversity. The department has done pioneering work in conserving the indigenous local species of plants and also introduction of exotic species from other places. Various native and exotic trees, shrubs, herbs, climbers, aquatic plants, cacti and succulents have been grown and arranged in taxonomical order for imparting knowledge to our students as well as general public. Flower shows and Bonsai making trainings are organized from time to time. There is no UG programme going on in the Department, however, Department is offering six UG Courses to Undergraduates of College of Agriculture and seven four Courses to Undergraduates of I.C. College of Home Science. **The department has two UG Lab, one PG Lab, five research lab, one seminar room and one departmental library**

6.4.1 Brief History of the Degree Programme: *Clearly mention in which year the degree program was initiated along with its objective and accomplishments.*

PG programmes in Botany and Plant Physiology were initiated in the year 1970. Entry qualification for master's programme is B.Sc (Medical) and B.Sc (Hons.). Minimum duration of the M.Sc. programme is 2 years and maximum duration is 4 years. Minimum duration of the Ph. D. programme is 3 years and maximum duration is 5 years.

Objectives of initiating M.Sc. programme

- To produce quality human resource in the discipline of Plant Physiology with awareness of recent development/innovation
- To provide training and specialization to students in following research areas
 - Abiotic stress physiology (salt, drought, heat, freezing, water logging, cold and heavy metals)
 - Nodulation and nitrogen fixation in leguminous plants
 - Physiology of senescence and abscission in crop plants

- Phytoremediation, especially with reference to salt and heavy metal stress
- Ecophysiology of tree species to evaluate bio-drainage potential of plants under waterlogged saline area
- Growth and development of crop plants
- Mineral nutrition in crop plants
- Plant growth regulators to improve crop productivity
- Photosynthesis, respiration and related processes for crop improvement

Accomplishments of M.Sc. programme

- The department has well developed infra structure for the M.Sc Programme with Seminar rooms and well equipped laboratories
- The department has produced 138 M.Sc. students.
- Around 75% of the students have progressed to Ph.D Programmes
- Students have been placed in public and private sector jobs
- Students have been availing national level scholarships like INSPIRE fellowship (2) from Department of Science and Technology (INSPIRE –DST), Junior Research fellowship (2) from Indian Council of Agricultural Research (JRF-ICAR), Senior Research fellowship (1) from Indian Council of Agricultural Research (JRF-ICAR), Junior Research fellowship from Council of Scientific and Industrial research (JRF-CSIR) (1) etc.
- Students (8) presented oral and poster research papers in national seminars/conferences
- Students (1) attended workshop related to intellectual property rights.

Objectives of initiating Ph.D programme

- To produce advanced quality human resource in the discipline of Plant Physiology
- To provide advanced training and specialization to students in following research areas
- Abiotic stress physiology (salt, drought, heat, freezing, water logging, cold and heavy metals)
- Nodulation and nitrogen fixation in leguminous plants
- Physiology of senescence and abscission in crop plants
- Phytoremediation, especially with reference to salt and heavy metal stress
- Ecophysiology of tree species to evaluate bio-drainage potential of plants under waterlogged saline areas
- Growth and development of crop plants
- Mineral nutrition in crop plants
- Plant growth regulators to improve crop productivity
- Pphotosynthesis, respiration and related processes for crop improvement

Accomplishments of Ph.D programmes

- The department has well developed infra structure for the Ph. D Programme with Seminar rooms and well equiped laboratories
- The department has produced 80 Ph.D students.
- More than 90% of the students are well placed
- Students have been availing International and national level scholarships like Commonwealth (1), UGC (2), DBT (1) BARC (1) etc.
- Students (14) presented oral and poster research papers in national seminars/conferences
- Students (3) attended workshop related to intellectual property rights and new software used in library

Note: For details of accomplishments see Annexure BPP I (with the details of student cleared NET, got placement, academic awards (fellowship), cultural activities awards etc.)

Student data for the last five years

Degree Programme offered by the Department	Specialization	Year of start	No. of seats							No. of students passed out						
			Y1	Y2	Y3	Y4	Y5	Y6	Total	Y1	Y2	Y3	Y4	Y5	Y6	Total
M.Sc.	Botany	*														
Ph.D.	Botany															
M.Sc.	Plant Physiology		4	5	5	5	2	3	24	3	5	3	1	4	6	22
Details in Annexure BPP-II																
Ph.D.	Plant Physiology		3	3	4	-	3	4	17	1	5	3	2	5	3	19
Details in Annexure BPP II																

*Botany is scientific study of plants. Study of plants is equally important because it covers almost all animal life on Earth by generating a large proportion of oxygen that provides us and other organisms with aerobic respiration with the chemical energy that is essential to be alive. This department has the course curriculum including basic and advanced courses of botany. The students passed out from botany are well placed as assistant professors or lecturer in different government/private colleges/ schools. At present the PG programme in botany is suspended due to lack of faculty but the undergraduate courses are being taught by Dr. U.K. Varshney (Consultant Faculty of Botany) in college of Agriculture and Home Science. Two posts have been advertised and very soon appointments will be made to continue PG in Botany.

Research Publications: Total publications during last five years are 29, out of which 5 are from M. Sc. and 24 from Ph. D theses.

Programme	Research Article	NAAS Rating/ Impact Factor	Remarks
M.Sc.	5	4-6	Total student publications (See Annexure BPP III)
Ph.D.	24	4-6	

Student Participation in Academic Activities

- Ms. Poonam (2011BS23D) participated and presented paper in National conference on Frontiers of Plant Physiology Research: Food Security and Environmental Challenges organised by National Society for Plant Physiology, New Delhi held at 23-25, Nov. 2014 at Bhubaneswar, Orissa.
- Dharamvir (2012BS10D), Mahesh Kumar (Admn No.2014BS34M), Parveen Kumar (2014BS34M), Kirpa Ram (2013BS10D), Raj Kumar (2013BS12D), Manohar lal (2014BS09D), Ajeev (2016BS19D), Poonam (2011BS23D), Neelam (2014BS12D), Savita Dhuan (2012BS11D) and Suman Bala (2012BS11D), attended and presented paper in National Seminar on “Technological advances in botanical sciences” pp.27-28, Organised by

- Directorate of Higher Education, held at Department of Botany, Kumari Vidyavati Anand DAV College for Women, Karnal, January 21, 2016.
- Dharamvir (2012BS10D), Neelam (2014BS12D) and Rajkumar (2013BS12D) attended International Conference (2017) on “Emerging Areas of Environmental Science and Engineering” Organized by Department of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar, 16-18 February.
 - Kirpa Ram (2013BS10D), Neelam (2014BS12D), Pooja (2015BS36M) and Pooja Rani (2014BS11D) attended Workshop on Capacity Building on IPR Instruments (2017) organized by Directorate of Research, CCS Haryana Agricultural University and Department of Science and Technology, Panchkula, 6th May.
 - Dr. Suman Bala (2012BS11D), Sarita (2015BS37M), Biswabiplab (2015BS33M), Sapna (2015BS35M), Pooja Alhawat (2015BS34M) and Pooja (2015BS36M) attended Swarna Jyanti National conference (2017) on Biodiversity and Sustainable Utilization of Plant Resources organized by Department of Botany, Kurukshetra University, Kurukshetra on 17-18th February.

Student Participation in Extra Co-Curricular Activities

- Biswabiplab Singh (2015BS33M) got second position in Solo song competition (General) in UTSAV-2016 held from 16 to 18 January.
- Biswabiplab Singh (2015BS33M) got third prize in group song competition in All India Inter agricultural Youth Festival 2015-16 from 01 to 04 February, 2016 at OUAT, Bhubaneshwar, Odisha.
- Biswabiplab Singh (2015BS33M) got fourth prize in Patriotic song competition in All India Inter agricultural Youth Festival 2015-16 from 01 to 04 February, 2016 at OUAT, Bhubaneshwar, Odisha.
- Biswabiplab Singh (2015BS33M) participated in All India Inter agricultural Youth Festival 2015-16 from 01 to 04 February, 2016 at OUAT, Bhubaneshwar, Odisha.
- Biswabiplab Singh (2015BS33M) participated in All India International Universities sports and games meet 2016-17 held from 25-29 March.

Departmental Library: Departmental library has 124 M.Sc and 77 Ph.D Theses.

6.4.2. Faculty Strength: The faculty strength of the Degree Programme need to be given cadre-wise, both sanctioned and in-place (under the table mentioned below). Clearly mention the number of permanent faculty appointed for the Degree Programme, part time faculty being deputed from the other departments (in such case mention the name of these departments). If the Degree Programme is also taking the help of Research staff, extension staff, contractual faculty, guest faculty, adjunct faculty or any other arrangement being made to complete the curriculum, it should be clearly mentioned in the report.

S. No.	Designation	Sanctioned	In place*	Vacant	As per Fifth Deans' Committee
1.	Professor and equivalent	1	4	1	There is no UG programme in the college
2.	Associate Professor and equivalent	1	-	-	
3.	Assistant Professor and equivalent	12	3	6	
4.	Guest faculty (specify)	-	1		

5.	Contractual faculty (Teaching Associate)	-	1		
6.	Any other (specify)	Six number of faculty have retired from this department during the period of report.			

Note: All the faculty of this programme is assigned the responsibilities for the multiple programmes.

*The faculty also includes personal promotes.

6.4.3. Technical and Supporting staff: *The position of the technical and supporting staff of the Degree Programme including farm and field workers need to be mentioned for both sanctioned and in-place.*

S. No.	Designation	Sanctioned	In place
1.	Office Staff	4	
	Clerk	2	0
	PA/Steno	1	0
	Messenger	1	0
2.	Lab staff	5	
	Lab Assistant	1	1
	Lab Attendant	4	3
3.	Field staff	1	
	Beldar	1	1
	Farm and field worker (specify)	6	1
4.	Guard	1	0

Note: All the staff is assigned the responsibilities for the multiple programmers'.

6.4.4 Classrooms and Laboratories: *Mention the number of class rooms and functional laboratories available for the degree programme and justify if it is sufficient to meet the course curricula requirement. Lists major equipments, laboratories, farm facilities, workshops and other instructional units being utilized for the award of the degree programme may be given. Mention theory and practical batches for the degree programme.*

List of classrooms and functional laboratories

No. of lecture rooms with seating capacity	1 Seminar Room for PG Classes (seating capacity 40), 1 Seminar Room for UG Classes (seating capacity 30)
No. of lecture rooms with LCD	1 Seminar Room for PG Classes (seating capacity 40)
No. of labs with specialized purpose : 8	
Nodulation and N ₂ – Fixation Lab (Lab No. 334)	N ₂ -fixation mechanism (leghaemoglobin, nitrogenase activity and oxidative metabolism) under abiotic stress condition in different nodules
Phytoremediation (Lab No. 320)	Identification of salt and heavy metal hyperaccumulator plants
Stress Physiology Lab (Lab No. 329)	Identification of physiological markers (MSI, RSI, Photosynthetic efficiency, Photochemical Quantum Yield, CTD, Pollen viability) under different abiotic stresses
Environmental Science Lab (Lab No. 331)	Physiological changes in response to agricultural pollutants and strategic research for environment and climate resilient sustainable agriculture

Plant Tissue Culture Lab (Lab No. 318)	Available for micro-propagation of medicinal and ornamental plants
2 UG Labs [One at Department (Lab No. 319) and one at IATTE Building]	Conduct different Botany and Plant Physiology courses practicals for UG students
1 PG Lab (Lab No. 324)	Conduct different Plant Physiology courses practical's for PG students
Farm facilities/ Screen House	7 : for conducting of experiments
Any other instructional units being utilized for the award of the Degree Programme	<ul style="list-style-type: none"> • 1 Botanical Garden (Instructions for some practicals) • 4 Lecture rooms per Semester in COA for UG programme • 2 Lecture rooms per Semester in COHS for UG programme • One Lab at IATTE Building for UG programme

These facilities meet the requirement for degree programme.

List of Major equipments at present available in the department:

S. No.	Name of equipment	Location/Lab
1.	Chlorophyll Meter	Lab No.329
2.	Seed Germinator	Lab No. 334
3.	Centrifuge	Lab No.329
4	Power Supply	Lab No.329
5	Computer	Lab No. 320
6	Double beam UV-Visible spectrophotometer	Lab No.329
7	Chlorophyll concentration meter	Lab No.329
8	Refrigerated centrifuge	Lab No.329
9	IRGA	Lab No. 320
10	Orbital Shaker	Lab No.334
11	BT-UVS-SBA-1 spectrophotometer	Lab No.334
12	Water Bath	Lab No. 320, 334
13	Vapour Pressure Osmometer	Lab No. 320
14	Deep Freezer	Lab No. 320, 329, 334
15	KEL + Microblack Digestion system	Lab No. 331
16	KEL + Digestion system Acid Neutralizer scrubber	Lab No.329
17	Hot air oven	Lab No. 331
18	Growth Chamber	Lab No.329
19	Hydro plus automatic double water distillation system	Lab No. 320
20	Pressure Chamber	Lab No.329
21	Microscopes	Lab No. 319
22.	Refrigerators	Lab No. 320, 334
23.	Hot plate	Lab No. 334
24.	Distillation Unit	Lab No. 320,329,334

25.	Sony Projector	Seminar Room
26.	Hot Air Oven	Lab No. 320, 329,334
27.	Vortex Mixer	Lab No. 329
28.	PH Meter, EC Meter,	Lab No. 320, 329,334
29.	Microwave	Room No. 325

Mention theory and practical batches for UG Programme

There is no UG programme going on in the Department, however, Department is offering three UG Courses to Undergraduates of College of Agriculture and one UG Courses to Undergraduates of I.C. College of Home Science. All the courses have practical components.

- For course Bot.101 offered to CoA in sem 1st and 5th have three sections with an average of about 30 students with two practical group in each section.
- For course Bot.101 offered to COHS in sem 2nd have one theory batch with an average of about 60-70 students with three groups for practical classes.
- **As per 5th Deans' Committee Recommendations the nomenclature two new supporting courses i.e. Bio 101 and PI Phy 102 introduced for B.Sc Agriculture. The courses were offered respectively in 1st & 5th sem and 2nd & 6th sem. Bio 101 has two theory batches and four practical batches.** For course PI Phy 102 have three sections with an average of about 55-60 students with two practical group in each section
- At M.Sc level, the Department of Botany and Plant Physiology offers 14 courses and 9 courses have practical components. There are limited seats in M.Sc. programme with an average of 3-4 students. Some courses are offered as minor courses for students of other departments. There is only batch for theory classes and one batch for practical classes in all the courses with an average of 4-35 students.
- Similarly, at Ph.D level there are limited seats in Ph.D programmes. Hence, there is only batch for theory classes and one batch for practical classes in all the courses. For PhD, the Department of Botany and Plant Physiology offers 9 courses and 2 courses have practical components.

6.4.5 Conduct of Practical and Hands-on-Training: *It is important to have a sound grasp of the theory that underlies any professional degree. But there are some skills that can only be learned through hands-on -practice. It is important that much of the learning material in any given course should be provided in a way that allows students to get as involved as possible to increase their knowledge and abilities. Clearly mention how far students are getting desired practical and hands-on-training as per the curriculum and meeting above mentioned requirements.*

Degree programme/ Courses with Cr. Hrs.	Practical and Hands-on-training courses	How far students are getting desired practical and hands- on-training as per the curriculum (bullet form)
PI Phy 102; 1+1 COA Fundamentals of crop physiology (168 students)	<ul style="list-style-type: none"> • Demonstration of imbibitions, osmosis, plasmolysis, root pressure, transpiration • Separation of photosynthetic pigments through paper chromatography, respiration, relative water content, infra red gas analyser (IRGA). 	<ul style="list-style-type: none"> • Students are able to conduct experiment on physiological processes like imbibitions, osmosis, transpiration, respiration, photosynthesis

<p>BOT 101; 1+1 (COA) Elementary Botany</p>	<ul style="list-style-type: none"> • Study of structure, types and modifications of root, stem and leaves through specimens • Study of structure of flower and its reproductive parts through specimens and slides • Demonstration of experiments of diffusion, imbibition, osmosis, guttation, transpiration, respiration, photosynthesis, photoperiodism 	<ul style="list-style-type: none"> • Students are well acquainted with the structure, types and modifications of root, stem, leaves and flower • Students are able to conduct experiment on physiological processes like imbibitions, osmosis, transpiration, respiration, photosynthesis
<p>BOT 101 ; 1 + 1 (COHS) Elementary Botany</p>	<ul style="list-style-type: none"> • Study of structure, types and modifications of root, stem and leaves through specimens • Study of structure of flower and its reproductive parts through specimens and slides • Demonstration of experiments of diffusion, imbibition, osmosis, guttation, transpiration, respiration, photosynthesis, photoperiodism 	<ul style="list-style-type: none"> • Students are well acquainted with the structure, types and modifications of root, stem, leaves and flower • Students are able to conduct experiment on physiological processes like imbibitions, osmosis, transpiration, respiration, photosynthesis
<p>PP 503; 3+1 Physiological and molecular responses of plants to abiotic stresses</p>	<ul style="list-style-type: none"> • Measurement of water status of plants, determination of osmotic potential by vapour pressure and freezing point depression. • Determination of soil water potential and content by psychrometry and other systems. • Stress imposition and quantification, stomatal conductance. canopy temperature as a reflection of transpiration and root activity, Water use efficiency determination at whole plant and single leaf level, Root shoot signals ABA and cytokinin effect on stomatal behavior • Heat tolerance and membrane integrity. Sullivans heat tolerance test • Chilling tolerance, Galactolipase and free fatty acid levels as biochemical markers for chilling damage, Cold induced inactivation of O₂ evolution of chloroplasts as a screening technique for chilling tolerance 	<ul style="list-style-type: none"> • Students are able to study the various methods for studying the plant water status • Students studied the effect of abiotic stresses (Salt, water and temp., heat, chilling) on plant growth and development • Students studied the role of hormones under abiotic stresses
<p>PP 504; 2+1 Hormonal regulation of plant growth and development</p>	<ul style="list-style-type: none"> • Quantification of Hormones. Principles of bioassays, physico chemical techniques and immunoassay, Extraction of hormones from plant tissue. • Auxins bioassays, auxins - effect on rooting of cuttings, abscission and apical dominance. • Gibberellins bioassays, GA effect on germination of dormant seeds. • Cytokinin bioassays, estimation using immunoassay technique, cytokinin effect on apical dormancy and senescence. • ABA bioassays estimation using immunoassay technique. ABA effect on stomatal movement, • Ethylene bioassays, estimation using physico-chemical techniques, effect on breaking 	<ul style="list-style-type: none"> • Students are able to study the bioassays for different plant growth hormones (Auxins, cytokinin, Gibberellins, ABA, ethylene • Students are able to study the physiological effects of different growth hormones in plants

	dormancy.	
PP 505; 1+1 Physiology of growth and yield and modelling	<ul style="list-style-type: none"> Plant sampling for leaf area and biomass estimation; analysis of growth and yield parameters –LAD, NAR, CGR, LAI, LAR, SLA Portioning efficiency HI, Measurement of light interception, light extinction coefficient, energy utilization efficiency based energy intercepted, and realized, Computer applications in plant physiology, crop productivity and modelling. 	<ul style="list-style-type: none"> Students get acquainted with study of different growth and yield parameters in different crops. Students get knowledge of computer applications in plant physiology, crop productivity and modelling.
PP 506; 2+1\ Genome organization in higher plants	<ul style="list-style-type: none"> Culturing and transformation of bacteria; genomic DNA and plasmid DNA isolation from bacteria, restriction enzyme digestion and analysis by agarose gel electrophoresis Isolation of genomic DNA and RNA from plants and quantification Culture of bacteriophage; studies on lytic and lysogenic phages. 	<ul style="list-style-type: none"> Students get knowledge about the various biotechnological techniques.
PP 507 Morphogenesis, tissue culture and transformation	<ul style="list-style-type: none"> In vitro culture of different explants such as leaf, stem, shoot apex, cotyledonary nodes, Effect of growth regulators auxin, cytokinin, ethylene on callus induction, organogenesis, somatic embryogenesis, effect of growth condition such as temperature and photoperiod on organogenesis 	<ul style="list-style-type: none"> Students learn different plant tissue culture techniques and effects of growth regulators in <i>in-vitro</i> culture
PP 509; 3+1 Physiological and molecular aspects of photosynthesis, respiration and nitrogen assimilation	<ul style="list-style-type: none"> Extraction and separation of plant pigments, Isolation of chloroplasts, O₂ evolution. Determination of photosynthetic rates –gas exchange. A, gs, Ci, A/gs, C/gs-intrinsic WUE by gas exchange rates. Light, CO₂, VPD response curves, Determination of photorespiration by gas exchange. Genotypic/species differences in photosynthetic rates. Determination of NH₄⁺, reduction of inorganic nitrogen species 	<ul style="list-style-type: none"> Students get acquainted with extraction of chlorophyll content by different methods. Photosynthetic activity, stomatal conductance
PP 510; 2+1 Mineral nutrition	<ul style="list-style-type: none"> Physiological and biochemical changes in plants under nutrient sufficiency and deficiency levels. Quantification of pigment levels, enzyme activities. 	<ul style="list-style-type: none"> Students get knowledge of various physiological and biochemical changes in plants under nutrient sufficiency and deficiency levels.
PP 511/SST 509; 1+1 Seed physiology	<ul style="list-style-type: none"> Proximate analysis of chemical composition of seed Methods of testing viability Kinetics of seed imbibitions and solute leakage. Seed germination and dormancy breaking methods Seed invigoration and priming treatments Accelerated ageing and controlled deterioration tests 	<ul style="list-style-type: none"> Students get acquainted with various methods of seed testing viability, vigour testing.

	<ul style="list-style-type: none"> • Enzymatic activities and respiration during germination and effect of accelerated ageing • Vigour testing methods 	
PP 599; 0+20 Master's Research	<p>Students use practical knowledge to conduct researches in areas of Plant Physiology Studies:</p> <ul style="list-style-type: none"> • Abiotic stress physiology (salt, drought, heat, freezing, water logging, cold and heavy metals) • Nodulation and nitrogen fixation in leguminous plants • Physiology of senescence and abscission in crop plants • Phytoremediation, especially with reference to salt and heavy metal stress • Ecophysiology of tree species to evaluate bio-drainage potential of plants under waterlogged saline area • Growth and development of crop plants • Mineral nutrition in crop plants • Plant growth regulators to improve crop productivity • Photosynthesis, respiration and related processes for crop improvement • Post harvest Physiology of fruits 	
PP 603; 2+1 Molecular approaches for improving physiological traits	<ul style="list-style-type: none"> • Phenotyping approaches for the different physiological traits. • Genotyping options using gene-scan systems. • Development of SSR, SNP and SCAR markers, resolution of polymorphism on agarose gels and PAGE • Genotyping using a DNA sequencing machine, scoring of gels and assessment of polymorphism • Molecular biology–genomic/plasmid DNA isolation, RNA Isolation • Transformation in model system, Crop transformation Agrobacterium mediated transformation (<i>in planta</i> & <i>in vitro</i>) • Evaluation of transgenics –semi quantitative & quantitative RT-PCR, southern blot, northern blot western blot and ELISA • Biochemical/physiological assay based on the function of gene & testing LOD 	<ul style="list-style-type: none"> • Students get knowledge of various phenotyping approaches for the different physiological traits through biotechnological techniques.
PP 604; 1+2 Techniques in plant physiology	<ul style="list-style-type: none"> • Photosynthetic gas exchange measurements, light and CO₂ response curves determination of relative limitations to photosynthesis • Chlorophyll fluorescence measurements, • Assessment of nutrient deficiency by use of leaf color chart. • Estimation of water use efficiency at whole plant and single leaf level. • Use of stable & radioactive isotopes to understand physiological processes. • Canopy temperature depression (CTD). • Evaluation of various plant water indices like RWC (Relative water content), Leaf water retention (LWR %), and water retention capability (WRC %), Relative Stress injury 	<ul style="list-style-type: none"> • Students are able to study physiological processes (photosynthetic rate, stomatal conductance, Chlorophyll fluorescence, nutrient deficiency symptoms CTD, plant water status and water use efficiency.

	<p>(RSI), evaluation of stress indices (Heat susceptibility index, heat response index).</p> <ul style="list-style-type: none"> • DNA & RNA isolation, cDNA synthesis & library construction, semi quantitative & quantitative RT-PCR, Northern blot, immunoassays • Quantification of mineral nutrients using advanced instruments like AAS. • Extraction isolation and estimation of plant growth regulators. 	
PP 606; 2+1 Post harvest physiology	<ul style="list-style-type: none"> • Physiological and biochemical changes during senescence and ripening • Estimation of ethylene during senescence and ripening. • Determination of Reactive Oxygen Species and scavenging enzymes. • Measurement of dark and alternate respiration rates during senescence and ripening. • Estimation of ripening related enzyme activity, cellulases, pectin methyl esterases, polygalacturonase 	<ul style="list-style-type: none"> • Students get knowledge to study various physiological and biochemical changes during senescence and ripening. • Students are able to estimate ethylene, ROS and ripening related enzyme activity like cellulases, pectin methyl esterases, polygalacturonase
PP 607; 1 + 1 Weed physiology and herbicide action	<ul style="list-style-type: none"> • Adjuvant and their effect on spray droplets, chemical entry and transport. • Determination of physiological and biochemical processes like photosynthesis, respiration, cell division, Protein & fatty acid synthesis, membrane permeability as affected by herbicides • Quantification of pigment levels in leaves, specific enzyme activities affected by herbicides. 	<ul style="list-style-type: none"> • Students get knowledge to study the efficiency of herbicides by estimating various physiological and biochemical processes.
PP 608; 2 + 1 Advanced seed physiology	<ul style="list-style-type: none"> • Determination of seed storage proteins. • Alpha-amylase activity in germinating seeds. Role of GA in inducing amylase activity. Role of embryo in GA induced a-amylase activity. • Protease and lipase activity in germinating seeds. • Seed viability test and accelerated ageing test. • Seed hardening/osmotic priming of seeds. • Seed respiration rates. • Seed viability losses through membrane leakage 	<ul style="list-style-type: none"> • Students get acquainted with the role of GA in seed germination. • Students are able to study seed viability, protease, lipase activity, seed priming.
PP 699; 0+45 Doctoral Research	<ul style="list-style-type: none"> • Students use practical knowledge to conduct researches in areas of Plant Physiology Studies: • Physiological and molecular studies for abiotic stresses (salt, drought, heat, freezing, water logging, cold and heavy metals) • Nodulation and nitrogen fixation in leguminous plants • Physiology of senescence and abscission in crop plants • Phytoremediation, especially with reference to salt and heavy metal stress • Eco-physiology of tree species to evaluate bio-drainage potential of plants under waterlogged saline areas • Growth and development of crop plants • Mineral nutrition in crop plants 	

- Plant growth regulators to improve crop productivity
- Photosynthesis, respiration and related processes for crop improvement
- Post harvest Physiology of fruits

6.4.6. Supervision of students in PG/PhD programmes: *Number of students being supervised by Faculty in case of Masters/Ph. D Programme (as per ICAR/UGC guidelines). Mention the realistic figure number of qualified faculty in relation to the intake of students, as per the guidelines in the matter.*

Details of M.Sc. programmes offered by the Department:

Year	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	11	7	1.57:1
2013-14	16	7	2.28:1
2014-15	8	8	1:1
2015-16	10	8	1.25:1
2016-17	11	7	1.57:1
2017-18	5	7	0.71:1

Details of PhD programmes offered by the Department:

Year	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	12	7	1.71:1
2013-14	14	7	2:1
2014-15	14	8	1.75:1
2015-16	13	8	1.63:1
2016-17	9	7	1.28:1
2017-18	9	7	1.28:1

6.4.7. Feedback of stakeholders (Students, parents, industries, employers, farmers etc.): *Mention the feedback mechanism (duly supported by the documents) from different stakeholders of the degree programme. What action the University has taken in last five years to address the issues raised in the feed back?*

Alumni feedback is invited on the basis of following criteria.

- Delivering of courses contents
- Teaching methodology
- Student teacher interaction
- Punctuality of the teacher

Alumni Feedback is basis for selection of teachers for ICAR sponsored Best Teacher Award. Feedback questionnaire has been modified to get feedback from alumini, students etc. Students and alumini were contacted/invited to get feedback to evaluate the quality of the teaching/learning. Based on the feedback obtained the seats of M.Sc and Ph. D students has been changed with respect to the number of faculty to maintain a healthy teacher student interaction. ICT has been included in teaching methodology along with black board teaching. M.Sc. programme in Environmental Sciences has been introduced in academic year 2016-17.

6.4.8. Student intake and attrition in the programme for last five years: Year wise information on sanctioned strength, actual intake and attrition in the last five years of the Degree Programme, in the tabular form, shall be provided.

Name of the Degree Programme	Actual student admitted in last five years						Attrition (%)					
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
M.Sc. Plant Physiology	4	5	5	5	2	3	25	40	-	-	-	-
Ph.D. Plant Physiology	3	3	4	-	3	4	-	-	-	-	33.33	-

Note. Figures in parenthesis indicate number of attrition

6.4.9. ICT Application in Curricula Delivery: The ICT is now integral part of the teaching programme. ICAR has also been promoting the use of ICT in teaching and practical. Mention whether the Degree Programme is meeting the expectations. If there is any shortfall, it shall be clearly mentioned.

Use of ICT application in teaching and practical for curricula delivery

Courses	Total courses	Theory	Practical	Type of ICT Application
M.Sc.	10	23	8	Power Point, blackboard, white board (Annexure BPP IV)
PhD	10	16	3	Power Point, blackboard, white board (Annexure BPP IV)

6.4.10. The information pertaining to 6.4.1 to 6.4.9 shall be provided for each one of UG, PG and PhD Degree Programmes, separately, and to be presented College-wise.

6.4.11. Since the accreditation of Programmes is related to the All India Admission from ICAR and also having weightage for College accreditation, therefore the data presented in the section 6.4 is liable to the verification at any stage.

6.4.12. Certificate (Applicable when SSR is submitted for Programme)

I, the Dean **Prof. Rajvir Singh**, hereby certify that the information contained in the Sections 6.4.1 to 6.4.9 are furnished as per the records available in the college, and degree awarding university.



Signature of Dean of the College with Date & Seal



PROGRAMME - 3



M.Sc. Chemistry
and
Ph.D. Chemistry



6.4 About the Department

The Department of Chemistry runs excellent teaching programs at M.Sc. and Ph.D. degree levels. The current areas of research in chemistry are: synthesis of agrochemicals having biological activities, isolation and characterization of plant based bioactive compounds, green chemistry and pesticide chemistry. The Department has successfully completed a number of research projects funded by the ICAR, CSIR and other agencies. The research findings from the various research programs in chemistry have been presented in the National and International conferences and also published in the form of a large number of research papers in reputed journals. Apart from the various research programs being carried out in the Department, its faculty members are lending support to other Departments of the university in interdisciplinary co-ordinated research programs, particularly, in the areas of Entomology, Soil Science, Agronomy and Genetics and Plant Breeding. In recognition of the excellent research activities in the Department, many of its faculty members and students have been offered national scientific awards and visiting fellowships.

The Department has a team of highly qualified and experienced faculty who have shown excellence both at the national and international levels. During last five years on an average five students were admitted in M.Sc. and five students in Ph.D(**Annexure CHEM I**). Presently there are 9 M.Sc. students and 18 Ph.D. students on roll(**Annexure CHEM II**).

There is no UG programme going on in the Department, however, the Department is offering two UG Courses to Undergraduates of College of Engineering and one UG Courses to Undergraduates of I.C. College of Home Science.

Objectives of the Department

- To impart quality education to the UG and PG students of different colleges of the University and to develop human resource specialized in various aspects of basic and applied Chemistry.
- To carry out research in basic and applied chemistry in areas relevant to agriculture viz. synthetic chemistry, natural products chemistry, environmental chemistry and bio-efficacy of chemical compounds
- To develop botanical based agrochemicals

6.4.1. Brief History of the Degree Programme: *Clearly mention in which year the degree program was initiated along with its objective and accomplishments.*

The M.Sc. programme in Chemistry was initiated in the year 1984 and Ph.D. was started in 1988.

Objectives of initiating M.Sc. programme

- To produce quality human resource in the discipline of Chemistry
- To provide knowledge to students in following research areas
- Natural Product Chemistry
- Bio-efficacy and Development of Agrochemicals
- Synthetic Chemistry
- Environmental studies: Chemical and physical aspects
- Green synthesis

Accomplishments of M.Sc. programme:

- Seven Students have been placed in Government sector jobs (**Annexure CHEM III A**)
- Six Students participated in conferences and symposia (**Annexure CHEM III B**)
- Five Students have been availing national level scholarships like POSE HSCST, INSPIRE

DST, ICAR JRF, CSIR JRF, UGC etc. (**Annexure CHEM IV**) and published papers in referred journals (**Annexure CHEM V**)

Objectives of initiating Ph.D programme:

Ph.D. Chemistry programme was initiated with the following objectives:

- To provide advanced knowledge in the discipline of Chemistry
- To provide training and specialization to students in following research areas
 - Natural Product Chemistry
 - Bio-efficacy and Development of Agrochemicals
 - Synthetic Chemistry
 - Environmental studies: Chemical and physical aspects
 - Green synthesis

Accomplishments of Ph.D programme:

- Seven Students have been placed in public and private sector jobs
- Seven Students have been availing national level scholarships like INSPIRE DST, ICAR JRF, CSIR JRF, UGC etc.
- Three Students were encouraged to participate in conferences (CHEM III B)
- Seven most of the students got fellowships/ stipend from university and other sources (CHEM IV)
- Six of the student has qualified NET, GATE and other national level exams (CHEM IV).
- Seven of our students have been getting fellowship like POSE, CSIR, ICAR, DST (INSPIRE) and merit fellowships (CHEM IV) and published papers in journals of repute (CHEM V)

6.4.2. Faculty Strength: *The faculty strength of the Degree Programme need to be given cadre-wise, both sanctioned and in-place (under the table mentioned below). Clearly mention the number of permanent faculty appointed for the Degree Programme, part time faculty being deputed from the other Departments (in such case mention the name of these Departments). If the Degree Programme is also taking the help of Research staff, extension staff, contractual faculty, guest faculty, adjunct faculty or any other arrangement being made to complete the curriculum, it should be clearly mentioned in the report.*

Designation	Sanctioned	In place*	Vacant	As per Fifth Deans' Committee
Professor and equivalent	1	2	1	There is no UG programme in the college
Assoc. Professor and equivalent	3	-	3	
Asst. Professor and equivalent	12	3	7	

Note: All the faculty of this programme is assigned the responsibilities for the multiple programmes.

*The faculty in positions also includes personal promotees.

The faculty attends various seminars, conferences, workshops at national and international levels regularly. Faculty of the department published various research papers in journals of national and international repute and book chapters.

6.4.3. Technical and Supporting staff: The position of the technical and supporting staff of the Degree Programme including farm and field workers need to be mentioned for both sanctioned and in-place.

In the Department of Human Development and Family Studies, there are 10 posts sanctioned for technical and supporting staff. In position there are 6 posts of technical and supporting staff, one person is re-employed as clerk and one person is on contractual basis against the post of messenger.

S. No.	Designation	Sanctioned	In place
1.	Office staff	1	1
	Clerk	1	1
	Peon	-	-
2.	Lab staff	2	2
	Lab Attendant	1	1
	Any other (SLA)	1	1

Note: All the staff is assigned the responsibilities for the multiple programmes.

6.4.4. Classrooms and Laboratories: Mention the number of class rooms and functional laboratories available for the degree programme and justify if it is sufficient to meet the course curricula requirement. Lists major equipments, laboratories, farm facilities, workshops and other instructional units being utilized for the award of the Degree Programme may be given. Mention theory and practical batches for the Degree Programme.

List of classroom and functional laboratories

No. of lecture rooms with seating capacity	One seminar room with seating capacity of 30
No. of labs under Dean's office with specialized purpose	Three Research, one UG and One PG
	1. Organic Lab No. 409 & 407: Synthesis and characterization of organic compounds and isolation of active principles from different plant material
	2. Inorganic Lab No. 420: Synthesis and characterization of inorganic compounds and isolation of active principles from different plant material

List of equipments at present available in the Department:

S. No.	Name of equipment	Location/Lab
1	Centrifuge 16000RPM (two)	Organic Chemistry Lab (Lab No. 409) Organic Chemistry Lab (Lab No. 407)
2	pH meter (two)	Organic Chemistry Lab (Lab No. 409) Organic Chemistry Lab (Lab No. 407)
3	Water Bath (four)	Organic Chemistry Lab (Lab No. 407) Organic Chemistry Lab (Lab No. 409) UG Chemistry Lab (Lab No. 413 B) PG Chemistry Lab (Lab No. 413A)
4	Spectrophotometer (one)	Organic Chemistry Lab (Lab No. 407)

5	Electronic Balance (four)	Organic Chemistry Lab (Lab No. 407) Organic Chemistry Lab (Lab No. 409) UG Chemistry Lab (Lab No. 413 B) PG Chemistry Lab (Lab No. 413A)
6	Circulating Water Bath (four)	Organic Chemistry Lab (Lab No. 407) Organic Chemistry Lab (Lab No. 409) UG Chemistry Lab (Lab No. 413 B) PG Chemistry Lab (Lab No. 413A)
7	Soxhlet Apparatus Magnetic stirrer (three each)	Organic Chemistry Lab (Lab No. 409) Organic Chemistry Lab (Lab No. 407) Organic Chemistry Lab (Lab No. 409)
8	Hot air oven (two)	Organic Chemistry Lab (Lab No. 407) Organic Chemistry Lab (Lab No. 409)
9	Refractometer (one)	PG Chemistry Lab (Lab No. 413A)
10	BOD Incubator (one)	Organic Chemistry Lab (Lab No. 409)
11	Muffle furnace (one)	PG Chemistry Lab (Lab No. 413A)
12	Digital conductivity meter (one)	Organic Chemistry Lab (Lab No. 407)
13	Rotor centrifuge (one)	Organic Chemistry Lab (Lab No. 407)

Theory and practical batches

Year	Theory			Practical		
	UG	M.Sc.	Ph.D	UG	M.Sc.	Ph.D.
2012-13	2 courses with one batch each	24 Courses with one batch each	10 Courses with one batch each	2 courses, one having one batch and other two batches	8 Courses with one batch each	-
2013-14	2 courses with one batch each	24 Courses with one batch each	10 Courses with one batch each	2 courses, one having one batch and other two batches	8 Courses with one batch each	-
2014-15	2 courses with one batch each	24 Courses with one batch each	10 Courses with one batch each	2 courses, one having one batch and other two batches	8 Courses with one batch each	-
2015-16	2 courses with one batch each	24 Courses with one batch each	10 Courses with one batch each	2 courses, one having one batch and other two batches	8 Courses with one batch each	-
2016-17	2 courses with one batch each	24 Courses with one batch each	10 Courses with one batch each	2 courses, one having one batch and other two batches	8 Courses with one batch each	-
2017-18	2 courses with one batch each	24 Courses with one batch each	10 Courses with one batch each	2 courses, one having one batch and other two batches	8 Courses with one batch each	-
Total	12	144	60	12	48	

6.4.5. Conduct of Practical and Hands-on-Training: *It is important to have a sound grasp of the theory that underlies any professional degree. But there are some skills that can only be learned through hands-on -practice. It is important that much of the learning material in any given course should be provided in a way that allows students to get as involved as possible*

to increase their knowledge and abilities. Clearly mention how far students are getting desired practical and hands-on-training as per the curriculum and meeting above mentioned requirements.

Degree programme/ Courses	Practical/ Hands-on-training courses	How far students are getting desired practical and hands- on-training as per the curriculum (bullet form)
For B.Sc (2 courses)		
Chem 100	Acid-base titration; identification of acid radicals; detections of elements (N,S,X) and functional groups, any two preparations: iodoform, aspirin, orange dye; removal of colour stains from clothes.	Students will be able to, Identification of radicals, Removal of colour stains from cloths, Detection of elements and organic functional groups
Chem 101	Determination of temporary and permanent hardness of water by EDTA method, estimation of chloride, dissolved oxygen, BOD and COD in water sample, available chlorine in bleaching powder, viscosity of oil, activity of water sample, carbonate and non-carbonate hardness by soda reagent, coagulation of water and chloride ion content, specific rotation of an optically active compound, λ_{\max} and verification of Lambert's beer law, calorific value of fuel, identification of functional groups (alcohol, aldehyde, ketone, carboxylic acid and amide) by infrared spectroscopy, chromatographic analysis, molar refraction of organic compounds	Students got basic knowledge about the following <ul style="list-style-type: none"> • Titration by EDTA method • BOD and COD in water sample • Chromatographics analysis • Organical functional groups
M.Sc. Chemistry (8 courses)		
Chem 504	Applications of spectroscopy for structural studies	Students got basic knowledge about the Infrared, Nuclear magnetic resonance, Mass spectrometry etc.
Chem 505	Conductivity; potentiometry; pH metry, polarography; amperometric titration, Spectrophotometry: flame-photometry; Refractometry; cryoscopic and ebulliosopic measurements; Chromatography, Distribution Law; Measurement of viscosity	Students will be able to following: <ul style="list-style-type: none"> • pH metry • conductivity • refractometry • chromatography • Viscosity
Chem 509	Potentimetric determination of formation constants of 3d-series transition metal ions	Students will be familiar to Formation constants

Chem 510	Preparation of inorganic complexes like $\text{Co}[\text{Hg}(\text{SCN})_4]$, $\text{Hg}[\text{Co}(\text{SCN})_4]$, $\text{Co}(\text{NH}_3)_5\text{Cl}] \text{Cl}_2$, $[\text{Cu}(\text{Gly})_2]$, Preparation of $[\text{Co}(\text{NH}_3)_5\text{NO}_2] \text{Cl}_2$, $[\text{Co}(\text{acac})_3]$, $\text{K}_4[\text{Co}_2(\text{C}_2\text{O}_4)_4(\text{OH})_2]$, $\text{K}_2[\text{Cu}(\text{C}_2\text{O}_4)_2]$, $[\text{Co}(\text{NH}_3)_4]\text{SO}_4$ and $\text{Na}_3[\text{Co}(\text{NO}_2)_6]$, Determination of magnetic characteristic of above complexes, Analysis of alloys using conventional physical and chemical techniques, Complexometric titrations.	Students will be able to following: <ul style="list-style-type: none"> • Complex preparation • Complexometric titrations • Magnetic properties
Chem 517	Separation and identification of the components of a binary organic mixture. Synthetic preparations involving two steps. Quantitative analysis of phenol, aniline. Quantitative analysis of sulphur, nitrogen. UNIT-V: Isolation experiments.	Students will be able to enumerate following: <ul style="list-style-type: none"> • Quantitative analysis • Synthetic preparation • Components Identification
Chem 518	Testing of pesticidal formulations from point of view of their quality; Estimation of active principles of pesticides employing different analytical techniques in different matrices, Determination of pesticide residues in different commodities by GLC.	<ul style="list-style-type: none"> • Students are able to Gas layer chromatography for pesticides estimation • Analytical Techniques for active pesticides and Pesticide formulation
Chem 521	Identification and preparation of organic compounds	<ul style="list-style-type: none"> • Students will be able to understand Organic compounds preparation
Chem 523	Identification of intermediates and derivatives used in dyes. Preparation and isolation of dyes. Determination of copper number, methylene number and carboxylic group in degraded cellulose.	<ul style="list-style-type: none"> • Students will be able to understand the following: • Dyes preparation • Intermediates identification

6.4.6. Supervision of students in PG/Ph.D programmes: *Supervision of M.Sc. students in PG programme offered by the Department:*

Year	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	2	7	0.3:1
2013-14	3	7	0.4:1
2014-15	5	7	0.7:1
2015-16	6	6	1:1
2016-17	11	6	1.8:1
2017-18	9	5	1.8:1

Details of Ph.D programmes offered by the Department:

Year	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	2	7	0.3:1
2013-14	5	7	0.7:1

2014-15	10	7	1.4:1
2015-16	15	6	2.5:1
2016-17	14	6	2.3:1
2017-18	18	5	3.6:1

6.4.7. Feedback of stakeholders (Students, parents, industries, employers, farmers etc.):

Mention the feedback mechanism (duly supported by the documents) from different stakeholders of the degree programme. What action the University has taken in last five years to address the issues raised in the feed back?

Alumni feedback is invited on the basis of following criteria.

- Delivery of courses contents
- Teaching methodology
- Student teacher interaction
- Punctuality of the teacher

Feedback from the students is obtained to evaluate the quality of teaching. On these suggestions, courses are periodically revised These courses are then approved by DAC and BOS, COBSH for inclusion in the course curricula

6.4.8. Student intake and attrition in the programme for last five years: *Year wise information on sanctioned strength, actual intake and attrition in the last five years of the Degree Programme, in the tabular form, shall be provided.*

Name of the Degree Programme	Actual student admitted in last five years						Attrition (%)					
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
M.Sc.	2	3	3	5	2	6	-	33	-	20	-	-
Ph.D.	3	5	5	2	6	5	-	-	-	-	-	-

6.4.9. ICT Application in Curricula Delivery: *The ICT is now integral part of the teaching programme. ICAR has also been promoting the use of ICT in teaching and practical. Mention whether the Degree Programme is meeting the expectations. If there is any shortfall, it shall be clearly mentioned.*

Courses	Total courses	Theory	Practical	Type of ICT Application
B.Sc	2	2	2	e-manuals, Powerpoint, videos, e-books, white board
M.Sc.	32	24	8	Powerpoint, e-books, white board, videos, e-manuals
Ph.D.	10	10	-	white board, e-manuals, Powerpoint,, videos, e-books

6.4.10. The information pertaining to 6.4.1 to 6.4.9 shall be provided for each one of UG, PG and Ph.D Degree Programmes, separately, and to be presented College-wise.

6.4.11. Since the accreditation of Programmes is related to the All India Admission from ICAR and also having weightage for College accreditation, therefore the data presented in the section 6.4 is liable to the verification at any stage.

6.4.12. Certificate (Applicable when SSR is submitted for Programme)

I, the Dean **Prof. Rajvir Singh**, hereby certify that the information contained in the Section 6.4.1 to 6.4.9 are furnished as per the records available in the college, and degree awarding university.



Signature of Dean of the College with Date & Seal



PROGRAMME - 4



M.Sc. Food Science & Technology

and

Ph.D. Food Science & Technology



6.4 About Department of Food Science and Technology

The Department was established in 2001 and is working on different aspects of food processing, preservation and quality control. The faculty, staff and students in this centre are members of a large interdisciplinary team of scientists at CCS HAU who are working coherently to improve the availability and quality of food. Students at the centre enjoy the combined advantages offered by the university programme as well as the compulsory industrial training. The main objective of the centre is to develop trained manpower and appropriate technology for food processing industry.

The Department offers M.Sc. and Ph.D. programmes in Food Science and Technology. There is no UG programme going on in the Department, however, the Centre is offering three UG Courses to Undergraduates of College of Agriculture under experiential learning module.

Programme Level	Name of the Program/ Course	Duration	Number of Seats (Gen+ICAR)	Entry Qualification	Medium of instruction
Food Science & Technology	M.Sc.	2 Years	2+1	Bachelor's degree in Science/Agri./ Home Science/Agri. Engineering/ FST/Food Tech.	English
	Ph.D.	3years (minimum)	2+0	M.Sc.(Food Science Technology)	English

The department has so far produced 216 M.Sc. and 8 Ph.D scholars some of them occupying high positions at the national level. The students from this Centre either have developed their own entrepreneurship or are well placed at various executive positions in food industries like Mother Dairy, Nestle, Parle, Pan Foods, Haldiram, Reliance Fresh, Hindustan Lever, Tops India, Sunfeast, Bakeman, Yalkult, Pepsico, Midas foods, etc. From 2012 onwards 33 M.Sc. students passed ARS-NET, One M.Sc. student placed as ARS scientist in 2014.

From 2012 onwards students are availing various fellowships like ASPEE –Foundation Fellowship, ICCR Scholarship, ICAR-JRF, BR Ambedkar Post Matric SC/ST Scholarship, ICAR-India-Afghanistan Fellowship, ICAR-Africa Fellowship and ICAR-JRF. **Since 2012-14 till date, 11 M.Sc. students from foreign countries (Afghanistan, Sri Lanka, Indonesia, Uganda, Nigeria, Vietnam) were admitted and have successfully completed their M.Sc. (FST) degree.** All pass out students are ARS-NET qualified. One Ph. D. student placed as ARS scientist in 2014. At present, there are 11 M.Sc. students and 5 Ph.D. students enrolled in CFST.

Departmental Library

No. of books held by departmental library	81
No. of PhD/MPhil theses held by departmental library	M.Sc. Thesis-217 Ph.D. Thesis-12

6.4.1. Brief History of the Degree Programme:

Centre of Food Science & Technology (CFST) was established in 2001 with the staff working on different aspects of food processing, preservation and quality control. The Centre is having Faculty members with specialization in Fruit and Vegetable Processing, Microbiology, Postharvest Physiology, Food & Nutrition and Food Technology. The Centre admits 4-5 students every year in M.Sc. programme through an entrance test being conducted by the University in the month of June. The M.Sc. programme involves teaching, laboratory exercises and 4 weeks compulsory in-plant training in various food industries. The students also carry out research work and submit a thesis before being finally eligible for the award of Degree.

Objectives of initiating M.Sc. programme

M.Sc. programme in Food Science was initiated in the year 1996-97 under Basic Sciences College. Later a separate Centre of Food Science and Technology was established in 2001 and M.Sc. in Food Science and Technology was started. The objectives to initiate this degree programme were

- to develop trained manpower for food processing industry.
- to provide the students in-depth and multidisciplinary knowledge in the field of food science and technology
- to develop and evaluate value-added food products.
- to develop enterprising skills in the students

Accomplishments of M.Sc. programme

- The students from this Centre either have developed their own entrepreneurship or are well placed at various executive positions in food industries like Mother Dairy, Nestle, Parle, Pan Foods, Haldiram, Reliance Fresh, Hindustan Lever, Tops India, Sunfeast, Bakeman, Yalkult, Pepsico, Midas foods, etc. [See Annexure FST I(a)]
- Till date about 216 students have passed out from the Centre and are well placed in different food industries and academic institutions.
- From 2012-13 onwards, 19 students passed ARS-NET, One M.Sc. student placed as ARS scientist in 2014 [See Annexure FST I(c)].
- The students availed/are availing various fellowships like ASPEE –Foundation Fellowship, ICCR Scholarship, ICAR-JRF, BR Ambedkar Post Matric SC/ST Scholarship, ICAR-India-Afghanistan Fellowship, ICAR-Africa Fellowship and ICAR-JRF [See Annexure FST I(d)].
- There were 53 research papers published in the last 5 years from the research work done by M.Sc. students during their degree programme [See Annexure FST II]
- The students participated and 5 students won prizes in various events of Youth Festival at CCS HAU, Hisar.
- The students organize every year World Food Day, participate in activities like declamation contest, food quiz, poster and slogan writing competition, etc. and won the prizes [See Annexure FST IV].
- The students participate in conference/seminar etc. and detail are listed in Annexure FST -V
- Harsha Rohilla and Monika Kakkar won position in Academics in COBS&H during 2016-17.
- Ms. Harshitha T. was awarded 1st prize in poster presentation in poster presentation in National Seminar on “Reorientation of Agricultural Research to Ensure National Food Security” from January 6 to 7, 2014 at CCSHAU, Hisar.

- Mr. Sumit Kumar won Third Prize in Oral Presentation in National Conference on “Advances in Food Science and Technology - Current Trends and Future Perspectives” (AFST-2017) organized by Department of Food Technology, Akal College of Agriculture, Eternal University, Baru Sahib, Distt. Sirmour (HP) from March 24 to 25, 2017.
- CFST students attended, participated and won prizes in various events during Inter-College Youth Festival, Annual Athletic Meet, All India Inter Agriculture Sports, etc.
- Ms. Meenu Roperia was awarded AFST(I) Education and Publication Trust Scholarship (2017).
- **Since 2012-14 till date, 11 students from foreign countries (Afghanistan, Sri Lanka, Indonesia, Botswana, Uganda, Nigeria, Viet Nam) were admitted and have successfully completed their M.Sc. (FST) degree [See Annexure FST I(e)].**

Objectives of initiating Ph.D programme

- From academic year 2010-11, Ph.D. programme has been started with the following objectives
 - To produce advanced quality human resource in the discipline of Food Science and Technology
 - **To conduct applied research with emphasis in agriculture and process engineering**
 - **Contribution in research , especially in thrust area like:**
 - i) Development of nutritionally rich value added high shelf life processed foods
 - ii) Production, standardization, nutritional evaluation and value addition of the products based on horticultural crops, underutilized pulses and medicinal plants
 - iii) Development of instant and convenience foods
 - iv) Lab. to industry scaling up of food processing technologies
 - v) Food safety and quality management
 - vi) Refinement and transfer of postharvest and value addition technologies

The centre admits 2 students every year and the basic requirement for admission to Ph.D. is M.Sc. (Food Science & Technology).

Accomplishments of Ph.D. programmes

- The Ph.D. programme was started w.e.f. 2010-11 and till date 8 students have passed out from the Centre [See FST I(a)]. All the pass out students are well placed in different academic institutions.
- All the 12 pass out students are ARS-NET qualified.
- Ms. Anuradha selected as ARS scientist in 2014.
- The students availed/are availing various fellowships like Rajiv Gandhi National Fellowship (UGC), ICAR-SRF, INSPIRE, DST, Rajiv Gandhi National Fellowship (RGNF), ICAR Netaji Subhash International Fellowship [See FST I (d)].
- There were 8 research papers published in the last 5 years from the research work done by the students during their Ph.D. degree programme [See FST I (e)]
- Ms. Aneeta won Second Prize in Nutritious Bakery Products Competition at International Seminar on Wheat and Wheat Products from February 10 to 11, 2012 at New Delhi.
- Ms. Sucheta participated in projects for ANVESHAN: Students’ Research Convention (North Zone) of Association of Indian Universities for UG and PG students held during December 28 to 30, 2015.

- Ms. Simran Arora was awarded 1st Prize in oral presentation, and Ms. Jyoti Prabha was awarded 2nd position in poster presentation in National Seminar on “Reorientation of Agricultural Research to Ensure National Food Security” from January 6 to 7, 2014 at CCSHAU, Hisar.
- Ms. Simran Arora won Second Prize in Poster Presentation in National Conference on “Advances in Food Science and Technology - Current Trends and Future Perspectives” (AFST-2017) organized by Department of Food Technology, Akal College of Agriculture, Eternal University, Baru Sahib, Distt. Sirmour (HP) from March 24 to 25, 2017.

6.4.2. Faculty Strength: *The faculty strength of the Degree Programme need to be given cadre-wise, both sanctioned and in-place (under the table mentioned below). Clearly mention the number of permanent faculty appointed for the Degree Programme, part time faculty being deputed from the other departments (in such case mention the name of these departments). If the Degree Programme is also taking the help of Research staff, extension staff, contractual faculty, guest faculty, adjunct faculty or any other arrangement being made to complete the curriculum, it should be clearly mentioned in the report.*

S. No.	Sanctioned Faculty and designation	Faculty sanctioned			Faculty in place			Vacant position		
		T	R	E	T	R	E	T	R	E
1.	Professor and equivalent	1	-	-	3*	-	-	1	-	-
2.	Assistant Professor and equivalent	7	-	-	2	-	-	2**	-	-

* Three are presently as Professors under CAS.

**Already advertised.

Note: All the faculty is assigned responsibility for multiple programmes

As per Fifth Deans' Committee, there is no UG programme in the college

Faculty Profile

Name	Gender	Designation	Specialization	Experience	Qualification
Dr. (Mrs.) Raj Bala Grewal	Female	Director	Food Science & Nutrition	36 years	Ph.D.
Dr. Saleem Siddiqui	Male	Professor and Head	Post Harvest Technology	34 years	Ph.D.+PDF
Dr. Rakesh Gehlot	Male	Professor	Fruit and Vegetables processing	27 years	Ph.D.
Dr. (Mrs) Rekha	Female	Asstt. Professor	Food Science & Technology	7 years	Ph.D.+ NET
Dr. (Mrs) Anju Kumari	Female	Asstt. Professor	Food Microbiology	5 years	Ph.D.

Note: All the faculty of this programme is assigned the responsibilities for the multiple programmes. Faculty appointed in teaching also carry research and extension activities.

6.4.3. Technical and Supporting staff: *The position of the technical and supporting staff of the Degree Programme including farm and field workers need to be mentioned for both sanctioned and in-place.*

S. No.	Sanctioned Technical and supporting staff	Technical and supporting staff in place
1.	Assistant	1
2.	Clerk	1
3.	JSS/Stenographer	1
4.	Lab Assistant	1
5.	Messenger	1
6.	Beldar	2
7.	Farm and field worker(specify) Lab. Technician	1
8.	Senior Lab Assistant	1

Note: All the staff is assigned the responsibilities for the multiple programmes.

6.4.4. Classroom and laboratories: *Mention the number of class rooms and functional laboratories available for the degree programme and justify if it is sufficient to meet the course curricula requirement. Lists major equipments, laboratories, farm facilities, workshops and other instructional units being utilized for the award of the Degree Programme may be given. Mention theory and practical batches for the Degree Programme.*

Name of College/ Department	CFST
No. of lecture rooms with LCD	1 Lecture Room for PG Classes (seating capacity 30) 1 Seminar Room for PG Classes (seating capacity 30)
No. of labs with specialized purpose	7 (5 labs and 2 pilot plants) Fruits & Vegetables Processing Lab (Lab No. 1) Food Chemistry Lab (Lab No. 3) Instrumental Analysis Lab (Lab No. 4) Food Microbiology Lab (Lab No. 5) • Pilot Plant of Fruits & Vegetables Processing (Lab No. 6) • Spray dryer pilot plant (Lab No. 2) Cereal Technology Lab (Lab No. 7)
Any other instructional units being utilized for the award of the Degree Programme	Pilot Plants -Two

List of equipments available in CFST

Sr. No.	Name of equipment	Location/ Lab.	Sr. No.	Name of equipment	Location /Lab.
1	Orbital Shaking Incubator	Lab.7	20	Micro Processor Spectrophotometer	Lab.7
2	Fat Analyzer System	Lab.7	21	Revolutionary Research 22 Centrifuge	Lab.1

3	Protein Analyzer System	Lab.7	22	Grit Making Machine	Lab.7
4	Water Activity Meter (Lab.Swift)	Lab.7	23	Packaging Machine with N Flux	Lab.7
5	Farinograph,	Lab.7	24	Coating Pan	Lab.7
6	Rheofermentometer,	Lab.7	25	Flaking Machine	Lab.7
7	Rapid visco-analyser	Lab.7	26	Display Chamber (Panasonic Showcase)	Lab.7
8	Junior mill	Lab.7	27	Interactive Podium with mike	Seminar Room
9	Texture analyser	Lab.7	28	Modular Compact Rheometer	Lab.7
10	Soxhlet Extraction unit	Lab.7	29	Balance Mettler	Lab.4
11	Sewain Making Machine	Lab.7	30	Vertical Autoclave	Lab.5
12	Tissue Terror Homogenizer	Lab.4	31	Spectrophotometer	Lab.4
13	Noodle Making Machine	Lab.7	32	Water Bath NSW-133	Lab.4
14	Food Extruder Lab. Model	Lab.7	33	Water Distillation with chilling unit	Lab.3
15	Revolving Research Centrifuge	Lab.7	34	Refrigerator Whirlpool	Lab.5
16	Papad Making Machine	Lab.7	35	Spectrophotometer	Lab.4
17	BOD Incubator	Lab.1	36	HP Desktop	Office
18	Multimedia Projector	Seminar Room	37	Freeze Dryer(Lypholizer)	Lab.4
19	Analytical Balance	Lab.7			

Theory and practical batches for UG Programme

There is no UG programme going on in the Department, however, Department is offering three UG Courses under Module VI to Undergraduates of College of Agriculture.

Theory and practical batches for PG Programmes

On an average, one batch of theory and one batch of practical is taken in M.Sc. and Ph.D.courses.

6.4.5. Conduct of Practicals/Hands-on-Training:

6.4.6.

Degree programme/ Courses	How far students are getting desired practicals / hands-on-training as per the curriculum
For B.Sc. (Agriculture) (3 courses)	
FST-401 FST-402 FST-403	Students are trained to develop value added food products from fruits, vegetables, cereals, pulses and oilseeds through practical demonstrations and hands on practice Efforts are made for building entrepreneurship spirit and business management competence among the students

M.Sc. – FST (15 courses)	
FST 452 INTRODUCTION TO MICROBIOLOGY	Students acquaint with history, classification and role of Microbiology in agriculture, food and environment.
FST 501 FOOD CHEMISTRY AND NUTRITION	Students acquaint with properties, role of various constituents in foods, interaction and changes during processing and importance of various foods and nutrients in human nutrition.
FST 502 FOOD MICROBIOLOGY	Students acquaint with different groups of micro-organisms associated with food, their activities, destruction and detection in food
FST 503 FOOD ENGINEERING	Students acquaint with basic principle of Food Engineering and its Processes, with importance of various foods process and their evaluation.
FST 504 PRINCIPLES OF FOOD PROCESSING	Students acquaint with principles of different techniques used in processing and preservation of foods.
FST 505 FOOD PACKAGING	Students acquaint and equip the students with packaging methods, packaging materials, packaging machineries, modern packaging techniques etc.
FST 506 FOOD QUALITY SYSTEMS AND MANAGEMENT	Students acquaint with food quality parameters and control systems, food standards, regulations, specifications.
FST 507 TECHNIQUES IN FOOD ANALYSIS	Students get familiarize with the conventional analysis of raw and processed food products of all commodity technologies used for routine quality control in food industry and their role on nutritional labeling.
FST 511 POST HARVEST MGT. OF FRUITS AND VEGETABLES	Students acquaint with the proper handling technologies of fruits and vegetables to reduce post harvest losses and value addition.
FST 512 TECHNOLOGY OF FRUITS AND VEGETABLE PROCESSING	Students acquaint with principles and methods of preservation and processing of fruits and vegetables into various products.
FST 513 TECHNOLOGY OF CEREALS, PULSES AND OILSEEDS	Students acquaint with processing technologies for product development and value addition of various cereals, pulses and oilseeds.
FST 515 TECHNOLOGY OF MILK AND MILK PRODUCTS	Students acquaint with techniques and technologies of testing and processing of milk into various products.
FST 520 FOOD ADDITIVES AND INGREDIENTS	Students get an insight into the additives that are relevant to processed food industry for shelf life extension, processing aids and sensory appeal.
FST 521 INDUSTRIAL MICROBIOLOGY	Students acquaint with application of micro-organisms for the production of Industrial products with particular reference to foods and food ingredients.
FST 528 SENSORY EVALUATION	Students acquaint with sensory quality parameters, and methods of sensory evaluation of foods.
Ph. D. – FST (1 course)	
FST 602 MODERN FOOD MICROBIOLOGY	Students learn the evaluation of microorganism in raw and processed products by using various techniques and recent advances and applications in the area of food microbiology.

6.4.6. Supervision of students in PG/PhD programmes: *Number of students being supervised by Faculty in case of Masters/Ph. D Programme (as per ICAR/UGC guidelines).*

Details of M.Sc. programmes offered by the Department:

Academic year	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	11	4+1*=5	2.2:1
2013-14	8	5+1*=6	1.3:1
2014-15	14	5+2*=7	2.0:1
2015-16	13	5+2*=7	1.8:1
2016-17	9	5+2*=7	1.3:1
2017-18	11	5+1*=6	1.8:1

* = Faculty members associated from Dept. of Processing and Food Engineering, COAE&T

Details of Ph.D. programmes offered by the Department:

Academic year	Number of Students on roll	Number of PG Faculty	Student-teacher Ratio
2012-13	9	4+1*=5	1.8:1
2013-14	12	5+1*=6	2.0:1
2014-15	11	5+2*=7	1.6:1
2015-16	12	5+2*=7	1.6:1
2016-17	10	5+2*=7	1.4:1
2017-18	7	5+1*=6	1.1:1

* = Faculty members associated from Dept. of Processing and Food Engineering, COAE&T

6.4.7. Feedback of stakeholders (Students, parents, industries, employers, farmers etc.): At present there is a system of annual self appraisal report (SAR) with respect of all teaching faculty. SARs are reviewed by the Deans and Directors for performance appraisal and finally approved by the Worthy Vice-Chancellor. Students of Professional Elective course are placed in different institutions for In-plant training. The stakeholders' feedback on the overall performance and quality of the institutions is obtained through general meetings.

6.4.8. Student intake and attrition in the programme for last five years: *Year wise information on sanctioned strength, actual intake and attrition in the last five years of the Degree Programme, in the tabular form, shall be provided.*

Name of the Degree Programme	Actual student admitted in last five years						Attrition (%)					
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
M.Sc. FST	4	5	9	4	4	6	0	0	0	0	0	0
Ph.D. FST	3	3	3	2	1	2	0	0	0	0	0	0

6.4.9. ICT Application in Curricula Delivery: *The ICT is now integral part of the teaching programme. ICAR has also been promoting the use of ICT in teaching and practical. Mention whether the Degree Programme is meeting the expectations. If there is any shortfall, it shall be clearly mentioned.*

Courses	Course Title	Theory + Practical	Type of ICT Application
M.Sc. (18 Courses)	FST 501	2+1	PPT
	FST 502	2+1	PPT, e-Manual
	FST 503	2+1	PPT
	FST 504	2+1	PPT
	FST 505	2+1	PPT
	FST 506	1+1	PPT
	FST 507	1+2	PPT, e-Manual
	FST 511	2+1	PPT, e-Manual
	FST 512	2+1	-
	FST 513	2+1	PPT, e-Manuals
	FST 514	2+1	PPT
	FST 515	2+1	PPT
	FST 516	2+1	PPT
	FST 517	1+1	PPT
	FST 518	1+1	PPT, e-Manual
	FST 520	2+1	PPT
	FST 521	2+1	PPT
	FST 528	1+1	PPT, e-Manual
Ph. D. (6 courses)	FST 601	3+0	PPT
	FST 602	2+1	PPT
	FST 603	2+0	PPT
	FST 604	2+1	PPT
	FST 605	2+0	PPT
	FST 609	2+0	PPT

6.4.10. The information pertaining to 6.4.1 to 6.4.9 shall be provided for each one of UG, PG and PhD Degree Programmes, separately, and to be presented College-wise.

6.4.11. Since the accreditation of Programmes is related to the All India Admission from ICAR and also having weightage for College accreditation, therefore the data presented in the section 6.4 is liable to the verification at any stage.

6.4.12. Certificate (Applicable when SSR is submitted for Programme)

I, the Dean, **Prof. Rajvir Singh**, hereby certify that the information contained in the Section 6.4.1 to 6.4.9 are furnished as per the records available in the college, and degree awarding university.



Signature of Dean of the College with Date & Seal



PROGRAMME - 5



M.Sc. Statistics
and
Ph.D. Statistics



6.4. About the Department

The Department of Mathematics, Statistics and Physics has been imparting quality education since its inception in 1971. It has three major components viz., teaching, research and consultancy. The Department offers courses of Mathematics, Statistics and Physics for UG and PG students of various colleges of the university i.e., Agriculture, Basic Sciences & Humanities, Agricultural Engineering and Home Science. This department has a strong research program on theoretical and applied aspects with emphasis on applications of Statistics in agriculture and allied fields. Besides supporting other disciplines in their research, the department is running its own M.Sc. programme in Statistics and Physics and Ph.D. programme in Statistics. Advisory and consultancy services are also provided by the faculty members to research scholars and scientists of the entire university with the following objectives:

- To provide quality education in Statistics and Mathematics
- To develop human resources in Statistics to meet out the challenges and improve the quality of agricultural research.
- To conduct research in thrust areas related to agriculture and related fields
- To assist research scholars and agricultural scientists in planning their experiments, analysis and interpretation of their research data
- To develop professionals in Statistics with adequate knowledge of software packages
- To impart training to research scholars and statisticians of SAUs and ICAR Institutes

6.4.1. Brief History of the Degree Programmes:

Well trained students of statistics have great scope and job opportunities in teaching and research in colleges and universities as well as in the private sectors. Competent statisticians are in great demand for business analytics and conducting marketing research in multinational companies. Industrial quality control and consultancy are other areas open to the professional statisticians. The Dept. of Maths, Stat. & Physics offers M.Sc. and Ph.D. in Statistics. The entry qualification for M.Sc. is B.Sc. with Statistics/Mathematics or B.Tech/B.Sc. (Hons.) Agri. For Ph.D. a candidate should have done Masters in Statistics or Mathematics. The M.Sc. programme in Statistics started in the year 1974 and the Ph.D. programme was initiated in the year 1975. The students are trained to face any kind of challenge in their career. The courses taught by the department have been revised as per the recommendations of the ICAR at national level. Most of the ex-students of this department are very well placed at national and international levels. Some of them are in faculty and other responsible positions in universities and institutes of national and international repute.

Objectives of initiating M.Sc. programme

- To develop human resources with adequate expertise in Statistics for analyzing and interpreting the agricultural and allied data.
- Providing the students both conceptual and operational knowledge in different areas of Statistics and Mathematics.

Accomplishments of M.Sc. programme

- The department has produced 86 M.Sc. students till date, and out of these 14 students have passed out during the last five years and 18 students are on roll (**Annexure STAT I**)
- The department has well developed infra structure for the M.Sc. Programme with seminar room and well equipped computer lab

- The following M.Sc. passed out students got various positions in different organizations
 - a) Vikas Joon (2009BS148M, Asstt. Scientist, ICAR)
 - b) Naveen (2015BS23M, Junior Technical Assistant, Central ware housing corporation)
 - c) Swati (2013BS23M, Statistician, Zafin Software Centre of Excellence Pvt Ltd)
 - d) Poonam (2013BS26M, Associate Analyst, Google, Gurugram)
- One student named Muzahid Khan got UGC fellowship in 2017 and has been recently selected as Asstt. Professor in SKN Agricultural University, Jobner, Rajasthan
- Three students cracked UGC NET in the field of Population Studies
- Students' research brought out 11 publications during last five years on various aspects of statistics and in the field of agriculture. Out of these, five publications are bearing NAAS Rating more than 5 and four are lying between 3-5 (**Annexure STAT IIa**)
- Six M.Sc. students participated in national/international conferences/seminars etc. (**Annexure STAT III**)
- Six students participated and got prizes in different co-curricular activities during last five years (**Annexure STAT IV**)

Objectives of initiating Ph.D. programme

- To produce advanced quality human resource in the discipline of Statistics and Applied Statistics
- To conduct research with emphasis on the tools/techniques of statistics useful for field scientists
- Contribution in research, especially in the following thrust area:
 - Stochastic Processes
 - Design of Experiments
 - Genetic Statistics
 - Sample Surveys
 - Statistical Inference
 - Linear Models
 - Regression Analysis
 - Time Series Analysis.
- Understanding the interrelations among various areas of statistics and agriculture/ allied fields

Accomplishments of Ph.D. programmes

- The department has produced so far 32 Ph.D. scholars and 4 students have completed their Ph.D. degree during the last five years and 11 students are on roll
- Three Ph.D. students out of four are well placed; one student has joined as Statistical Assistant, Department of Agriculture and farmers' welfare, Haryana and two of them were in-service candidates in the capacity of Asstt. Scientists from ICAR, New Delhi.
- The department has well developed infra-structure for the Ph.D. Programme with seminar room and well equipped computer lab
- Students' research brought out 10 publications during last five years on various aspects of statistics and in the field of agriculture. Out of these, four publications are bearing NAAS Rating more than 5 and two are lying between 3-5 (**Annexure STAT IIb**)
- Four Ph.D. students participated in national/international conferences and seminars etc. (**Annexure STAT III**)

- One student participated and got prizes in extra co-curricular activities during last five years (Annexure STAT IV)

Student data of the last five years

Degree Programme	Specialization	Year of start	No. of seats							No. of students passed out						
			Y1	Y2	Y3	Y4	Y5	Y6	Total	Y1	Y2	Y3	Y4	Y5	Y6	Total
M.Sc.	Statistics	1974	4+ 1	4+ 1	4+ 1	4+1	2+ 1	5+ 2	23+ 7	-	-	2	6	5	2	15
Ph.D.	Statistics	1975	2+ 0	2+ 0	2+ 0	2+ 1	2+ 0	2+ 0	12+ 1	-	-	1	1	-	2	4
Details in Annexure STAT I																

6.4.2 Faculty Strength: *The faculty strength of the Degree Programme need to be given cadre-wise, both sanctioned and in-place (under the table mentioned below). Clearly mention the number of permanent faculty appointed for the Degree Programme, part time faculty being deputed from the other departments (in such case mention the name of these departments). If the Degree Programme is also taking the help of Research staff, extension staff, contractual faculty, guest faculty, adjunct faculty or any other arrangement being made to complete the curriculum, it should be clearly mentioned in the report.*

S. No.	Designation	Sanctioned	In place*	Vacant	As per Fifth Deans' Committee
1.	Professor and equivalent	1	4	1	There is no UG programme in the college
2.	Associate Professor and equivalent	4	-	3	
3.	Assistant Professor and equivalent	11	3	5	
5.	Contractual faculty (specify)		2		
6.	Adjunct faculty (specify)	-	2		

* Faculty in place under Professor includes personal promotes.

Note: All the faculty of this programme is assigned the responsibility of multiple programmes.

Five members of faculty have retired during the period of report.

6.4.3. Technical and Supporting staff: *The position of the technical and supporting staff of the Degree Programme including farm and field workers need to be mentioned for both sanctioned and in-place.*

S. No.	Designation	Sanctioned	In place	Vacant
1.	Assistant	1	1	-
2.	Clerk	1	-	1

3.	JSS/Steno	1	1	-
4.	Lab Assistant	1	-	1
5.	Any other (Sr.Lab.Asstt)	1	1	-

Note: The staff members are assigned the responsibility of multiple programmes

6.4.4. Classrooms and Laboratories: *Mention the number of class rooms and functional laboratories available for the degree programme and justify if it is sufficient to meet the course curricula requirement. List of major equipments, laboratories, farm facilities, workshops and other instructional units being utilized for the award of the Degree Programme may be given. Mention theory and practical batches for the Degree Programme.*

Classrooms and functional laboratories

No. of lecture rooms along with LCD projector with sitting capacity	One (50) Room No. 14
Any other instructional units being utilized for the award of the Degree Programme	DST-FIST Statistical Computation Lab (Room No. 15)

List of major equipments at present

Sr. No.	Name of equipment	Location/Lab
1.	Interactive Podium (one)	Seminar Room (R. No. 14)
2.	Computer System (Eleven)	DST-FIST Statistical Computation Lab (R. No. 15)

Theory and practical batches for UG Programme

There is no UG programme going on in the department, however, the department is offering seven UG courses to undergraduates of different colleges (COA, Hisar & Kaul, COHS, Hisar and COAE&T, Hisar).

- For theory batches, there are 13 batches for first year and one batch for second year with an average of about 35-40 students in each batch.
- For practical batches, there are 19 batches for first year and two batches for second year with an average of about 18-20 students in each batch.

Theory and practical batches for PG Programmes

At M.Sc. level, the department offers an average of 28 theory/21 practical courses every year with an average of 4-5 students per batch. Similarly, average(s) of 6 theory/4 practical courses are offered annually at Ph.D. level with an average of 2-3 students per batch.

Year	Theory		Practical	
	M.Sc.	Ph.D.	M.Sc.	Ph.D.
2012-13	1 course with 5 batches 1 course with 2 batches 25 courses with 1 batch each	2 courses with 1 batch each	1 course with 5 batches 1 course with 2 batches 22 courses with 1 batch each	1 course with 1 batch

2013-14	1 course with 5 batches 1 course with 2 batches 25 courses with 1 batch each	5 courses with 1 batch each	1 course with 5 batches 1 course with 2 batches 17 courses with 1 batch each	4 courses with 1 batch each
2014-15	1 course with 5 batches 1 course with 2 batches 25 courses with 1 batch each	5 courses with 1 batch each	1 course with 5 batches 1 course with 2 batches 19 courses with 1 batch each	3 courses with 1 batch each
2015-16	1 course with 5 batches 1 course with 2 batches 24 courses with 1 batch each	6 courses with 1 batch each	1 course with 5 batches 1 course with 2 batches 17 courses with 1 batch each	4 courses with 1 batch each
2016-17	1 course with 5 batches 25 courses with 1 batch each	8 courses with 1 batch each	1 course with 5 batches 19 courses with 1 batch each	5 courses with 1 batch each
2017-18	1 course with 5 batches 32 courses with 1 batch each	10 courses with 1 batch each	1 course with 5 batches 25 courses with 1 batch each	6 courses with 1 batch each
Total	194	36	157	23

6.4.5. Conduct of Practical and Hands-on-Training: *It is important to have a sound grasp of the theory that underlies any professional degree. But there are some skills that can only be learned through hands-on -practice. It is important that much of the learning material in any given course should be provided in a way that allows students to get as involved as possible to increase their knowledge and abilities. Clearly mention how far students are getting desired practical and hands-on-training as per the curriculum and meeting above mentioned requirements.*

Degree programme/ Courses with Cr. Hrs.	Practical and Hands-on-training	How far the students are getting desired practical and hands-on-training as per the curriculum (bullet form)
For B.Sc. (6 courses)		
Stat 100/ Stat 101 Elementary Statistics/ Statistical Methods 1+1	<ul style="list-style-type: none"> • Computation of correlation coefficient and its testing • Fitting of simple regression equations • Analyses of CRD, RBD & LSD • SND test/ t-test for single mean and difference between two means • Chi-square test 	The students are acquainted with the basic concepts of statistics and mathematics applicable in agriculture and its allied fields
Math 101 Mathematical Methods in Agriculture	<ul style="list-style-type: none"> • Problems based on AP, GP and binomial expansion • Operation on Matrices, Inverse of Matrices and solution of system of equations, 	The students are acquainted with the basic concepts of statistics and mathematics applicable in agriculture

3+1	Problems on differentiation and Integration	and its allied fields
Math 104 Engg. Mathematics-I 2+1	<ul style="list-style-type: none"> • Indeterminate forms, Curve tracing , Definite integral , Area, Volume and surfaces of revolution of curves • Double and Triple integrals • Vector Calculus, Divergence and Curl of vector point functions • Line, Surface and Volume integrals 	The students are acquainted with the basic concepts of statistics and mathematics applicable in agriculture and its allied fields
Math 105 Engineering Mathematics-II (For B. Tech.) 2+1	<ul style="list-style-type: none"> • Eigen value and Eigen vectors, Bilinear and Quadratic forms, Fourier Series • Linear differential equation 	The students are acquainted with the basic concepts of statistics and mathematics applicable in agriculture and its allied fields
Math 201 Engineering Mathematics-III (For B. Tech.) 2+1	<ul style="list-style-type: none"> • Interpolation and Extrapolation • Finite difference equations • Solution of differential equations by Picard, Taylor and Euler's Method • Laplace Transformation and its applications to the solution of ordinary and simultaneous equations • Complex functions 	The students are acquainted with the basic concepts of statistics and mathematics applicable in agriculture and its allied fields
M.Sc. (15 courses)		
Stat 511 Statistical Methods for Applied Sciences 3+1	<ul style="list-style-type: none"> • Binomial, Poisson and Normal distributions along with their related problems • Concepts of sampling and sampling distribution of means and difference between means • Testing of statistical hypothesis based on Chi-square/F-distributions and related problems • Curve fitting and related problems • Simple, partial and multiple correlation coefficients along with their properties and testing • Non-parametric tests and Introduction to Multivariate analysis 	<ul style="list-style-type: none"> • Conducting basic, applied and adaptive research in statistics • Promoting the application of advanced statistical techniques through the use of latest computing techniques for data management and analysis using different software packages
Stat 532/ BIF 505 Statistics for Biological Sciences 2+1	<ul style="list-style-type: none"> • Computational exercise on descriptive measures, random sampling and probability distribution 	Conducting basic, applied and adaptive research in statistics
Stat 534/ MBB 553/ FST 531/ SOC 512 Bio-Statistics and Computers 2+1	<ul style="list-style-type: none"> • Test of significance, correlation and regression analysis, usage of MS windows/ SPSS 	Conducting basic, applied and adaptive research in statistics

Stat 561 Statistical Methods 2+1	<ul style="list-style-type: none"> Fitting of discrete, continuous and truncated distributions Analysis of association between attributes, categorical data and log-linear models 	Conducting basic, applied and adaptive research in statistics
Stat 563 Multivariate Analysis 2+1	<ul style="list-style-type: none"> Principal Component, Factor, Cluster and discriminant analyses Multivariate analysis of variance and covariance 	Conducting basic, applied and adaptive research in statistics
Stat 565 Theory of Sampling Techniques 2+1	<ul style="list-style-type: none"> Randomized response techniques, Ratio and regression methods of estimation. Sampling with varying probability 	Conducting basic, applied and adaptive research in statistics
Stat 566 Statistical Genetics 2+1	<ul style="list-style-type: none"> Detection and estimation of linkage parameter by different procedures, Mating design 	Conducting basic, applied and adaptive research in statistics
Stat 567 Regression Analysis 2+1	<ul style="list-style-type: none"> Multiple linear regression fitting and residual diagnostics, Stepwise regression analysis, Orthogonal polynomial fitting 	Conducting basic, applied and adaptive research in statistics
Stat 512 Experimental Designs 2+1	<ul style="list-style-type: none"> Uniformity trial data analysis, Analysis of factorial experiments without and with confounding, Split and Strip plot designs 	Conducting basic, applied and adaptive research in statistics
Stat 513 Sampling Techniques 2+1	<ul style="list-style-type: none"> Simple random sampling with and without replacement Stratified random sampling Multistage, Systematic and Cluster sampling; Advantages/Disadvantages and their estimation procedures, Ratio and Regression methods of Estimation 	Conducting basic, applied and adaptive research in statistics
Stat 521 Applied Regression Analysis 2+1	<ul style="list-style-type: none"> Multiple linear regression analysis, Handling of correlated errors, Multicollinearity 	Conducting basic, applied and adaptive research in statistics
Stat 562 Statistical Inference 2+1	<ul style="list-style-type: none"> Non-parametric tests, Sequential probability ratio test, Decision function 	Conducting basic, applied and adaptive research in statistics
Stat 564 Design of Experiments 2+1	<ul style="list-style-type: none"> Analysis of BIB, PBIB and Lattice designs, Factorial experiments without and with confounding, Missing plot techniques 	Conducting basic, applied and adaptive research in statistics
Stat 568 Statistical Computing 1+1	<ul style="list-style-type: none"> General linear model, Categorical data analysis, Spatial modeling, Clinical trial, Survival Analysis, Handling of missing data 	Conducting basic, applied and adaptive research in statistics
Stat 569 Time-series Analysis 2+1	<ul style="list-style-type: none"> Seasonal and non-seasonal ARIMA modeling, Demand and Supply Analysis 	Conducting basic, applied and adaptive research in statistics

Degree programme/ Courses with Cr. Hrs.	Practical and Hands-on-training	How far the students are getting desired practical and hands-on-training as per the curriculum (bullet form)
Ph.D. (7 courses)		
Stat 601 Advanced Statistical Computing 2+1	<ul style="list-style-type: none"> Markov chains, Generalized linear model, Linear mixed effect models, Fitting of dose-response curves and estimation of parameters 	<ul style="list-style-type: none"> Promoting the application of advanced statistical techniques for data management and analysis using SAS and R software packages
Stat-602 Simulation Techniques 2+1	<ul style="list-style-type: none"> Re-sampling methods, Simulating multivariate distributions, Markov chain, Monte-Carlo and Gibbs' sampling 	
Stat- 603 Optimization Techniques 1+1	<ul style="list-style-type: none"> Linear programming problems by simplex method through MS-excel/R, Sensitivity Analysis, Problems based on integer programming 	
Stat 611 Advanced Statistical Methods 1+1	<ul style="list-style-type: none"> Fitting of Logistic regression, Application of Generalized linear model and mixed effects models 	
Stat 621 Advanced Multivariate Analysis 1+1	<ul style="list-style-type: none"> Multivariate regression; MANOVA and PCA 	
Stat 616 Statistical Modelling 1+1	<ul style="list-style-type: none"> Fitting of Mechanistic and non-linear models 	
Stat 617 Advanced Time Series Analysis 1+1	<ul style="list-style-type: none"> Fitting of stationary and non-stationary multivariate time series models; Analysis and forecasting 	

6.4.6. Supervision of students in PG/PhD programmes: *Number of students being supervised by Faculty in case of Masters/Ph. D Programme (as per ICAR/UGC guidelines). Mention the realistic figure number of qualified faculty in relation to the intake of students, as per the guidelines in the matter.*

Details of M.Sc. programmes offered by the Department:

Year	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	6	12	0.5:1
2013-14	10	10	1:1

2014-15	14	9	1.56:1
2015-16	16	5	3:1
2016-17	9	5	2:1
2017-18	18	5	4:1

Details of Ph.D. programmes offered by the Department:

Year	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	4	9	0.5:1
2013-14	5	8	0.5:1
2014-15	5	7	1:1
2015-16	7	4	2:1
2016-17	11	4	3:1
2017-18	11	2	6:1

6.4.7. Feedback of stakeholders (Students, parents, industries, employers, farmers etc.): *Mention the feedback mechanism (duly supported by the documents) from different stakeholders of the degree programme. What action the University has taken in last five years to address the issues raised in the feed back?*

There is a system of annual self-appraisal report (SAR) in respect of all faculty members. SARs are reviewed by the HODs', Deans and Directors for performance appraisal and finally approved by the Worthy Vice-Chancellor. The performance of the faculty is also reviewed on the basis of feedback from the students. Frequent trainings on "Statistical Methods and Data Analysis Techniques" are conducted for research scholars and faculty from CCS HAU, Hisar as well as from other SAU's. Verbal feedbacks from the participants is collected for improvement and training needs in future and any suggestion provided by the participant is considered for training. The teachers get informal feedback from the students based on their parents' observation and suggestions. These suggestions are conveyed to the HODs and controlling officers.

6.4.8. Student intake and attrition in the programme for last five years: *Year wise information on sanctioned strength, actual intake and attrition in the last five years of the Degree Programme, in the tabular form, shall be provided.*

Name of the Degree Programme	Actual student admitted in last five years						Attrition (%)					
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
M.Sc. Statistics	1	7	6	5	3	13	-	-	16.7	60.0	-	-
Ph.D. Statistics	2	2	1	3	4	3	-	50.0	-	-	-	-

6.4.9. ICT Application in Curricula Delivery: *The ICT is now integral part of the teaching programme. ICAR has also been promoting the use of ICT in teaching and practical. Mention whether the Degree Programme is meeting the expectations. If there is any shortfall, it shall be clearly mentioned.*

Use of ICT application in teaching and practical for curricula delivery

Courses	Total courses	Theory	Practical	Type of ICT Application
B.Sc.	4	Stat 100, Stat 101, Math 101, Math 104	Stat 100, Stat 101, Math 101, Math 104	PPT, CDs of manuals
M.Sc.	2	Stat 511, Stat 533	Stat 511	e-manual, PPT, CDs of manuals
Ph.D.	1	Stat 611	Stat 611	PPT, CDs of manuals

6.4.10. The information pertaining to 6.4.1 to 6.4.9 shall be provided for each one of UG, PG and PhD Degree Programmes, separately, and to be presented College-wise.

6.4.11. Since the accreditation of Programmes is related to the All India Admission from ICAR and also having weightage for College accreditation, therefore the data presented in the section 6.4 is liable to the verification at any stage.

6.4.12. Certificate (Applicable when SSR is submitted for Programme)

I, the Dean **Prof. Rajvir Singh**, hereby certify that the information contained in the Section 6.4.1 to 6.4.9 are furnished as per the records available in the college, and degree awarding university.



Signature of Dean of the College with Date & Seal

PROGRAMME - 6



M. Sc. Microbiology
and
Ph. D. Microbiology



6.4 About the Department

The department of Microbiology was established in 1964 in the erstwhile Punjab Agricultural University under the supervision of Dr. S.R. Vyas as the founder Professor & Head, who laid solid foundation for the subsequent growth and development of the department. With the establishment of CCSHAU in 1970, the Dept. of Microbiology became a part of the College of Basic Sciences & Humanities. Over the years, the department has made significant contribution in research, teaching and extension. The department developed a solid state fermentation process for the production of citric acid from cane molasses using improved strains of *Aspergillus niger*. Technology for the production of wine from locally grown grapes was developed by Prof. Vyas and the technical know-how for the large scale production of wine was later transferred to Panipat Cooperative distillery, Panipat. Subsequently, a process for the direct fermentation of sugarcane molasses for alcohol production was also developed. Yeast strain, HAU-I along with a thermostable yeast, DGH 1 have been developed for the production of ethanol and are being supplied to various Indian distilleries. Usefulness of organic manures in maintaining soil organic matter status and their role in pollution abatement has been worked out. Technology for enrichment of compost with (i) *Azotobacter* for increased nitrogen content, (ii) rock phosphate for increased phosphate availability and (iii) urea for increased organic nitrogen content has been developed. Use of neem cake in controlling nitrification and slow release of nitrogen from nitrogenous fertilizers has been worked out. Since the late sixties, the department has been in the forefront in carrying basic and applied research towards producing efficient rhizobial strains for chickpea, mungbean, urd bean, cowpea, berseem soybean and other legumes and *Azotobacter* for non-leguminous crops. Large scale production and distribution of biofertilizers to farmers has reached a maximum of 1, 05, 800 packets in the year 2016-17. The department was awarded National Productivity Council Award for 1985-86. Biofertilizers of phosphate solubilizing bacteria (PSB) and biocontrol inoculants of *Gluconacetobacter* are also being produced by the department. Molecular ecological studies of these microbes have also been carried out. Microbial parameters in the anaerobic digestion of organic wastes for biogas production have been studied. Conditions for increasing biogas production in winter through recycling of spent slurry, and effective use of brackish water for biogas production have been worked out. Family size Janta biogas plant has been modified for solid state fermentation of cattle dung that has been tested all over India and has been found satisfactory. During last five years on an average six students were admitted in M.Sc and five students in Ph.D (**Annexure MICRO I**). Presently there are 8 M.Sc. students and 19 Ph.D. students on roll (**Annexure MICRO II**).

There is no UG programme going on in the Department, however, Department is offering two UG Courses to Undergraduates of College of Agriculture and one UG Course to Undergraduate students of I.C. College of Home Science.

Objectives of the Department

- To provide quality education to students and develop skilled manpower in the field of microbiology.
- To develop professionals in Microbiology.
- To conduct research in thrust areas related to Agricultural, Industrial and Environmental microbiologist.

6.4.1 Brief History of the Degree Programme: Clearly mention in which year the degree program was initiated along with its objective and accomplishments.

M.Sc. programme in Microbiology was initiated in the year 1964. Entry qualification for masters programme is B.Sc/ B.Sc. (Hons.) in Biology/ Microbiology/ Life Sciences/ Agriculture. Minimum duration of the programme is 2 years and maximum duration is 4 years. Medium of instruction is English.

Objectives of initiating M.Sc. programme

- To teach microbiology for meeting up the technical support to Industry and Education system.
- To create the masters in microbiology with specialization in different areas of it.

Accomplishments of M.Sc. programme

- The department has well developed infrastructure for the M.Sc Programme with Seminar rooms and well equipped modern state of art laboratories
- The department has produced 256 M.Sc. students.
- Quality human resource generation in microbiology and allied field.
- One student (Raman Jangra) went for higher studies at Concordia University, Canada.
- Students were encouraged to participate in conferences and symposia. Five students from M.Sc. participated in conferences and symposia (**Annexure MICRO III**)
- M.Sc. students published 26 research papers in last five years (NAAS rating 0-4: 6 papers; 4-6: 13 papers; >6: 5 papers) (**Annexure MICRO IX**)

Objectives of initiating Ph.D programme

Ph. D Microbiology programme was initiated with the following objectives:

- To produce advanced quality human resource in the discipline of Microbiology
- The *program objectives* are to train and equip researchers and professionals to face the issues posed by Agriculture, Industry and Environment.
- Contribution in agricultural research , especially in thrust area like:
 - ✓ Production of Biofertilizers
 - ✓ Biocontrol
 - ✓ Waste management
 - ✓ Bioenergy
 - ✓ Fermentations
 - ✓ Post harvest management

Accomplishments of Ph.D programmes

- The department has well developed infra structure for the Ph.D. Programme including Seminar room and well equipped modern state of art laboratories with one biofertilizers production unit.
- Quality human resource generation in Microbiology and allied field.
- The department has so far produced 109 Ph.D. scholars some of them occupying high positions at the national level.
- Sixteen students participated in conferences and symposia of national and international level (**Annexure MICRO III**)
- Students in doctoral programme attended the trainings from time to time. In last five years seventeen students attended various trainings (**Annexure MICRO IV**)
- Twelve students joined higher education and placed very well in institutes of national and international repute (**Annexure MICRO V**).
- Fifteen students got fellowships/ stipend from university and other sources (**Annexure MICRO VI**)

- Twenty seven students has qualified NET, GATE and other national level exams in last five years (**Annexure MICRO VII**).
- Five of our students have been getting fellowship like POSE, CSIR, ICAR, DST (INSPIRE), RGNP and merit fellowships (**Annexure MICRO VIII**)
- Ph. D. students published 25 research paper in last five year (NAAS rating 0-4: 5 papers; 4-6: 12 papers; >6: 5 papers) (**Annexure MICRO IX**)
- Alumni of the department are well placed at higher position in India and abroad.

Student data for the last five years

Name of the Department	Microbiology															
Degree Programme	Specialization	Year of start	No. of seats							No. of students passed out						
			2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Total	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Total
M.Sc.	Microbiology	1964	7	7	5	6	4	5	34	4	8	7	8	3	7	37
Ph.D.	Microbiology	1964	6	7	6	4	3	5	31	2	4	4	4	6	6	26
Detail in Annexure MICRO I																

6.4.2 Faculty Strength: *The faculty strength of the Degree Programme need to be given cadre-wise, both sanctioned and in-place (under the table mentioned below). Clearly mention the number of permanent faculty appointed for the Degree Programme, part time faculty being deputed from the other departments (in such case mention the name of these departments). If the Degree Programme is also taking the help of Research staff, extension staff, contractual faculty, guest faculty, adjunct faculty or any other arrangement being made to complete the curriculum, it should be clearly mentioned in the report.*

S. No.	Designation	Faculty sanctioned	Faculty in place*	Vacant	As per Fifth Deans' Committee
1.	Professor and equivalent	1	4	1	There is no UG programme in the college
2.	Associate Professor and equivalent	7	-	7	
3.	Assistant Professor and equivalent	14	4	6	
	Total	22	08	14	

Note: All the faculty of this programme is assigned the responsibilities for the multiple programmes.

*The number of faculty also includes personal promotes.

At present there are four Professors (all promoted under CAS) and four Assistant Professors/ equivalents. Faculty of the department published more than 76 research papers in journals of national and international repute, 17 book chapters and three authored books in last five years

Six vacancies of Asst. Professor have already been advertized.

6.4.3. Technical and Supporting staff: *The position of the technical and supporting staff of the Degree Programme including farm and field workers need to be mentioned for both sanctioned and in-place.*

S. No.	Designation	Sanctioned	Technical and supporting staff in place
1.	Assistant	2	2
	Clerk	2	1
	PA/Steno	1	-
	Messenger	1	-
2.	Lab staff		
	➤ Lab Assistant	2	1
	➤ Lab Attendant	5	3
	➤ Sr. Lab Asstt.	1	1
3.	Field staff		
	➤ Beldar	1	1
4.	Technician	1	1
5.	Any other (specify) Mechanic	1	-
	Total	17	10

Note: All the staff is assigned the responsibilities for the multiple programmes.

6.4.4. Classrooms and Laboratories: *Mention the number of class rooms and functional laboratories available for the degree programme and justify if it is sufficient to meet the course curricula requirement. Lists major equipments, laboratories, farm facilities, workshops and other instructional units being utilized for the award of the Degree Programme may be given. Mention theory and practical batches for the Degree Programme.*

List of classroom and functional laboratories

No. of lecture rooms with sitting capacity	Two (One seminar room with 40 sitting & one conference room with 35 sitting capacity)
No. of lecture rooms with LCD	Two
No. of labs with specialized purpose	Seven Research, one UG and One PG
1. Molecular Microbiology Lab no. 202:	Molecular characterization of PGPRs
2. Biocontrol lab no. 207:	Development of biocontrol for various pests and diseases of crops
3. Plant-microbial Interaction lab no 217:	Studying interactions of microbes with plants
4. Bioremediation lab no. 222:	Development of strategies for bioremediation of polluted soils
5. Soil Microbiology Lab no. 225:	Studying microbes and their role in soil
6. Fermentation Lab no. 229:	Different aspects of fermentation
7. Bio Energy lab no. 237&234:	Biogas, biofuels are being developed in this lab
Farm facilities	Five Screen houses
Workshops	-
Any other instructional units being utilized for the award of the Degree Programme	

Other instructional units being utilized for the award of degree programme

Instructional Units	Functioning
1. Seminar room with LCD	Seminar room is used for presentation of assignments and delivering seminars by PG students and also used for conducting PG classes.
2. Departmental library	Reference material, journals, thesis etc are referred by PG students for preparation of assignments, synopsis and thesis work.
3. Conference Hall	Conference Hall is air conditioned having 40 seating capacity for training to students, entrepreneurs and farmers regarding biofertilizers production and application
3. Biofertilizers Production Unit	A well equipped production unit for biofertilizers production

List of major equipments available in the department:

Sr. No.	Name of equipment	Location/Lab.	Sr. No.	Name of equipment	Location /Lab.
1	<i>Flesh Gel System</i>	Biofertilizers Prod Unit	31	Spinex vortex shaker	-do-
2	Spectrophotometer	-do-	32	Centrifuge	-do-
3	Gas Chromatography	-do-	33	Microcentrifuge	-do-
4	Autoclave	-do-	34	Deep Freezer	-do-
5	Electric Balance	-do-	35	PCR	-do-
6	Autoclave	-do-	36	pH Meter	-do-
7	Conductivity Meter	-do-	37	BOD	-do-
8	Oven	-do-	38	Heating plate	-do-
9	Battery	-do-	39	Gel Electrophoresis system	-do-
10	UPS	-do-	40	Automated cell counter	-do-
11	Refrigerators and ACs	-do-	41	Cross flow protein purification system	-do-
12	Handycam	-do-	42	Plant Growth Chamber	-do-
13	Water purification System	-do-	43	Autoclave	Lab-225
14	LAF	-do-	44	Microscope with accessories	Lab-225
15	LAF	-do-	45	Gel documentation system	Production
16	LAF (Verticle)	-do-	46	Autoclave (2)	Lab-222
17	Microscope	-do-	47	Orbital incubator shaker	Lab-237
18	Microscope with PC and Camera	-do-	48	Autoclave	Production
19	Spectrophotometer and Flame photometer	-do-	49	Cooling centrifuge	Lab-225
20	BOD	-do-	50	BOD incubator and plant growth chamber	Lab-202
21	Rotary Shaker	-do-	51	BOD incubator	Lab-225
22	Spectrophotometer	-do-	52	Microscope	Lab237

23	Elisa Reader	-do-	53	Autoclave	Lab-237
24	Filling Sealing machine	-do-	54	COD	Lab-237
25	Fermentor	-do-	55	Spin with Micro centrifuge	Lab-202
26	Gel Documentation system	-do-	56	Autoclave	Lab-225
27	Autoclave	-do-	57	Electronic balance	Lab-237
28	Autoclave	-do-	58	Gel documentation system	Lab-202
29	Spinwin	-do-	59	UV Vis spectrophotometer	Lab-237
30	Rockymax	-do-			

Theory and practical batches

At UG level, the department of Microbiology offers 2 core and 1 professional elective courses, of which two core and one professional course have practical components.

- For theory in core courses, there are three batches and one each for College of Agriculture and Home Science respectively with an average of about 55-65 students in each batch.
- For practical in core courses, there are two batches in College of Agriculture in each section (six batches) with an average of about 25-30 students in each batch and two batches for College of Home Science with 20-30 students in each batch.
- At M.Sc level, the department of Microbiology offers 10 courses and 09 courses has practical components. There are limited seats in M.Sc. programme with an average of 5-6 students. Some courses are offered as minor courses for students of other departments. There is only batch for theory classes and one batch for practical classes in all the courses with an average of 4-15 students.
- Similarly, at PhD level there are limited seats in PhD programmes. Hence, there is only batch for theory classes and one batch for practical classes in all the courses. For PhD, the department of Microbiology offers 5 courses and 1 course have practical components.

6.4.5. Conduct of Practical and Hands-on-Training: *It is important to have a sound grasp of the theory that underlies any professional degree. But there are some skills that can only be learned through hands-on -practice. It is important that much of the learning material in any given course should be provided in a way that allows students to get as involved as possible to increase their knowledge and abilities. Clearly mention how far students are getting desired practical and hands-on-training as per the curriculum and meeting above mentioned requirements.*

Degree programme/ Courses	Hands-on-training courses	How far students are getting desired practical and hands-on-training as per the curriculum (bullet form)
For B.Sc (3 Courses)		
Micro 102	<ul style="list-style-type: none"> • Introduction to microbiology laboratory and its equipments; • Bright field microscope- parts and principles, resolving power and numerical aperture. • Staining: Simple staining, Gram staining and Negative staining. • Media preparation and sterilization. • Methods of isolation and purification of microbial cultures using pourspread and streak plate methods. 	<ul style="list-style-type: none"> • Students got basic knowledge about the microbiology lab, staining techniques and media preparation. • Students will be able to culture and isolate bacteria, algae & fungi of agriculture importance.

	<ul style="list-style-type: none"> Demonstration of ubiquitous nature of microorganisms. Enumeration of bacteria and fungi in soil. 	
Micro 100	<ul style="list-style-type: none"> Study of microscope and other laboratory equipments Examination of bacteria, yeasts and molds Preparation of culture media and Sterilization techniques Demonstration of ubiquitous nature of micro organisms. 	<ul style="list-style-type: none"> Students got basic knowledge about the microbiology lab, staining techniques and media preparation.
M.Sc. (10 Courses)		
MICRO 501	<ul style="list-style-type: none"> Methods of isolation, purification and maintenance of microorganisms from different environments (air, water, soil, milk and food). Enrichment culture technique – isolation of asymbiotic, symbiotic nitrogen fixing bacteria. Isolation of photosynthetic bacteria. Use of selective media, antibiotic resistance and isolation of antibiotic producing microorganisms. Morphological, physiological and biochemical characterization of bacteria. 	<ul style="list-style-type: none"> Students will be able to isolate, characterize and maintain different microorganisms
MICRO 502	<ul style="list-style-type: none"> Use of simple technique in laboratory (Colorimetry, Centrifugation, Electrophoresis and GLC). Determination of viable and total number of cells. Measurement of cell size. Gross cellular composition of microbial cell. Growth – Factors affecting growth. Sporulation and spore germination in bacteria. Protoplasts formation. Induction and repression of enzymes. 	<ul style="list-style-type: none"> Students will be familiar to the different techniques used for characterization of metabolites, cell size and growth behavior of microbes.
MICRO 503	<ul style="list-style-type: none"> Inactivation of microorganisms by different mutagens. Production, isolation and characterization of mutants. Determination of mutation rate. Isolation, characterization and curing of plasmids. Transfer of plasmid by conjugation, electroporation. Tetrad and random spore analysis. 	<ul style="list-style-type: none"> Students will be able to apply modern techniques like gene transfer, electroporation, plasmid isolation and their application to construct microbe with desired traits.
MICRO 504/ SOILS 506	<ul style="list-style-type: none"> Determination of soil microbial population; Soil microbial biomass Decomposition studies in soil, Soil enzymes; Measurement of important soil microbial processes such as ammonification, nitrification. N₂ fixation, S oxidation, P solubilization and mineralization of other micro-nutrients. Study of rhizosphere effect. 	<ul style="list-style-type: none"> Students will be able to enumerate microbes and microbial activity in different kinds of soils.
MICRO505/MBB 506	<ul style="list-style-type: none"> Isolation of industrially important microorganisms, their maintenance and improvement. Production of industrial compounds such as alcohol, beer, citric acid, lactic acid and their recovery. Study of bioreactors and their operation. Production of biofertilizers. Immobilization of cells and enzymes, study of their kinetic behaviour. 	<ul style="list-style-type: none"> Students are able to isolate & develop new microbial products of commercial use.
MICRO 506	<ul style="list-style-type: none"> Statutory, recommended and supplementary tests for microbiological analysis of various Foods: Baby foods, canned foods, milk and dairy products, eggs, meat, vegetables, fruits, cereals, surfaces, containers and water. 	<ul style="list-style-type: none"> Students will be able to understand the role of microbes in food and its derivatives.
MICRO 507	<ul style="list-style-type: none"> Titration of phages and bacteria. Absorption of phages. Preparation of phage stocks. Isolation of new phages and phage resistant bacteria. One step growth curve, phage bursts. Induction of lambda etc. 	Students will be able to understand the biological aspects of viruses.
MICRO 508	<ul style="list-style-type: none"> Analysis of natural waters, waste waters and organic waste in relation to water pollution assessment, pollution strength and resource quantification; Quality control tests, waste treatment and anaerobic digestion; Demonstration of waste water treatment processes such as activated sludge processes, biofilter and fluidized bed process. 	In this course students will be able to understand the role of microbes in environment, its pollution abatements and standards of environment pollution.
MICRO510	<ul style="list-style-type: none"> Production of industrial compounds such as alcohol, beer, citric acid, lactic acid and their recovery. Detection of food-borne pathogens, pesticide degradation. 	In this course student will be able to exploit microbes for their commercial purpose.

	<ul style="list-style-type: none"> Demonstration of biogas production. Production of biocontrol agents. 	
MICRO 511	<ul style="list-style-type: none"> Isolation of symbiotic, asymbiotic, associative nitrogen-fixating bacteria. Development and production of efficient beneficial microorganisms, Determination of beneficial properties in important bacteria to be used as biofertilizer, Nitrogen fixing activity, indole acetic acid (IAA), siderophore production etc, Bioinoculant production and quality control. 	The students will learn the capability of microbes in agriculture and their role in agricultural industries like biofertilizers and biocontrol production.
PhD (1 Course)		
MICRO 601	<ul style="list-style-type: none"> Industrially important microbes and their genetic manipulations Fermentation by improved strains of yeast for production of alcohol and beer Microbial production of important antibiotics, enzymes and organic acids Bioremediation of industrial effluents. 	This course aims at latest techniques used in industrial uses of microbes, introduction to industrial scale instruments.

6.4.6 Supervision of students in PG/PhD programmes: Number of students being supervised by Faculty in case of Masters/Ph. D Programme (as per ICAR/UGC guidelines). Mention the realistic figure number of qualified faculty in relation to the intake of students, as per the guidelines in the matter.

Supervision of M.Sc. students in PG programme offered by the Department:

Year	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	7	10	0.7:1
2013-14	7	10	0.7:1
2014-15	5	9	0.55:1
2015-16	6	8	0.75:1
2016-17	4	6	0.66:1
2017-18	5	6	0.83:1

Details of Ph.D. programmes offered by the Department:

Year	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	6	10	0.6:1
2013-14	7	10	0.7:1
2014-15	6	9	0.66:1
2015-16	4	8	0.5:1
2016-17	3	6	0.5:1
2017-18	5	6	0.83:1

6.4.7 Feedback of stakeholders (Students, parents, industries, employers, farmers etc.): Mention the feedback mechanism (duly supported by the documents) from different stakeholders of the degree programme. What action the University has taken in last five years to address the issues raised in the feed back?

There is a system of annual self appraisal report (SAR) with respect of all teaching faculty. SARs are reviewed by the Deans and Directors for performance appraisal and finally approved by the

Worthy Vice-Chancellor. Any suggestions provided by them are incorporated in the curriculum. The stakeholders' feedback on the overall performance and quality of the institutions is obtained through general meetings with parents and interaction with alumni. The teachers get informal feedback from the students based on their parents' observation and suggestions. These suggestions are conveyed to the HODs and controlling officers.

Farmers' feedbacks were regularly taken for the betterment of our services including production of biofertilizers and biocontrol agents. Till date there is very positive response in terms of biofertilizers produced by the department. Department has also initiated working on different biocontrol development as per the demand of farmers.

6.4.8 Student intake and attrition in the programme for last five years: *Year wise information on sanctioned strength, actual intake and attrition in the last five years of the Degree Programme, in the tabular form, shall be provided.*

Name of the Degree Programme	Actual student admitted in last five years						Attrition (%)					
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
M.Sc.	7	7	5	6	4	5	-	14.2	-	16.66	25	-
Ph.D.	6	7	6	4	3	5	-	-	-	-	-	-

6.4.9. ICT Application in Curricula Delivery: The ICT is now integral part of the teaching programme. ICAR has also been promoting the use of ICT in teaching and practical. Mention whether the Degree Programme is meeting the expectations. If there is any shortfall, it shall be clearly mentioned.

The faculty members of Department of Microbiology use ICT in teaching and practical. There is one Seminar Room and one conference room with computer, LCD projector and internet connection. All faculty members have computer printer and internet connection in their offices. There is Wi-Fi facility for faculty, staff and students. This infrastructure provides opportunities for the use of ICT in quality teaching, research and extension. Faculty members use power point presentations, YouTube, emails and CD ROM in teaching all courses at UG, PG and PhD level.

6.4.10. The information pertaining to 6.4.1 to 6.4.9 shall be provided for each one of UG, PG and PhD Degree Programmes, separately, and to be presented College-wise.

6.4.11. Since the accreditation of Programmes is related to the All India Admission from ICAR and also having weightage for College accreditation, therefore the data presented in the section 6.4 is liable to the verification at any stage.

6.4.12. Certificate (Applicable when SSR is submitted for Programme)

I, the Dean **Prof. Rajvir Singh**, hereby certify that the information contained in the Section 6.4.1 to 6.4.9 are furnished as per the records available in the college, and degree awarding university.



Signature of Dean of the College with Date & Seal



PROGRAMME - 7



- a. M.Sc. Molecular Biology and Biotechnology**
- b. Ph.D. Molecular Biology and Biotechnology**
- c. M.Sc. Bioinformatics**



6.4. About the Department

The Department was created in 1997 by Padamshiri Dr J.B.Chowdhury; the then Vice-Chancellor of CCS Haryana Agricultural University. Hisar. It has basic facilities for conducting research in plant biotechnology and molecular biology. However, in the past 2-3 years the strength of students opting biotechnology as major as well as minor subjects has increased tremendously. The Department has nine members of the faculty of which three are Professors, one is Principal Scientist and four are Assistant Professors and one is Emeritus Scientist/Consultant faculty. The faculty of this department has a unique distinction and privilege to have secured several prestigious fellowships (Rockefeller Foundation PDF and BCF fellowships, USA; DAAD fellowships, Germany; Indo-Japan Exchange Fellowship, AHRD Fellowship, DBT Overseas Associate fellowship), for their Post-doctoral and/or advance research in USA, UK, Germany, and Japan. One of the faculty has received ICAR sponsored “Best Teacher Award” of the University. Our faculty has over the years won several competitive research grants from National agencies like DBT, DST-GOI, ICAR, CSIR, DRDE, UGC, DST-Haryana. Our students are pursuing higher degrees in reputed National and International Institutes and have been selected as faculty in reputed Institutions such as DRDO, ICAR, ICGEB, SAUs, Govt. Colleges, public/ private institutions/industries. Two students were decorated with “Best Thesis Award”. Every Year our students have cleared NET/ JRF examinations conducted by UGC/CSIR/ ICAR/ DBT. The Department is actively involved in research in areas of plant transformation and genetic engineering, molecular markers and marker-assisted selection for biotic & abiotic stresses & quality traits, enzyme technology and microbial biotechnology. Research in some new areas such as genomics, proteomics, nanobiotechnology, immunodiagnostics, biosensors, bioinformatics and commercial plant tissue culture is planned to be carried out during next five years.

There is no UG programme going on in the Department. However, Department offers six UG Courses to Undergraduates of College of Agriculture.

6.4.1. Brief History of the Degree Programme:

M.Sc. (Biotechnology & Molecular Biology) programme was initiated in the year 1997 and M.Sc. (Bioinformatics) programme was initiated in the year 2004. Nomenclature of the programme was changed to Molecular Biology and Biotechnology in 2011. Detailed information of M.Sc. and Ph.D students is provided in **Annexure MBBB I**

Objectives of initiating M.Sc. Molecular Biology and Biotechnology programme

- To generate quality human resource in Molecular Biology and Biotechnology
- To familiarize the students with the fundamental principles of Biotechnology, various developments in Biotechnology and its potential applications.
- To familiarize the students with the basic cellular processes at molecular level, cell biology at molecular level, microbial processes/systems/activities for the development of industrially important products/ processes, various aspects of biosafety regulations, IPR and bioethical concerns arising from the commercialization of biotech products.
- To provide hands on training on various techniques of plant tissue culture, genetic engineering and transformation and basic molecular biology.
- To familiarize the students about the use of molecular biology tools in plant breeding, genomic and proteomic concepts and usage of various algorithms and programmes in analysis of genomic and proteomic data.
- To provide training to students in following research areas.

- a) Plant tissue culture and micropropagation of important plant species.
- b) Development of transgenic crops with resistance/tolerance against biotic and abiotic stresses and with improved nutritional quality.
- c) DNA fingerprinting, genotype identification and diversity analysis.
- d) Linkage mapping & tagging of genes/QTLs for stress tolerance, disease resistance & quality traits and marker assisted selection.
- e) Value addition in plants and microbes.
- f) Developing genomic and nanobiotechnological tools for their application in improving eco-friendly crop production.
- g) Drug discovery.
- h) QSAR (Quantitative Structure-Activity Relationship).
- i) Genomics and proteomics.
- j) Protein engineering - modeling and interactions.

Accomplishments of M.Sc. programme MBB

- The department has produced 156 M.Sc. students. During period under report, 25 students from MBB discipline.
- Majority of the students joined higher studies.
- Ten papers were published by the M.Sc. students.
- Five M.Sc. students attended conferences.
- Seven students cleared NET exam.
- Four students were awarded fellowships.
- Patent was granted to two M. Sc. Students.

Objectives of initiating M.Sc. Bioinformatics programme

Bioinformatics is a newly emerging interdisciplinary research area in which Molecular Biology, Biochemistry, and Genetics as well as Theoretical and Applied Computer Science merge into a new discipline. Bioinformatics deals with methods for storing, retrieving and analyzing biological data. It plays an important role as biological research is based more and more on techniques for modeling biological data, efficient algorithms to process biological data, and methods to extract relevant information from large biological data bases. Since methods of Bioinformatics are already industrially used and there are hardly any graduates in Bioinformatics so far, there is a high demand of skilled Bioinformaticians in industry as well as in research centers and universities. Keeping in view the importance of this science, the M.Sc. (Bioinformatics) programme was initiated in 2004.

Accomplishments of M.Sc. (Bioinformatics) programme

- During period under report, 4 students from Bioinformatics discipline completed their degree.
- Majority of the students joined higher studies.
- Five papers were published by the M.Sc. students.
- Seven students attended conferences.
- Ten students cleared NET exam.
- Two students were awarded fellowships.

Objectives of initiating Ph. D programme

Ph. D. Molecular Biology and Biotechnology programme was initiated in 1997 with the following objectives:

- To produce advanced quality human resource in the discipline of Molecular Biology and Biotechnology

- To familiarize the students with the specialized topics and recent advances in the field of plant molecular biology
- To familiarize the students with the specialized topics and advances in field of genetic engineering and their application in plant improvement.
- To familiarize the students with specialized topics about industrially important microorganisms
- To familiarize the students with specialized topics on the application of molecular tools in breeding of specific crops.
- To familiarize the students with recent advances and applications of functional genomics and proteomics in agriculture, medicine and industry.
- To familiarize the students with the commercial applications of plant tissue culture in agriculture, medicine and industry.
- To provide specialized training to students in following research areas:
 - a) Plant tissue culture and micropropagation of important plant species.
 - b) Development of transgenic crops with resistance/tolerance against biotic and abiotic stresses and with improved nutritional quality.
 - c) DNA fingerprinting, genotype identification and diversity analysis.
 - d) Linkage mapping & tagging of genes/QTLs for stress tolerance, disease resistance & quality traits and marker assisted selection.
 - e) Value addition in plants and microbes.
 - f) Developing genomic and nanobiotechnological tools for their application in improving eco-friendly crop production.
 - g) Drug discovery.
 - h) QSAR (Quantitative Structure-Activity Relationship).
 - i) Genomics and proteomics.
 - j) Protein engineering - modeling and interactions.

Accomplishments of Ph.D programme

- A total of 61 students have completed Ph.D. programme in the Department out of which 26 students completed their degree during last five years.
- A total of 26 Ph.D. students enrolled during last five years.
- 15 Ph.D. students were placed in various public and private institutions.
- A total of 33 Students participated in various academic activities like conferences trainings etc.
- 10 students received prestigious awards such as Monsanto-Beachell Borlaug Fellowship, BBSRC-DFID, Commonwealth Pre-doctoral Fellowship, Rajiv Gandhi National Fellowship, DST-INSPIRE, Student Travel etc.
- 8 students participated in various Extra Co-Curricular Activities.
- 31 students cleared the NET.

The details of the accomplishments are provided in the **Annexure MBBB I**.

Research achievements:

- The Department is running 10 State Plan schemes and completed 8 External funded projects during the period under report.
- The department was awarded FIST programme of DST and is at present handling three externally funded projects.

- The faculty has published 119 research articles and ten manuals during the period under report.
- The faculty has 62 publications in Conference Proceedings during last five years.
- The faculty has contributed 14 Scientific/ technical Books /Book Chapters.
- The faculty has developed nine e-learning modules.
- The faculty has submitted four sequences in the gene bank.
- Three patents have been granted and other fifteen patents have been filed by the Department.
- Two technologies were commercialized during the period under report.
- The department organized two Conferences and one Workshop during this period.
- The faculty participated in 10 Seminars/Conferences/Workshops during the period under report.
- Four faculty members Drs V. K. Chowdhury, S. Dhillon, R.K.Jain and Pushpa Kharb served on higher positions.
- Dr. R.K. Jain (2016) and Dr. Neelam R. Yadav (2016) were felicitated for their contribution in Monsanto-Beachell Borlaug International Scholarship Programme by Programme Director Dr. Ed. Runge, USA.

The details of the accomplishments are provided in the **Annexure MBBB II**.

Extension Activities:

- The Department actively participates in Kisan Melas, Chrysanthemum show and Agri Summit.
- The Department organizes three weeks and six weeks trainings every year for students and faculty from other Departments of the University/other Institutions. So far the Department has organized 14 trainings/seminars.

The details of the accomplishments are provided in the **Annexure MBBB III**.

6.4.2. Faculty Strength:

S. No.	Designation	Faculty Sanctioned	Faculty in Place	Vacant	As per Fifth Deans' Committee
1.	Professor and equivalent	-	3*	-	There is no UG programme in the college
2.	Associate Professor and equivalent	1	-	1	
3.	Assistant Professor and equivalent	15	4	8	
4.	Emeritus scientist	-	1	-	

* Personal promotees.

Note: The entire faculty is assigned responsibility for multiple programmes.
Five members of the faculty have retired during the period under report.
Four posts of Assistant Scientists/Assistant Professors have been advertised recently.

Faculty Profile

Name	Designation	Specialization	Experience (Years)	Qualification	Scholar/Fellow	PDF
K.P.Singh	Professor and Vice-Chancellor, CCS HAU	Nano-biotechnology & Biophysics	21	Ph.D.	UGC	UK, USA, Slovakia
Pushpa Kharb	Professor & Head	Plant Biotechnology	27	Ph.D.	CSIR	USA
Neelam R. Yadav	Principal Scientist	Plant Biotechnology	33	Ph.D.	DAE	USA
Sudhir Kumar	Professor	Bioinformatics	27	Ph.D	-	USA
Shikha Yashveer	Asst. Professor	Molecular Biology & Biotechnology	10	Ph.D	ARS-NET & UGC-NET	-
Mr Anil Kumar	Asst. Professor	Bioinformatics	6	M.Sc	-	-
Neeru Redhu	Asstt. Professor	Bioinformatics	6	M.Sc	CSIR-NETGATE	-
Upendra Baliyan	Asst. Professor	Functional Genomics & Molecular Breeding	8	M. Phil.; Ph.D.	NET, GATE	Japan
Virendra K. Sikka	Emeritus Scientist	Molecular Biology, Microbial Biotechnology	34	Ph.D.	IARI Senior fellowship	Germany & USA
R. K. Jain	Principal Scientist	Molecular Biology & Biotechnology	(Retired in 2017)	Ph.D.	CSIR	Germany, UK & USA
Sunita Jain	Professor	Biochemistry & Bioinformatics	(Retired in 2017)	Ph.D.	UGC/ICAR Senior fellowship	USA
R. C. Yadav	Principal Scientist	Plant Biotechnology	(Retired in 2016)	Ph.D.	HAU Merit fellowship	Japan & USA
Santosh Dhillon	Professor	Molecular Biology & Biotechnology	Retired in 2015	Ph.D.	ICAR Senior fellowship	USA
K. S. Boora	Principal Scientist	Plant Biotechnology	Retired in 2015	Ph.D.	-	USA

The research accomplishments of the faculty are provided in the MBBB II.

6.4.3. Technical and Supporting staff: The position of the technical and supporting staff of the Degree Programme including farm and field workers need to be mentioned for both sanctioned and in-place.

S. No.	Designation	Sanctioned	In place
1.	Office staff		
	Assistant	1	-
	Clerk	1	1
	PA/Steno/JSS	1	1
	Messenger	1	-
2.	Lab staff		
	➤ Lab Assistant	2	2
	➤ Any other (SLA)	1	1
3.	Field staff		
	➤ Beldar	2	2

Note: All the staff is assigned responsibility for multiple programmes. One assistant retired in Oct. 2014.

6.4.4. Classrooms and Laboratories: Mention the number of class rooms and functional laboratories available for the degree programme and justify if it is sufficient to meet the course curricula requirement. List major equipments, laboratories, farm facilities, workshops and other instructional units being utilized for the award of the Degree Programme may be given. Mention theory and practical batches for the Degree Programme.

List of classroom and functional laboratories

Name of College/Department	
No. of seminar rooms with sitting capacity	3; with sitting capacity of 40 students each
No. of seminar rooms with LCD	3
No. of labs with specialized purpose	Eight
<p>Plant Tissue Culture and Genetic Engineering laboratory (No.127-131): All experiments of Plant Tissue Culture and Genetic transformation are conducted in the lab</p> <p>Molecular Biology Laboratories (two; No. 109, 110): Experiments related to molecular biology, genetic diversity and molecular breeding are conducted in the lab</p> <p>Microbial Biotechnology Laboratory (No. 138) : Experiments related to microbes are conducted in the lab</p> <p>Molecular Breeding/Experiencial Laboratory (No.123): Experiments related to molecular markers are conducted in the lab</p> <p>DNA Isolation Laboratory (No. 115): Genomic DNA Isolation is conducted in the laboratory</p> <p>High Performance Computing Laboratory: Experiments requiring high computation are conducted in this lab</p> <p>Technology Incubation Laboratory/Molecular Breeding (No. 117): For Technology validation and technology transfer and molecular breeding</p>	
Farm facilities, Net Houses, Transgenic Net Houses	Available

Any other instructional units being utilized for the award of the Degree Programme	Departmental Library with a collection of 163 books and 217 theses
---	--

Note: These facilities are being used for all the programmes. The facilities in the department are sufficient to meet the requirements of the course curricula.

List of Major equipments

Sr. No.	Name of equipment	Location/Lab.	Sr. No.	Name of equipment	Location/Lab.
1	Vertical Gel Electrophoresis Apparatus	Lab. No. 109, 117,124,130	19	-40 Deep Freezer 262 Ltr.	Lab. No.124
2	Mega Gel Electrophoresis System with accessories	Lab. No.109,130	20	Ice Flaking Machine (MAC)	Lab. No.124
3	2- D Gel Electrophoresis Complete (IEF-100)	Lab. No.124	21	Ice Flaking Machine NSW	Lab. No. 130
4	Chrome Deluxe Dual Cooled Vertical Electrophoresis unit	Lab. No.109	22	Refrigerator Samsung	Lab. No. 130
5	Three Block PCR Thermal cycler with accessories	Lab. No.109	23	384 Well PCR	Lab. No. 130
6	Mega Gel Electrophoresis	Lab. No. 130	24	Orbital Shaking Incubator	Lab. No.110, 117
7	Gradient Thermal Cycler PCR Machine	Lab. No. 130	25	Gene gun(Bio Rad p1000)	Lab No. 130
8	Mega Gel Electrophoresis	Lab. No.109	26	Electroporation unit (btx600)	Lab No. 130
9	Gel Documentation System	Lab. No.110, 117	27	Hybridization Oven	Lab No 130
10	Gradient Thermal Cycler PCR Machine	Lab. No.109	28	Sonicator	Lab No. 130
11	Refrigerated Centrifuge with accessories	Lab. No.110	29	Cooling Water bath	Lab No 131
12	-40 Deep Freezer	Lab. No.110	30	UV spectrophotometers	Lab No. 131
13	T-100 Thermal Cycler PCR Machine	Lab. No.124	31	Refrigerated centrifuge	Lab No. 124, 130
14	Horizontal Electrophoresis Submarine Unit	Lab. No. 117, 124	32	Real time PCR	Lab No 124
15	Gel Documentation System	Lab. No.117, 124	33	Streomicroscope	Lab No 109, 131

16	Gradient Thermal Cycler PCR Machine	Lab. No.124	34	2-D Electrophoresis	Lab No 124, 131
17	Ultra Low Temp. Freezer Horizontal	Lab. No.124	35	ELISA Reader	Room No 121
18	-20 Deep Freezer	Lab. No.117			

The Department also has facilities like compound microscopes, Laminar flow, Deep fridge, refrigerators, Magnet Stirrer with heating Hot plate, Distillation plant, Water bath, Sony Projector, Hot Air Oven, Vortex Mixer, pH Meter, R.O. system, Microwave, etc.

Mention theory and practical batches for UG Programme

There is no UG programme going on in the Department, however, Department is offering one UG Course to undergraduate students of College of Agriculture. In addition seven courses are offered as Elective courses.

Mention theory and practical batches for PG Programmes

Average Theory Batches: One

M.Sc. Molecular Biology and Biotechnology: 12 approx. (five years average)

M.Sc. Bioinformatics: 6 (five year average)

Ph.D. Molecular Biology and Biotechnology: 12 approx. (five years average)

Average Practical Batches:

M.Sc. Molecular Biology and Biotechnology: 9 approx. (five years average)

M.Sc. Bioinformatics: 12 (three year average)

Molecular Biology and Biotechnology

Year	Theory		Practical	
	M.Sc.	Ph.D	M.Sc.	Ph.D
2012-13	Ten Courses with one batch each	Eleven Courses with one batch each	Eight Courses with one batch each and one course with two batches	-
2013-14	Nine Courses with one batch each	Eight Courses with one batch each	Seven Courses with one batch each and one course with two batches	-
2014-15	Nine Courses with one batch each	Twelve Courses with one batch each	Seven Courses with one batch each and one course with two batches	-
2015-16	Nine Courses with one batch each	Eleven Courses with one batch each	Seven Courses with one batch each and one course with two batches	-
2016-17	Twelve Courses with one batch each	Ten Courses with one batch each	Seven Courses with one batch each and one course with two batches	-
2017-18	Ten Courses with one batch each	Nine Courses with one batch each	Seven Courses with one batch each and one course with two batches	-

Bioinformatics

Year	Theory		Practical	
	M.Sc.	Ph.D	M.Sc.	Ph.D
2012-13	Six Courses with one batch each	-	Six Courses with one batch each	-
2013-14	Five Courses with one batch each	-	Five Courses with one batch each	-
2014-15	Six Courses with one batch each	-	Six Courses with one batch each	-
2015-16	Six Courses with one batch each	-	Thirteen Courses with one batch each	-
2016-17	Six Courses with one batch each	-	Thirteen Courses with one batch each	-
2017-18	Five Courses with one batch each	-	Eleven Courses with one batch each	-

6.4.5. Conduct of Practical and Hands-on-Training

Degree programme/ Courses with Cr. Hrs.	Practical and Hands-on-training/ How far students are getting desired practical and hands-on-training as per the curriculum (bullet form)
For B.Sc (8 Courses)	
Biochem 101 Fundamentals of Plant Biochemistry and Biotechnology 2+1	<ul style="list-style-type: none"> • Preparation of solution, pH & buffers, Qualitative tests of carbohydrates and amino acids. • Quantitative estimation of glucose/ proteins. • Effect of pH, temperature and substrate concentration on enzyme action • Paper chromatography/ TLC demonstration for separation of amino acids/ Monosaccharides. • Sterilization techniques. • Composition of various tissue culture media and preparation of stock solutions for MS nutrient medium. Callus induction from various explants. • Micro-propagation, hardening and acclimatization. • Demonstration on Isolation of DNA. Demonstration of gel electrophoresis techniques and DNA finger printing.
Bioinfo 417 Bioinformatics 1+2	<ul style="list-style-type: none"> • Use of INTERNET and W.W.W., • Searches on MEDLINE, CD-ROM; bibliographic databases; RASMO, M OLM OL, M X, VRMLetc; • Use of molecular model packages and visualization tools.
MBB 411 Essentials of Molecular Biology 1+1	<ul style="list-style-type: none"> • Laboratory set-up • Preparation of buffers and reagents • Estimation of proteins; RNA and DNA • SDS-PAGE of proteins • DNA isolation, purification and characterization

	<ul style="list-style-type: none"> • DNA restriction analysis • Polymerase chain reaction
MBB 412 Recombinant DNA Technology 1+2	<ul style="list-style-type: none"> • Good lab practices • Growth of bacterial culture and preparation of growth media • Gel electrophoresis- agarose and PAGE (nucleic acids and proteins) • Isolation of plasmid DNA from bacteria • Recombinant DNA construction
MBB 413 Plant Tissue Culture & Transformation 2+2	<ul style="list-style-type: none"> • Preparation of nutrient media • Handling and sterilization of plant material • Inoculation, subculturing and plant regeneration • Anther and pollen culture; embryo rescue; protoplast isolation, and culture • Gene transfer and selection of transformed tissues/plants
MBB 414 Molecular Breeding 1+1	<ul style="list-style-type: none"> • Isolation of plasmid DNA from bacteria • Gel electrophoresis- agarose, PAGE (nucleic acids and proteins) • Restriction digestion • Isolation of high molecular weight DNA • RAPD and PCR-RFLP analysis
MBB 415 Microbial & Environmental Biotechnology 1+2	<ul style="list-style-type: none"> • Sterilization methods and aseptic environment • Growth requirements of micro organisms • Preparation of buffers and reagents • Preparation of growth media • Staining and visualization of microbes • Estimation of load of microorganisms in diverse environments
MBB 416 Molecular Diagnostics 1+1	<ul style="list-style-type: none"> • Preparation of buffers and reagents • Immunoassays including ELISA; western blotting, and fluorescent antibody test; • Extraction of DNA/RNA from microorganisms and PCR
M.Sc.(MBB) (12 Courses)	
MBB504 Plant Tissue Culture and Genetic Transformation (Average 40 students; 2 batches) 2 +1	<ul style="list-style-type: none"> • Laboratory set-up. • Preparation of nutrient media; handling and sterilization of plant material; • Inoculation, subculturing and plant regeneration. • Anther and pollen culture. • Embryo rescue. • Suspension cultures and production of secondary metabolites. • Protoplast isolation, culture and fusion. • Gene transfer using different methods, reporter gene expression, selection of transformed tissues/plants, molecular analysis.
MBB505 Techniques in Molecular Biology 0+3	<ul style="list-style-type: none"> • Good lab practices; Biochemical techniques: Preparation of buffers and reagents, • Principle of centrifugation, Chromatographic techniques (TLC, Gel Filtration • Chromatography, Ion exchange Chromatography, Affinity Chromatography).

	<ul style="list-style-type: none"> • Gel electrophoresis- agarose and PAGE (nucleic acids and proteins); Growth of • bacterial culture and preparation of growth curve; Isolation of plasmid DNA from bacteria; • Growth of lambda phage and isolation of phage DNA; Restriction digestion of plasmid and phage DNA; Isolation of high molecular weight DNA and analysis. • Gene cloning – Recombinant DNA construction, transformation and selection of transformants; PCR and optimization of factors affecting PCR. • Dot blot analysis; Southern hybridization; Northern hybridization; Western blotting and ELISA; Radiation safety and non-radio isotopic procedure.
MBB 506/ MICRO 505 Industrial Biotechnology 2 +1	<ul style="list-style-type: none"> • Isolation of industrially important microorganisms, their maintenance and improvement. • Production of industrial compounds such as alcohol, beer, citric acid, lactic acid and their recovery. • Study of bio-reactors and their operations. • Production of biofertilizers. • Immobilization of cells and enzymes, studies on its kinetic behavior.
MBB 509 Techniques in Molecular Biology –II 0+3	<ul style="list-style-type: none"> • Construction of gene libraries; Synthesis and cloning of cDNA and RTPCR analysis; Real time PCR and interpretation of data. • Molecular markers (RAPD, SSR, AFLP etc) and their analysis; Case study of SSR markers (linkage map, QTL analysis etc); SNP identification and analysis; • Microarray studies and use of relevant software. • Proteomics (2D gels, mass spectrometry, etc.); RNAi (right from designing of construct to the phenotyping of the plant); Yeast 1 and 2-hybrid interaction. • Generation and screening of mutants; Transposon mediated mutagenesis.
MBB 512/ BIOCHEM 506/BIF 510 Immunology and Molecular Diagnostics 2 +1	<ul style="list-style-type: none"> • Preparation of buffers and reagents. • Serological tests such as bacterial slide agglutination, latex agglutination and agar gel • Immuno diffusion.
MBB 514/FST 519 Food Biotechnology 2 +1	<ul style="list-style-type: none"> • Study of auxotroph, Micropropagation through tissue culture, Strain improvement through • U.V. mutation, Mutagenesis using chemical mutagens (ethidium bromide), Isolation and • analysis of genomic DNA from <i>E.coli</i> and <i>Bacillus cereus</i>, Isolation of protoplasts, • Introduction to the techniques of ELISA / Southern blot / DNA fingerprinting / Agarose gel electrophoresis, etc.
MBB 515/FSC 509 Biotechnology of	<ul style="list-style-type: none"> • An exposure to low cost, commercial and homestead tissue culture laboratories, media

Horticultural Crops(Average 9 students) 2+1	<ul style="list-style-type: none"> • preparation, inoculation of explants for clonal propagation, callus induction and culture, • Regeneration of plantlets from callus, sub-culturing, techniques on anther, ovule, embryoculture, somaclonal variation, protoplast isolation and culture, genetic transformation.
MBB 553 /STAT 534/FST 531/SOC 512 Biostatistics and Computers 2 +1	<ul style="list-style-type: none"> • Data analysis using probability, test of significance • Correlation and regression analysis • Usage of MS-Windows • Exercises on test processing, spreadsheet and DBMS • SPSS
MBB 555/ BIF 501/ABT 608/FSC 604 Introduction to Bioinformatics 2+1	<ul style="list-style-type: none"> • Usage of NCBI resources • Retrieval of sequence/structure from databases • Visualization of structures • Docking of ligand receptors • BLAST exercises.
M.Sc. (Bioinformatics) 13	
BIF 502 Advanced Bioinformatics 2+1	<ul style="list-style-type: none"> • Development of small database • Phylogenetic analysis • Microarray data analysis (sample data from open sources) • Other practical exercises based on topics covered in theory.
BIF 503 Techniques in Bioinformatics 0+2	<ul style="list-style-type: none"> • Gene Information Resources: GenBank, EMBL, Protein Information Resources: • Swiss-Prot, BLOCKS, Gene Prediction Tools: GENSCAN, GRAIL. • Structural Databases: PDB, CSD, RELIBASE, REBASE, File Format Converter • Tools: BABEL, ReadSeq, NCBI Resources. • Visualization tools – RasMol, QMol, SwissPDB, Pymol, Modeling Tools: • MODELLER, SwissPDB, Geno3D, Docking Tools: Chimera, Dock, AutoDock, • GRAMM, Hex, Argus Lab. • Proteomics Tools: EXPASY, CDART, 3D-Structure Optimization Tools, • Sequence Analysis Tools: BLAST, FASTA, EMBOSS, TCOFFEE, Phylogenetic Analysis • Tools: Phylip, NTSYS, CLUSTALW/CLUSTALX, BIOEDIT.
BIF 505 / STAT 532 Statistics for Biological Sciences 2+1	<ul style="list-style-type: none"> • Computational exercises on Random Sampling • Construction and representation of frequency distributions • Descriptive measures • Probability distribution
BIF 506 Concepts in Computing 2+2	<ul style="list-style-type: none"> • MS-Windows • Linux, UNIX • Network design • Internet search • Graphics and animation

BIF 507 Programming Languages for Bioinformatics 2+2	<ul style="list-style-type: none"> • Programming in C and Visual basic with special reference to database linking • Small Java applets
BIF 511 Introduction to Database Systems 2+1	<ul style="list-style-type: none"> • Practical exercise using MySQL • Design of database in MS-Access and MySQL • Database linking
BIF 512 Computational and System Biology 2+2	<ul style="list-style-type: none"> • Usage of software for above topics • Molecular Visualization tools: RasMol, QMol, Swiss PDB, Pymol • Biomolecular Interaction Databases: BIND, DIP • Structure Similarity Search Tools: CN3D, Vast Search
BIF 513 Biomolecular Sequence Analysis 1+1	<ul style="list-style-type: none"> • EMBOSS • File Format Converter Tools: BABEL, ReadSeq • Phylogenetic Analysis Tools: Phylip, NTSYS, PAUP • CLUSTALW/CLUSTALX
BIF 514 Dynamic Web-Design 1+2	<ul style="list-style-type: none"> • Creation of Web-based applications, interactive and dynamic webpages • Connecting databases using CGI scripting • Creation and maintenance of web-sites using HTML, XML, ASP, PHP, PERL and CGI • Retrieval of specific information from web-sites using CGI scripts
BIF 515 Biological Databanks and Data Mining 1+2	<ul style="list-style-type: none"> • Gene Information Resources • Protein Information Resources • Structural Databases • Sequence Analysis and Database Similarity Search Tools: BLAST, PHI-BLAST, PSIBLAST, • FASTA, EMBOSS, CLUSTAL, TCOFFEE • Use of similarity, homology and alignment tools
BIF 516 Molecular Modelling and Drug Design 2+2	<ul style="list-style-type: none"> • Modelling Tools: MODELLER, Geno3D • Docking Tools: Chimera, Dock, AutoDock Tools, GRAMM, Hex, ArgusLab • 3D-Structure Optimization Tools: CHEMSKETCH, CHEM 3D, ISIS Draw, CHEMDRAW
MBB 508/ BIF 517 Genomics & Proteomics 2+1	<ul style="list-style-type: none"> • Gene Prediction Tools: GENSCAN, GRAIL, FGENESH • NCBI Genomic Resources • Proteomics Tools: EXPASY, CDART
BIF 518 Pharmacogenomics and IPR 2+1	<ul style="list-style-type: none"> • Microarray Analysis Tools: MAGICTool • Stanford Microarray Database • Gene Expression Omnibus • Creation of an On-line company
MBB599 & Bioinfo 599 Master's Research 0+20	Specific research of the Master's programme.

6.4.6. Supervision of students in PG/PhD programmes: *Number of students being supervised by Faculty in case of Masters/Ph.D. Programme (as per ICAR/UGC guidelines). Mention the realistic figure number of qualified faculty in relation to the intake of students, as per the guidelines in the matter.*

Student teacher ratio of M.Sc. (MBB):

Name of Department (MBBB)	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	16	11	1.4:1
2013-14	16	11	1.4:1
2014-15	15	13	1.1:1
2015-16	12	10	1.2:1
2016-17	13	7	1.8:1
2017-18	13	7	1.8:1

Student teacher ratio of M.Sc. (Bioinformatics):

Name of Department (MBBB)	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	2	2	1:1
2013-14	-	2	0.5:1
2014-15	-	2	0.5:1
2015-16	2	2	1:1
2016-17	6	2	3:1
2017-18	5	2	2.5:1

Student teacher ratio of Ph.D. (MBB):

Name of Department (MBBB)	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	28	11	2.5:1
2013-14	36	11	3.2:1
2014-15	22	13	1.6:1
2015-16	23	10	2.3:1
2016-17	23	7	3.2:1
2017-18	20	7	2.8:1

6.4.7. Feedback of stakeholders (Students, parents, industries, employers, farmers etc.): *Mention the feedback mechanism (duly supported by the documents) from different stakeholders of the degree programme. What action the University has taken in last five years to address the issues raised in the feed back?*

There is a system of annual self appraisal report (SAR) with respect of all teaching faculty. SARs are reviewed by the Deans and Directors for performance appraisal and finally approved by the

Worthy Vice-Chancellor. The performance of the faculty is also reviewed on the basis their results, feedback from the students.

Alumni feedback is invited by contacting them for the Best Teacher Award on the basis of following criteria.

- A. Delivering of courses contents
- B. Teaching methodology
- C. Student teacher interaction
- D. Punctuality of the teacher

Alumni Feedback is basis for selection of teachers for ICAR sponsored Best Teacher Award.

Feedback from the students is to be obtained to evaluate the quality of the teaching learning.

6.4.8. Student intake and attrition in the programme for last five years: Year wise information on sanctioned strength, actual intake and attrition in the last five years of the Degree Programme, in the tabular form, shall be provided (see **Annexure MBBB I**).

MBB

Name of the Degree Programme	Actual student admitted in last five years						Attrition (%)					
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
M.Sc. (MBB)	6	6	5	6	7	7	16.6	16.6	0	0	14.3	0
Ph D (MBB)	8	6	6	5	3	5	-	-	-	-	-	-

Bioinformatics

Name of the Degree Programme	Actual student admitted in last five years						Attrition (%)					
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
M.Sc. (Bioinformatics)	-	-	-	2	4	2	-	-	-	0	1	0

6.4.9. ICT Application in Curricula Delivery: The ICT is now integral part of the teaching programme. ICAR has also been promoting the use of ICT in teaching and practical. Mention whether the Degree Programme is meeting the expectations. If there is any shortfall, it shall be clearly mentioned.

Use of ICT application in teaching and practical for curricula delivery

For all the courses in the three programmes run by the Department, extensive use of Microsoft office, CD-ROM, you tube etc. is made

In addition to the above operating systems, bioinformatic programme also makes use of Linux, clustal W, Hex, DOCK, CHIMERA, SWISSPDB viewer, EMBOSS, BIOEDIT etc.

Additional information about the Department is given in MBBB III.

6.4.10. The information pertaining to 6.4.1 to 6.4.9 shall be provided for each one of UG, PG and PhD Degree Programmes, separately, and to be presented College-wise.

6.4.11. Since the accreditation of Programmes is related to the All India Admission from ICAR and also having weightage for College accreditation, therefore the data presented in the section 6.4 is liable to the verification at any stage.

6.4.12. Certificate (Applicable when SSR is submitted for Programme)

I, the Dean **Prof. Rajvir Singh**, hereby certify that the information contained in the Section 6.4.1 to 6.4.9 are furnished as per the records available in the college, and degree awarding university.



Rajvir Singh

Signature of Dean of the College with Date & Seal

PROGRAMME - 8



**M.Sc. Sociology
and
Ph.D Sociology**



6.4. About the Department

The Department of Sociology came into existence in 1970 as a constituent department of College of Basic Sciences and Humanities. In erstwhile Punjab Agricultural University, the department was with the Department of Economics. There after the discipline of Sociology was with the Department of Extension Education, College of Agriculture, CCSHAU, Hisar. Since 1971 the Department has been fast developing to achieve excellence in teaching and research. The department also caters to the requirements of UG and PG programmes of College of Agriculture and College of Home Science. The faculty of sociology department were awarded fellowships like UGC, ICSSR & Commonwealth etc. Dr. Raj Singh, Dr. R.K. Punia ICSSR, Dr. P.S. Malik, Dr. Subhan Khan, Malkit Kaur and Dr. Vinod Kumari have been the recipient of these fellowship. Dr. Subhash Chander was awarded UGC fellowship (RGNF) from 2010-13. The department has so far produced 129 M.Sc. and 41 Ph.D. scholars, some of them occupying high positions at the national level. At present, there are 09 M.Sc. students and 08 Ph.D students. The department is having a highly trained and talented faculty that consists of two Professors, two Assistant Professors and one Assistant Scientist. Presently the department is working on two research projects entitled “Agricultural technology and emerging socio-economic changes in rural society” and “Promotion and Impact Analysis of Direct Seeded Rice Technique of Rice cultivation on the Socio-economic Status of Farmers in Haryana”. The faculty is actively involved in extension work to extend knowledge and technical knowhow of technologies among rural people of adopted village Shamsukh under the Chairmanship of Dean, COBS&H, through various awareness campaign cleanliness drives, demonstration and other activities (**Annexure SOC I**). Department is also offering three months certificate course in Panchayati Raj & Rural Development. The faculty brought out 55 research publications during last five years. The publication of M.Sc., Ph.D. students and faculty are listed in (**Annexure SOC II**). A total of 03 Ph.D. students and 06 M.Sc. students have passed out during the last five years. Details of students admitted in last five years and Research Scholars (passed out) are mentioned at (**Annexure SOC III**).

Objectives of the Department:

- Development of specialized human resource and expertise through teaching and research based learning in Sociology.
- Research in areas of agricultural technology and emerging socio-economic changes in rural society.

6.4.1 Brief History of the Degree Programme:

The Department offered M.Sc. and Ph.D. Degree in Rural Sociology till 1999 and there after M.Sc. and Ph.D. degrees are offered in Sociology. The department has so far produced 129 M.Sc. and 41 Ph.D. scholars, some of them occupying high positions at the national level. At present, there are 09 M.Sc. students and 08 Ph.D students.

Objectives of initiating M.Sc. programme

1. To provide quality education to students and develop efficient manpower in the field of Sociology.
2. Research in areas of agricultural technology and emerging socio-economic changes in rural society in the following thrust areas :

- Adoption and impact assessment of new agricultural technologies on rural society of Haryana.
- Gender studies and women empowerment
- Studies on diversification in agriculture

- Panchayati Raj Institutions (PRIs') and social transformation
- Agrarian social structure and change
- Demographic dynamics
- Social mobility and migration
- Technology and rural social change
- Media and agrarian society
- Consumer rights and agrarian society
- Socio-economic challenges of rural society.

Accomplishments of M.Sc. programme

- The department has produced 129 M.Sc. students.
- 20 % (4 out of 20) students went for higher studies during last five years.
- One student, Sunil Kumar, 2013BS18M qualified UGC-NET in 2015.
- One student, Rahul, 2015BS22D, joined as Rural Development Officer in Union Bank of India, Ajmer.
- Students' research brought out 12 publications during last five years on small family norms, gender discrimination towards girl child and problems of women scientist in Haryana. (Annexure SOC IV)

Objectives of initiating Ph.D programme

1. Development of specialized human resource and expertise through teaching and research based learning in Sociology.
2. Research in areas of agricultural technology and emerging socio-economic changes in rural society in the following thrust areas :

- Adoption and impact assessment of new agricultural technologies on rural society of Haryana.
- Gender studies and women empowerment
- Studies on diversification in agriculture
- PRIs' and social transformation
- Agrarian social structure and change
- Demographic dynamics
- Social mobility and migration
- Technology and rural social change
- Media and agrarian society
- Consumer rights and agrarian society
- Socio-economic challenges of rural society.

Accomplishments of Ph.D programmes

- The department has produced 41 Ph.D. students.
- One student, Subhash Chander, 2007BS21D availed RJNF in 2012-13.
- One student, Subhash Chander, 2007BS21D joined as Asstt. Scientist in 2013 in CCSHAU, Hisar.
- One student, Sunil Kumar, 2013BS18M qualified UGC, NET-JRF in 2016.

- One student, Bijender Kumar 2017BS26D qualified UGC-NET in 2015.
- One student, Rijul Sihag, 2013BS30D joined as guest faculty in CRM Law College, Hisar in 2017.
- Eight students participated in seminars/conferences/workshops etc.
- Students' research brought out 08 publications during last five years on problems of debt among farmers in Haryana and Panchayati Raj Act.

6.4.2 Faculty Strength:

S. No.	Designation	Sanctioned	In place*	Vacant	As per Fifth Deans' Committee
1.	Professor and equivalent	-	02	-	There is no UG programme in the college
2.	Associate Professor and equivalent	-	-	-	
3.	Assistant Professor and equivalent	08	02	04	
Total		08	04	04	

* Faculty also include Personal Promotees

- Note:
1. All the faculty is assigned responsibility for multiple programmes.
 2. Three members of faculty have retired during the period of report.
 3. One post of Assistant Scientist has been advertised

6.4.3. Technical and Supporting staff:

S. No.	Designation	Sanctioned	In place
1.	Assistant	01	01
2.	PA/Steno/JSS	01	01
3.	Messenger	01	01

Note: All the staff is assigned responsibility for multiple programmes.

6.4.4. Classrooms and Laboratories:

There is one Seminar cum-lecture-room equipped with LCD and internet facility. (Room No 203) The seminar room is used for teaching classes and conducting seminars. The seating capacity is 40. There is also one departmental library (Room No, 214) with books and thesis for referring to PG students for preparation of assignments, synopsis and others research works. Each faculty member has computer with its peripheral for performing day-to-day assignments.

The facilities in the department are sufficient to meet the requirements of the course curricula. Mention theory and practical batches for PG Programmes

- At M.Sc level, the Department offers 12 courses and 2 courses have practical components. There are limited seats in M.Sc. programme with an average of 3-7 students. Some courses are offered as minor courses for the students of other departments namely Agricultural Economics, Extension Education (COA), Extension Education and Communication Management, Family Resource Management, Human Development and Family Studies (COHS) and Biostatistics and Computers (COBS&H).
- Similarly, at Ph.D. level there are limited seats (3-4) in the department. Hence, there is only batch for theory classes and one batch for practical classes in all the courses. For Ph.D. the department offers 4 theory courses and 2 courses have practical components.
-

6.4.5. Conduct of Practical and Hands-on-Training:

Degree programme/ Courses	Practical /Hands-on- training/ How far students are getting desired practical and hands-on-training as per the curriculum
For B.Sc (For COA Hisar, COA Kaul, COA Bawal and COHS) (5 Courses)	
Soc 401	<p>The students get practical exposure on the following aspects:</p> <ul style="list-style-type: none"> • Characteristics of rural society. • Social institution: Family, Village Panchayat, School • Pattern of social organizations • Selection of lay leaders based on sociometry • Taboos and social values of rural society. • Rural development programmes • Problems of agriculture: Small size of land holding, Risk in Agriculture and Agrarian unrest, Natural Calamities • Problems of rural society: Food Insecurity, Poverty and Unemployment, Rural Credit and Indebtedness, Alcoholism and Caste System • Impact of agricultural mechanization on social life of farmers • Field study-cum-institutional visits, preparation of field projects for analyzing the problems of agriculture and rural society, theme based group <p>Assignments on functioning of Gram Panchayat, caste system, jajmani system, Mahatma Gandhi National Rural Employment Gaurantee Scheme , Education system etc.</p>
For B.Sc. (For COA Hisar, COA Kaul, COA Bawal and COHS) (5 Courses)	
Soc 402	<p>The students get practical exposure on the following aspects:</p> <ul style="list-style-type: none"> • Promoting self-understanding and building positive attitude; • Interpersonal communication skills; conflict management; nature and scope; • Motivation: meaning, definition and types; • Organizational development; • Stress management: meaning, factors and methods of stress management, yoga, meditation and other exercises for healthy life style; • Time management and behavioral skills; management of change and behavioral skills; • Leadership skills: concept of leadership, leadership styles, characteristics of leaders, pattern of leadership; • Group relations; group behavior: concept of group, features of group, elements of group, forms of interaction in group; • Decision making: definition, process and elements of decision making, type of decision makers, and art of making decision, decision making and problem solving technique. • Course is based on participatory process with the teacher playing the role of facilitator, the learners centered approach adopted by the

	teacher includes activities designed as interactive and experimental with the resulting emphasis on learning by doing the exercises such as: group discussion, case study, exercise/game, self –analysis by students about their styles and behaviour, role play and participants presentations.
M.Sc. (14 Courses)	
Soc 503	The students get practical exposure on the following aspects: <ul style="list-style-type: none"> • Quantitative methods and survey research : Assumptions of quantification and neaverenat. Survey techniques, operationalism and research design, samling design, questionnaire construction, interview schedule, measurement and scaling, reliability and validity, limitations of survey. • Qualitative research techniques : Technique and methods of qualitative research, participant observation/ethnography interview guide, case study method, content analysis, oral history, narratives, life history, genealogy. • Triangulation-Mixing qualitative and quantitative methodologies, social research, action research, participatory research. • Application of computers in social research. E.g. SPSS, ethical issues in social research.
Soc 512	<ul style="list-style-type: none"> • Use of computers for statistical analysis data, field based survey for collection and analysis of social science data etc. • Application of computers in social research. E.g. SPSS, ethical issues in social research.
Soc 599	<ul style="list-style-type: none"> • Students use practical knowledge to conduct researches in areas of Sociology: • Conduct interaction programmes with rural families and communities, as well as develop literature and strategies. • Field visit in rural area regarding socio-economic problems etc.
Ph.D. (8 Courses)	
Soc 699	<ul style="list-style-type: none"> • Students use practical knowledge to conduct researches in areas of Sociology: • Conduct interaction programmes with rural families and communities, as well as develop literature and strategies. • Field visit in rural area regarding gender studies and related health.

6.4.6. Supervision of students in PG/PhD programmes:

M.Sc. Programmes:

Year	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	03	06	5:1
2013-14	06	07	9:1
2014-15	05	08	6:1
2015-16	08	08	1:1
2016-17	07	05	1.4:1
2017-18	11	05	2.2:1

Ph.D. Programmes:

Year	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	02	06	3:1
2013-14	02	07	3:1
2014-15	02	08	3:1
2015-16	05	08	6:1
2016-17	06	05	1.2:1
2017-18	08	05	1.6:1

6.4.7. Feedback of stakeholders (Students, parents, industries, employers, farmers etc.):

Feedback of PG students is taken regarding teaching and improvement is made according to suggestions /observations. There is a system of annual self appraisal report (SAR) with respect to all faculty. SARs are reviewed by the Deans and Directors for performance appraisal and finally approved by the Worthy Vice-Chancellor. The performance of the faculty is also reviewed on the basis their results and feedback from the students. Valuable suggestions provided by institution are incorporated in the curriculum. The stakeholders' feedback is obtained through general meetings with parents and interaction with alumni to improve overall performance and quality of the university. The teachers get informal feedback from the students based on their parents' observations and suggestions. These suggestions are conveyed to the HODs and controlling officers.

6.4.8. Student intake and attrition in the programme for last five years:

Name of the Degree Programme	Actual student admitted in last five years						Attrition (%)					
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
M.Sc./M.A. (Sociology)	-	03	02	04	04	06	-	66.7	50	50	25	-
Ph.D. (Sociology)	-	02	01	03	02	04	-	50	-	33.3	50	25

6.4.9. ICT Application in Curricula Delivery: Use of ICT application in teaching and practical for curricula delivery

The faculty members of Department of Sociology use ICT in teaching including practical of all the courses. There is one Seminar Room with computer, LCD projector and internet connection. All faculty members have computer printer and internet connection in their offices. There is Wi-Fi facility for faculty, staff and students. This infrastructure provides opportunities for the use of ICT in quality teaching, research and extension. Faculty members use power point presentations, YouTube, emails and CD ROM in teaching all courses at UG level. Students also use online books.

6.4.10. The information pertaining to 6.4.1 to 6.4.9 shall be provided for each one of UG, PG and Ph.D. Degree Programmes, separately, and to be presented College-wise.

6.4.11. Since the accreditation of Programmes is related to the All India Admission from ICAR and also having weightage for College accreditation, therefore the data presented in the section 6.4 is liable to the verification at any stage.

6.4.12. Certificate (Applicable when SSR is submitted for Programme)

I, the Dean **Prof. Rajvir Singh**, hereby certify that the information contained in the Section 6.4.1 to 6.4.9 are furnished as per the records available in the college, and degree awarding university.



Signature of Dean of the College with Date & Seal





PROGRAMME - 9



**M. Sc. Zoology
and
Ph.D. Zoology**



6.4. About the Department

The combined Department of Zoology-Entomology of the erstwhile Punjab Agricultural University and subsequently of the Haryana Agricultural University functioned for almost seven years but a major thrust was on plant protection especially toxicology. In order to strengthen the role of Zoology in education and to exploit its areas, a need was felt to develop this discipline for evolving technology and serving as base for increasing agricultural production. Thus, an independent Department of Zoology came into existence on October 26, 1971 with eminent scientists and academician in chair like late Prof. R. P. Kapil and Prof. R.B. Mathur who nurtured it with their academic excellence and vision. Since then it has been working towards accomplishing its goals as per the mandate of the department to promote academic excellence in the field of Zoology.

The department offers M.Sc. and Ph.D. degrees in Zoology. At PG level the department offers eleven M.Sc and eight Ph.D. courses. The department has so far produced 106 M.Sc. and 59 Ph.D scholars some of them occupying high positions at the national level. At present, there are 9 M.Sc. students and 11 Ph.D. students. Most of our students have been getting fellowship like POSE, CSIR, ICAR, DST (INSPIRE), RGNP and merit fellowships. One student got third prize for best thesis award and five students were selected for HPSC. There is no UG programme going on in the Department, however, the department also caters to the requirements of UG programs of College of Agriculture, Hisar, Kaul and College of Home Science. The department is offering five Courses to Undergraduates of College of Agriculture and seven Courses to Undergraduates of I.C. College of Home Science.

The department is having a highly trained and talented faculty having vast experience and international exposure. All members of faculty have obtained Ph.D degree. The faculty has successfully handled many research programmes. At present research in one state scheme and two adhoc schemes are being carried out in the thrust areas of Zoology. Presently the faculty of this department is working on the molecular characterization of organisms, quantitative and qualitative losses due to mites, rodents, birds and bats, effect of pesticides and heavy metals on earthworms, vermiculture and fish health. During the period under report, the faculty has handled seven research projects and brought 172 publications which include 64 research papers, 5 book chapters and 73 abstracts from students' Theses work. The department has also published five edited book/proceedings, seven book chapters, six teaching manuals and one research bulletin. Faculty members have attended a number of refresher courses, national and international conferences, seminars, workshops, trainings, science conclave etc. M.Sc and Ph.D. students were motivated to attend conferences, seminars, trainings etc. During the last five years, M.Sc students participated in 16 such academic activities. Ph.D. students attended 26 conferences, seminars, trainings etc. during the last five years additionally, students participated in Cultural fairs/exhibitions/ Sports activities.

The faculty members are actively involved in extension work to extend knowledge and technical know-how of the developed technologies among rural and urban masses through trainings/demonstrations/awareness campaigns. During the period under report, eight trainings were organized for farmers.

Objectives of the Department

- To provide quality education and develop competency in students.
- To develop professionals in Zoology.
- To conduct research in thrust areas related to Zoology.
- To sensitize the rural masses through dissemination of appropriate technologies regarding pest management and vermicomposting.

6.4.1 Brief History of the Degree Programme:

M.Sc. programme in Zoology was initiated in 1974 to sensitize the students on various aspects of Zoology. Entry qualification for Masters programme is B.Sc (Hon. Agri), B.Sc with Zoology as one of the subject. Admission is through Common Entrance Test and the duration of the programme is 2 years. At present, number of M.Sc seats in the department is 6. Detailed information of passed out M.Sc. students during the last five years and presently enrolled students is provided in **Annexure ZOO I and II.**

Objectives of initiating M.Sc. programme

- To generate quality human resource in Zoology
- To provide the students in-depth and multidisciplinary knowledge in the field of Zoology
- To provide training and specialization to students in following research areas:
 - ✓ Acarology
 - ✓ Apidology
 - ✓ Vermiculture
 - ✓ Fish health
 - ✓ Rodentology
 - ✓ Faunal Diversity

Accomplishments of M.Sc. programme

- The department has produced 106 M.Sc. students.
- Majority of M.Sc. students (57.14 %; 8 out of 14) went for higher studies during last five years, one student (Abhinav) went for higher studies in Canada.
- One student (Asha) got DST (INSPIRE) fellowship to pursue Ph.D from PU Chandigarh
- Ms. Anju (2015BS28M) and Ms. Renu (2016BS17M) were awarded POSE fellowship during 2015-17 and 2016-18, respectively (**Annexure ZOO III**).
- Mr. Ajay (2016BS18M) was awarded Post Matric fellowship during 2017-18 (**Annexure ZOO III**)
- One student (Hemlata) out of 14 students (**Annexure ZOO I**) joined as guest faculty in Jat College, Hisar during last five years.
- Students' research brought out 31 publications (**Annexure ZOO IV**) during last five years on losses and management of mites and rodents, effective utilization of some exotic species of earthworms for the production of vermicompost and honeybee pollination.
- Sixteen students participated in Academic activities like Conferences, Seminar, Workshops, Trainings etc. during last five years (**Annexure ZOO V**)
- Students attended, participated and brought laurels in various events during Inter-Zonal Youth Festival, Inter-College Youth Festival, Talent Search, National Youth Parliament Competition and other extra co-curricular activities (**Annexure ZOO VI**).
- Mr. Manoj (2014BS24M) acted as Member, Anti ragging Committee, COBS&H in 2016-17
- Mr. Akshay Kumar (2017BS41M) joined as Member of mountaineering club during 2017-18.
- Presently, 9 M.Sc students are on roll and doing research on vermiculture, mites, birds, rodents and fruit eating bats (**Annexure ZOO II**).

Objectives of initiating Ph.D programme

Ph. D. Zoology programme was initiated in the year **1975** with the following objectives:

- To produce advanced quality human resource in the discipline of Zoology

- To conduct applied research with emphasis in agriculture zoology and allied fields
- To contribute in agricultural research , especially in following thrust areas :
 - ✓ Acarology
 - ✓ Apidology
 - ✓ Vermiculture
 - ✓ Fish health
 - ✓ Rodentology

Admission is through Common Entrance Test and the duration of the programme is 3 years. Medium of instruction is English. At present, number of Ph.D seats in the department is 3 which will be increased to 4 from the next session (2018-19). Detailed information of passed out Ph.D students during the last five years and presently enrolled students is provided in ZOO I and II.

Accomplishments of Ph.D programmes

- The department has so far produced 59 Ph.D. scholars some of them occupying high positions at the national level.
- Most of our students have been getting fellowship like DST (INSPIRE), RGNP and merit fellowships and cleared competitive examinations (**Annexure ZOO III**).
- One passed out student (Kanika) is acting as reviewer in prestigious journals in USA
- All 12 students (100 %) got placement during last five years (**Annexure ZOO I**). During last five years 29 students got placement in different institutions (**Annexure ZOO VII**).
- Students' research brought out 38 publications (**Annexure ZOO IV**) during the period under report on quantitative and qualitative losses due to mites in mushrooms and vegetable crops, management of mites by using eco-friendly management practices, effect of pesticides and heavy metals on earthworms and fish.
- Twenty nine students participated in twenty six Academic activities like Conferences, Seminar, Workshops, Trainings etc.(**Annexure ZOO V**).
- Students attended, participated and brought laurels in various events during Inter-Zonal Youth Festival, Inter-College Youth Festival, Talent Search, National Youth Parliament Competition and other extra co-curricular activities (**Annexure ZOO VI**).
- Ms. Urmila (2016BS10D) acted as Member, Anti ragging Committee, COBS&H in 2017-18.
- Presently, 11 Ph.D students are on roll and doing research on vermiculture, mites, birds, rodents and fruit eating bats (**Annexure ZOO II**)

Degree Programme offered by the Department	Specialization	Year of start	No. of seats							No. of students passed out						
			2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Total	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Total
M.Sc.	Zoology	1974	4	3	3	3	3	6	22	-	-	4	5	1	4	14
PhD	Zoology	1975	2	2	3	3	2	3	15	1	-	-	2	3	3	9
	Fisheries	Closed in 2010	-	-	-	-	-	-	-	-	3	-	1	-	-	4
Detail in Annexure ZOO I and II																

6.4.2 Faculty Strength: *The faculty strength of the Degree Programme need to be given cadre-wise, both sanctioned and in-place (under the table mentioned below). Clearly mention the number of permanent faculty appointed for the Degree Programme, part time faculty being deputed from the other departments (in such case mention the name of these departments). If the Degree Programme is also taking the help of Research staff, extension staff, contractual faculty, guest faculty, adjunct faculty or any other arrangement being made to complete the curriculum, it should be clearly mentioned in the report.*

One post of Professor, one post of Associate Professor and six posts of Assistant Professor and equivalent are sanctioned. There are 2 Professors (promoted under CAS) and 2 Assistant Professors are in the Department.

S. No.	Designation	Sanctioned	In Place	Vacant	As per Fifth Deans' Committee
1.	Professor and equivalent	2	2*	1	There is no UG programme in the college
2.	Associate Professor and equivalent	1	-	1	
3.	Assistant Professor and equivalent	6	2	3	
4.	Contractual faculty (Teaching Associate)		2 (2016-17)		

* Personal Promotees

- Note:** 1. All the faculty is assigned responsibility for multiple programmes.
2. Three Members of the faculty superannuated

*Drs. R.C Sihag, V.P. Sabhlok and Kanchan Monga superannuated between 2012 and 2016

6.4.3 Technical and Supporting staff: *The position of the technical and supporting staff of the Degree Programme including farm and field workers need to be mentioned for both sanctioned and in-place.*

S. No.	Designation	Sanctioned	In place
1.	Deputy Superintendent	-	1 (looking after the work of Assistant)
2.	Assistant	1	1
3.	Clerk	1	-
4.	Steno	1	1
5.	Messenger	1	-
6.	Lab Assistant	3	-

(One Lab Assistant retired on 31.12.2017)

Note: All the staff is assigned the responsibilities for the multiple programmes.

6.4.4 Classrooms and Laboratories: *Mention the number of class rooms and functional laboratories Inavailable for the degree programme and justify if it is sufficient to meet the course curricula requirement. Lists major equipments, laboratories, farm facilities, workshops and other instructional units being utilized for the award of the Degree Programme may be given. Mention theory and practical batches for the Degree Programme.*

The department has well established teaching and research laboratories. There are two UG lab, one PG lab, six research labs, one computer room, one seminar room and one departmental library. Hence, sufficient numbers of labs are there to meet the course curricula requirements. There is one Seminar room and UG Lab equipped with LCD and internet facility; Departmental Library with reference material.

List of classroom and functional laboratories

No. of Seminar rooms with sitting capacity	1 Seminar Room for PG Classes (seating capacity 30)
No. of lecture rooms with LCD	1 Seminar Room for PG Classes (seating capacity 30) 1 UG Lab for Practical in IATTE Building
No. of UG/PG lab	2, One in department common with PG lab, One in IATTE Building
No. of labs with specialized purpose	6
Acarology Lab (Lab No. 311) : Mite and biocontrol agent rearing, quantitative, qualitative loss estimation, mite extraction, etc	
Sanitized Aquarium Room (Lab No. 310) : For experiments on fish and related material	
Rodentology Lab (Lab No. 307) : Management studies on rodents, microbial studies	
Taxonomy, Physiology and Ecology Lab (Lab No. 306) : Preparation of keys for identification, physiological experiments on Earthworms etc.	
Biotechnology Lab (Lab No. 305) : Molecular characterization of organisms	
Vermi-fish technology Lab (Lab No. 302) : Earthworm rearing, vermiwash, microscopic studies, etc.	
Farm facilities/ Screen House	4 : for earthworm and plant mite rearing
Any other instructional units being utilized for the award of the Degree Programme	<ul style="list-style-type: none"> • 3 units in the Department (Museum, Computer lab, Departmental Library); Library contains 78 books, 106 M.Sc Thesis and 59 Ph.D Thesis • 4 Lecture rooms per Semester in COA • 2 Lecture rooms per Semester in COHS • One Lab at IATTE Building

The facilities in the department are sufficient to meet the requirements of the course curricula.

List of Major equipments

S. No.	Name of equipment	Location/Lab
1	Sony Cyber Shot Camera	Vermi-fish technology lab (Lab No. 302)
2	ELISA Realer (micro plate) Reader	Vermi-fish technology lab (Lab No. 302)
3	Washer	Vermi-fish technology lab (Lab No. 302)
4	Microscope(Premaster Binocular)	Vermi-fish technology lab (Lab No. 302)
5	Deep Freeze	Vermi-fish technology lab (Lab No. 302)
6	SOCS Plus Solvent extraction system	Vermi-fish technology lab (Lab No. 302)
7	Digital electronic balance	Vermi-fish technology lab (Lab No. 302)
8	Power supply Lab mate	Vermi-fish technology lab (Lab No. 302)
9	Mini vertical electrophoresis complete	Vermi-fish technology lab (Lab No. 302)

10	Interactive Podium with mike	Seminar Room (Room no.)
11	BOD	Acarology Lab. (Lab No. 311)
12	Autoclave	Rodentology Lab (Lab No. 307)
13	Electronic precision balance	Rodentology Lab (Lab No. 307)
14	Laminar Flow	Rodentology Lab (Lab No. 307)
15	BOD incubator	Rodentology Lab (Lab No. 307)
16	UV VIS Spectrophotometer	Rodentology Lab (Lab No. 307)
17	Electrophoresis unit Mini	Rodentology Lab (Lab No. 307)
18	Electrophoresis chambers Mini	Rodentology Lab (Lab No. 307)
19	Trinocular microscope	Rodentology Lab (Lab No. 307)
20	Trinocular microscope Acc.	Acarology Lab. (Lab No. 311)
21	Sony digicam	Rodentology Lab (Lab No. 307)
22	Electronic precision balance	Acarology Lab. (Lab No. 311)
23	BOD incubator -NSW	Biotechnology Lab (Lab No. 305)

The Department also have facilities like stereozoom microscope, compound microscopes, Laminar flow, Deep fridge, refrigerators, Magnet Stirrer with heating Hot plate, Distillation plant, Water bath, Sony Projector, Hot Air Oven, Vortex Mixer, Ph Meter, Soxhlet Extraction unit, R.O. system, Microwave, etc.

Mention theory and practical batches for UG Programme

- There is no UG programme going on in the Department, however, Department is offering five UG Courses to Undergraduates of College of Agriculture and seven UG Courses to Undergraduates of I.C. College of Home Science.
- For theory, from 1st Sem to 2nd Semester there is one batch with an average of about 35-38 students in College of Agriculture and I.C. College of Home Science.
- For practical, from 1st Sem to 2nd Semester there are 2 batches with an average of about 12-18 students in College of Agriculture and I.C. College of Home Science.

Mention theory and practical batches for PG Programmes

- At M.Sc level, the Department offers 11 courses and 9 courses have practical components. There are limited seats in M.Sc. programme with an average of 3-6 students. Some courses are offered as minor courses for students of other departments. There is only batch for theory classes and one batch for practical classes in all the courses with an average of 3-6 students.
- Similarly, at PhD level there are limited seats (2-3) in PhD programmes. Hence, there is only batch for theory classes and one batch for practical classes in all the courses. For PhD, the department offers 8 courses and 4 courses have practical components.
- In addition to major courses, students have to do courses from Minor and supporting subjects.
- M.Sc students also do five non credit courses

6.4.5 Conduct of Practical and Hands-on-Training: *It is important to have a sound grasp of the theory that underlies any professional degree. But there are some skills that can only be learned through hands-on -practice. It is important that much of the learning material in any given course should be provided in a way that allows students to get as involved as possible to increase their knowledge and abilities. Clearly mention how far students are getting*

desired practical and hands-on-training as per the curriculum and meeting above mentioned requirements.

Sound grasp of the theory is important for a professional degree. Some the skills are acquired through practical and hands-on training. Hence, it is important to provide learning material and opportunities that allows students to get involved in activities that increase their knowledge and skills. Besides imparting theoretical knowledge, students are provided practical skills and hands-on-training as per the curriculum requirements.

- At UG level under four year degree programme, out of these 4 courses, 3 courses provide practical skills and hands-on training.
- At M.Sc level, out of these 11 courses, 10 courses provide practical skills and hands-on training.
- At Ph.D level, out of the 8 courses, 2 courses have practical components.

Practical and Hands-on-Training for UG Courses

Courses with Cr. Hrs.	Practical and Hands-on-training	How far students are getting desired practical and hands-on-training as per the curriculum (bullet form)
ZOO 101 (Ag) Introductory Biology 1 +1	<ul style="list-style-type: none"> • Classification and general features of different animal types • Microscopic structure of mammalian tissues • Study of some physiological functions 	<ul style="list-style-type: none"> • Students were able to recognize different organisms belonging to invertebrates and vertebrate phyla • Students got knowledge of tissues, skeleton and morphological characters of organisms • Students benefitted by conducting experiments with their own hands
ZOO 101 (HS) Introductory Biology 1 +1	<ul style="list-style-type: none"> • Classification and general features of different animal types • Microscopic structure of mammalian tissues • Study of some physiological functions 	<ul style="list-style-type: none"> • Students were able to recognize different organisms belonging to invertebrates and vertebrate phyla • Students got knowledge of tissues, skeleton and morphological characters of organisms • Students benefitted by conducting experiments with their own hands
ZOO 102 (HS) Elementary Human Physiology 2 +1	<ul style="list-style-type: none"> • Test for the presence of sugar, starch, proteins and fats in suitable animal materials • Test for urea, sugar, albumin and bile salts 	<ul style="list-style-type: none"> • Students benefitted by conducting experiments with their own hands

Practical and Hands-on-Training in M.Sc Courses

Course with Cr. Hrs.	Practical and Hands-on-training	How far students are getting desired practical and hands-on-training as per the curriculum (bullet form)
ZOO 501 Comparative Animal Anatomy	<ul style="list-style-type: none"> • Anatomical study of the representative types from invertebrates and vertebrates through simulation models and 	<ul style="list-style-type: none"> • Increased knowledge about the details of the functional and evolutionary modification in various systems of invertebrates and

3+1	<p>charts</p> <ul style="list-style-type: none"> • Preparation of whole mounts with reference to the systems in theory • Study of histological slides 	vertebrates
ZOO 502 Taxonomy and Systematics of Animals 2+1	<ul style="list-style-type: none"> • Collection and preservation of certain animals • Study of local fauna and their identification • Identification of animals using keys • Taxonomy of animals based on biochemical and cytological techniques 	<ul style="list-style-type: none"> • Students were able to recognize and identify different organisms belonging to invertebrates and vertebrate phyla • Students collected the insects, other invertebrates and rodents from different habitats and preserve the organisms • Students were able to prepare seven types of keys to identify class, orders and species • Increased knowledge about biochemical and cytological techniques
ZOO 503 Environmental Biology and Wildlife conservation 2+1	<ul style="list-style-type: none"> • Introduction to the ecological equipments, measurement of ecological parameters • Productivity, population density and species diversity in different ecosystems • Determination of LD₅₀ and LC₅₀ values • Visit to zoo/sanctuary or other habitats 	<ul style="list-style-type: none"> • Due to man engineered activities, our environment is being degraded and many wild species are becoming extinct. Basic aspects and implications of these changes are disseminated among the students.
ZOO 504 Animal Physiology And Behaviour 3+1	<ul style="list-style-type: none"> • Some biochemical estimations, buffer systems; • Demonstration of some hormonal functions; recording of action potentials; kymographic study of muscle contractions and heart beat • Study of some behavioural aspects such as instinctive movements, orientation responses; maze learning in rats and activity rhythms in animals. 	Increased knowledge about the details of the behavioural aspects of animals
ZOO 505 Methodology and Developmental Biology 2+2	<ul style="list-style-type: none"> • Study of normal development with reference to normal tables of developmental stages of fish/frog/toad; • Histology of developing embryo using serial sectioning technique; • Study of organogenesis-histogenesis 	Increased knowledge about the details of the developmental stages, regeneration and metamorphosis in animals

	<p>of some organs in fish, frog/toad;</p> <ul style="list-style-type: none"> • Morpho-histology of gonads of some seasonal breeders; Observations on live gametes • Study of regeneration in planaria/ hydra/ earthworm; tail and limb regeneration in frog, tadpoles; tail regeneration in lizards; • Observation on normal metamorphosis in frog, tadpoles; effect of thiourea, thyroxin and prolactins, taxidermy. 	
ZOO 506 Apidology 2+1	<ul style="list-style-type: none"> • Identification of different kinds of bees and their castes, management and domestication of Solitary and social bees, • nesting behaviour of different bees, • Thermoregulation in social bees, artificial feeding, measurement of total population and Other parameters of the colony; • Chromatographic studies of different honeys and nectars, foraging behaviour of bees. 	<ul style="list-style-type: none"> • Bees are beneficial insects and make an integral part of the ecosystem, including agroecosystem. During the course, students gained knowledge about bees, their social structure, nesting and foraging behavior, management
ZOO 507 Fundamentals of Vermiculture 2+1	<ul style="list-style-type: none"> • Earthworms-their type study; their identification and classification, methods of sampling/collection and population estimation, • study of different life stages of earthworms and their culturing, • food preferences of earthworms, methods of vermicomposting, • chemical changes in organic matter due to earthworms activity 	Increased knowledge about the details of earthworms and vermicomposting
ZOO 508 Mammology 2+1	Identification of different types of mammals especially rodents; factors governing population density; study of rat burrows and their architecture; feeding and exploratory behaviour.	Exposure to the interaction of mammals with their environment, including activity and behaviour; adaptations, metabolism of population, communication and migration in mammals.
ZOO 509 Principles of Arachnology 2+1	<ul style="list-style-type: none"> • Collection, extraction, preservation, mounting and study of various arachnids, Study of spiders and mites • Slide preparation 	<ul style="list-style-type: none"> • Students were able to extract mites from stored grains, soil and house dust. • Students were able to differentiate the organisms of different orders and able

	<ul style="list-style-type: none"> • Study of organs and systems by charts/ simulation models, • Use of rearing techniques. 	<ul style="list-style-type: none"> • to mount the specimen permanently. • Students gained knowledge about organ systems • Students were able to culture different species plant mites, stored mites and studied the symptoms of honeybee mites
ZOO 591 Master's Research	<ul style="list-style-type: none"> • Students perform different experiments on mites, earthworms, fish and rodents to gain first hand knowledge, record data as per approved synopsis 	<ul style="list-style-type: none"> • Students learned extraction, culturing biochemical, histological, molecular, techniques, crop management, animal behavior studies, data recording and its statistical analysis

Practical and Hands-on-Training in Ph.D. Courses

Course with Cr. Hrs.	Practical and Hands-on-training	How far students are getting desired practical and hands-on-training as per the curriculum (bullet form)
ZOO 603 Advances in Acarology 2+1	<ul style="list-style-type: none"> • Collection, preservation and identification of mites upto family • Extraction methods • study of life history of some mites • Culture of mites of different habitats 	<ul style="list-style-type: none"> • Students were able to extract, collect and preserve mites from plants, stored grains, soil, honeybees and house dust and were able to identify the mites with the help of keys • Students were able to differentiate the different stages of mites eg eggs, arva, protonymph, deutonymph, tritonymph, male and females of different species. • Students were able to culture different species of plant mites, stored mites and entomopathogenic fungi for management of mites
ZOO 699 Doctoral Research	<ul style="list-style-type: none"> • Students perform different experiments on mites, earthworms, fish and rodents to gain first hand knowledge, record data as per approved synopsis 	<ul style="list-style-type: none"> • Students learned extraction, culturing biochemical, histological, molecular, techniques, crop management, animal behavior studies, data recording and its statistical analysis

6.4.6. Supervision of students in PG/PhD programmes: Number of students being supervised by Faculty in case of Masters/Ph. D Programme (as per ICAR/UGC guidelines). Mention the realistic figure number of qualified faculty in relation to the intake of students, as per the guidelines in the matter.

M.Sc. Programmes :

Year	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	4	5	0.8:1
2013-14	8	3	2.6:1

2014-15	9	3	3:1
2015-16	9	4	2.2:5
2016-17	9	4	2.2:5
2017-18	9	4	2.2:5

Details of Ph.D. programmes offered by the Department:

Year	Number of students on roll	Number of PG faculty	Student-teacher Ratio
2012-13	7	4	1.7:1
2013-14	7	2	3.5:1
2014-15	9	3	3:1
2015-16	9	3	3:1
2016-17	8	3	2.7:1
2017-18	8	4	2:1

6.4.7. Feedback of stakeholders (Students, parents, industries, employers, farmers etc.):

Mention the feedback mechanism (duly supported by the documents) from different stakeholders of the degree programme. What action the University has taken in last five years to address the issues raised in the feed back?

- There is a system of annual self appraisal report (SAR) with respect of all teaching faculty. SARs are reviewed by the Deans and Directors for performance appraisal and finally approved by the Worthy Vice-Chancellor. The performance of the faculty is also reviewed on the basis their results.
- Alumni and student feedback is invited on the basis of following criteria: Delivering of course contents, Teaching methodology, Student teacher interaction, Punctuality of the teacher
- Alumni Feedback is basis for selection of teachers for ICAR sponsored Best Teacher Award.
- Feedback from the students is also obtained to evaluate the quality of the teaching learning.
- On their suggestions, courses were revised and four new courses were proposed keeping in mind the competitive exams and Department's research activity.
- Revision of Course curricula of the department for under graduates and post graduates students (2016)
- The new courses (Invertebrate Zoology, Advances in Rodentology, Avian biology and applied ornithology, Advances in Ornithology) are vetted from Department of Zoology from PAU, Ludhiana, MDU Rohtak and KUK, Kurukshetra. These courses were approved by DAC, BOS, COBSH and RIC, CCSHAU for inclusion in the course curricula.
- The teachers and HOD get informal feedback from the students based on their parents' observation and suggestions.

6.4.8. Student intake and attrition in the programme for last five years: Year wise information on sanctioned strength, actual intake and attrition in the last five years of the Degree Programme, in the tabular form, shall be provided.

Name of the Degree Programme	Actual student admitted in last five years						Attrition (%)					
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
M.Sc.	4	3	3	3	3	6	-	-	-	-	-	-
Ph.D.	2	2	3	3	2	3	-	-	-	-	-	-

6.4.9. ICT Application in Curricula Delivery: The ICT is now integral part of the teaching programme. ICAR has also been promoting the use of ICT in teaching and practical. Mention whether the Degree Programme is meeting the expectations. If there is any shortfall, it shall be clearly mentioned.

- The faculty members of Department use ICT in teaching and practical.
- There is one Seminar Room with computer, LCD projector and internet connection.
- One UG Lab is also equipped with LCD projector.
- All faculty members have computer printer and internet connection in their offices.
- Students have separate computer room in the department.
- There is Wi-Fi facility for faculty, staff and students. This infrastructure provides opportunities for the use of ICT in quality teaching, research and extension.
- Faculty members use power point presentations, YouTube, emails and CD ROM in teaching courses at UG, PG and PhD level.
- Sharing of information through email, WhatsApp
- Students assignments on given topics and their presentation with the help of multi media
- Providing site details to students for further search on the course material
- Use of CeRA, digital library

6.4.10. The information pertaining to 6.4.1 to 6.4.9 shall be provided for each one of UG, PG and PhD Degree Programmes, separately, and to be presented College-wise.

6.4.11. Since the accreditation of Programmes is related to the All India Admission from ICAR and also having weightage for College accreditation, therefore the data presented in the section 6.4 is liable to the verification at any stage.

6.4.12. Certificate (Applicable when SSR is submitted for Programme)

I, the Dean **Prof. Rajvir Singh**, hereby certify that the information contained in the Sections 6.4.1 to 6.4.9 are furnished as per the records available in the college, and degree awarding university.



Signature of Dean of the College with Date & Seal



**Languages
and
Haryanvi Culture**



6.4 About the Department

H.A.U. being an agricultural university gives impetus to teaching, research & extension activities in agriculture & allied sciences. To strengthen these activities, the first & foremost tool is language. So, the Department of Languages & Haryanvi Culture was established. The Department of LHC is a purely teaching department. It caters to the needs of all the constituent colleges of the University by teaching U.G. and P.G. courses. The Department offers one course of Hindi for the students from foreign countries. The department offers two PG diploma courses i.e. Communication Skills in English and English-Hindi Translation.

The department is having a very talented and dedicated faculty that consists of two Professors, two Assoc. Professors and one Assistant Professor.

Objectives of the Department

- To familiarise the students with the aspects of Language and Literature.
- To equip the students with Communication Skills.
- To inculcate confidence in students through mock interview, group discussion etc.

6.4.1 Brief History of the Degree Programme: *Clearly mention in which year the degree program was initiated along with its objective and accomplishments.*

The Department does not provide Masters or Doctoral programme in the Department but it provides two diploma programmes of one year duration as under-

Objectives of initiating Diploma in Communication Skills in English

- To equip the students with the aspects of Language and Literature.
- To train the students with reading, writing, listening and speaking Skills.
- To prepare the students for their better career through mock interview, group discussion, etc.

Accomplishments of Diploma in Communication Skills in English

- The department has well developed infra structure for the Diploma Programme with well equipped Seminar room.
- The students are prepared for mock interview, group discussion etc. as the tailor-made English does not suit the needs of the students nowadays.
- The students are equipped with all the four skills of Communication so that they express themselves very clearly.
- Correct pronunciation of words of English is focused in teaching.

Objectives of initiating Diploma in English-Hindi Translation

- To familiarize the students with the concepts of editing, drafting and noting techniques.
- To enrich the students with administrative vocabulary and Grammar.
- To equip the students with the basics of Translation.

Accomplishments of Diploma in English-Hindi Translation

- Students are made to learn the basic concepts of translation, editing, drafting and noting.
- Administrative vocabulary is also taught to them.

TRAININGS CONDUCTED:

- The Department of Languages and Haryanvi Culture coordinates two trainings annually for the students on 'Effective Public Speaking and Communication Skills' and 'Personality Development' in collaboration with Directorate Students' Welfare. The faculty also trains the students for interviews by conducting sessions on Group Discussion and Mock Interviews.

LECTURES DELIVERED:

- The faculty of Languages and Haryanvi Culture works as a regular resource person and delivers lectures in the trainings and refresher courses organized for students, Teachers and non-teaching staff by D.S.W. & D.H.R.M., CCSHAU, Hisar.

JUDGING THE CONTESTS:

- The faculty of Languages and Haryanvi Culture works as a Judge in various contests like Debate, declamation, slogan-writing etc. organized by H.A.U. & other Institutes.

6.4.2 Faculty Strength: *The faculty strength of the Degree Programme need to be given cadre-wise, both sanctioned and in-place (under the table mentioned below). Clearly mention the number of permanent faculty appointed for the Degree Programme, part time faculty being deputed from the other departments (in such case mention the name of these departments). If the Degree Programme is also taking the help of Research staff, extension staff, contractual faculty, guest faculty, adjunct faculty or any other arrangement being made to complete the curriculum, it should be clearly mentioned in the report.*

Six posts of Assistant Professor are sanctioned. There are 2 Professors (all promoted under CAS). There are 2 Associate Professors (all promoted under CAS). There is one Assistant Professor in the department.

S. No.	Designation	Faculty Sanctioned	Faculty in Place	Vacant Position	As per Fifth Deans' Committee
1.	Professor and equivalent	-	02	-	There is no UG programme in the college
2.	Associate Professor and equivalent	-	02	-	
3.	Assistant Professor and equivalent	06	01	03	
	Total	06	03	03	

Note: All the faculty of this programme is assigned the responsibilities for the multiple programmes. Faculty appointed in teaching also carry extension activities.

Faculty Profile:

At present there are two Professors, two Associate Professors (all promoted under CAS), and one Assistant Professor. Out of these, one Professor is posted in Publication Unit and one Associate Professor is posted in DHRM. Specialization of faculty members is English Literature and Hindi Literature.

S. No.	Name	Designation	Experience	Qualification
1.	Dr. Krishna Hooda	Professor & Head	27	Ph. D.
2.	Dr. Sushma Anand	Professor	23	Ph. D.

3.	Dr. Aparna	Associate Professor	31	Ph. D.
4.	Mrs. Manju Mehta	Associate Professor	31	M. Phil.
5.	Dr. Poonam Mor	Assistant Professor	06	Ph.D.+N.E.T

Retired Faculty:

S.No.	Name	Designation	Year of Retirement
1.	Dr. A.K. Bhatnagar	Professor & Head	2014
2.	Dr. Anita Bhardwaj	Professor & Head	2015
3.	Dr. M.R. Harru	Professor	2015
4.	Dr. Mira Tomer	Professor & University Librarian	2016

6.4.3 Technical and Supporting staff: *The position of the technical and supporting staff of the Degree Programme including farm and field workers need to be mentioned for both sanctioned and in-place.*

S. No.	Sanctioned Technical and supporting staff	Sanctioned	In place	Vacant
1.	Assistant/ Steno	01	-	01 (Steno)
2.	Clerk	01	01	-
3.	Lab Asst. / Technician/ Attendants	-		-
4.	Messenger	01	01	-
Total		03	02	01

Note: All the staff is assigned the responsibilities for the multiple programmes.

6.4.4. Classrooms and Laboratories: *Mention the number of class rooms and functional laboratories available for the degree programme and justify if it is sufficient to meet the course curricula requirement. Lists major equipments, laboratories, farm facilities, workshops and other instructional units being utilized for the award of the Degree Programme may be given. Mention theory and practical batches for the Degree Programme.*

List of classroom and functional laboratories

Name of College/Department	
No. of lecture rooms with seating capacity	
No. of lecture rooms with LCD	1 Seminar Room for UG and PG Classes (seating capacity 30)

Mention theory and practical batches for UG Programme

There is no UG and PG programmes in the Department, however, Department is offering four UG Courses to Undergraduates of College of Agriculture (COA) , Hisar and COA, Kaul and 2 UG Courses to Undergraduates of I.C. College of Home Science. The department also offers 1 course of English to the students of College of Agricultural Engineering.

Average number of students in Theory and Practical Classes

S. No.	Batch of students in Theory Class						Batch of students in Practical class					
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
No Degree programme is offered by the Department. However, the department teaches the following courses for U.G. and P.G. students												
UG- Eng.102- COHS-Hisar												
1	1 (75)	1 (74)	1 (77)	1- (75)	1- (77)	1- (77)	3	3	3	3	3	3
Eng.101-COA-Hisar (2 sections)												
2.	1 137	1 81	1 113	1 98	1 124	1 138	4	4	4	4	4	4
Eng.101-COA (Kaul)												
3.	1 164	1 64	1 61	1 56	1 55	1 61	2	2	2	2	2	2
Eng.201- COAE&T-Hisar												
4.	1 60	1 54	1 56	1 39	1 42	1 40	2	2	2	2	1	1
Eng.103 COHS-Hisar												
5.	---	---	---	---	---	1 77						3
PGS-502- M.Sc & Ph.D.(COBSH, COHS, COA, COAE&T & M.B.A.) (No Theory Class)												
6.	---	---	---	---	---	---	3 (I Sem 130) & 2 (II Sem113)	3 (I Sem 122) & 2 (II Sem 112)	3 (I Sem 131) & 2 (II Sem 145)	3 (I Sem 147) & 2 (II Sem 86)	?? (I Sem 115 & 2 (II Sem134)	3 (I Sem 93) & 2 (II Sem109)

6.4.5 Conduct of Practical and Hands-on-Training: *It is important to have a sound grasp of the theory that underlies any professional degree. But there are some skills that can only be learned through hands-on -practice. It is important that much of the learning material in any given course should be provided in a way that allows students to get as involved as possible to increase their knowledge and abilities. Clearly mention how far students are getting desired practical and hands-on-training as per the curriculum and meeting above mentioned requirements.*

Degree programme/ Courses with Credit Hours	Practical and Hands-on- training courses	How far students are getting desired practical and hands-on-training as per the curriculum (bullet form)
For B.Sc (11)		
ENG.101 COA Comprehension and Communication Skills (160 students) 1 +1	ENG.101 COA (6 batches) • Group discussion • Dialogue writing and delivery • Guidelines of interview	<ul style="list-style-type: none"> • Students were benefitted by appearing in mock interviews. • Students were given some imaginary situations to practice conversation. In this way they would overcome their hesitation.

ENG 102 COHS General English (73 students) 1 +1	ENG 102 COHS (3 batches) <ul style="list-style-type: none"> • Phonetic symbols • Conversation practice • Paper reading 	<ul style="list-style-type: none"> • Keeping in view the spoken English the students were able to recognize the different phonetic symbols and the sounds they represented. • Students were able to read and comprehend the different columns of the newspaper with ease. • The students were benefitted by having the magical mixture of grammar vocabulary and phonetics.
ENG 103 COHS Technical Writing (73 students) 1 +1	ENG 103 (3 batches) <ul style="list-style-type: none"> • Phonetic transcription • Tips for facing Interview • Public speech • Group Discussion 	<ul style="list-style-type: none"> • Students were given the guidelines for facing interviews and mock interviews were also conducted so that they could get confidence for appearing in interviews. • They could learn pronunciation of English words because now they knew the proper use of dictionary. • Keeping in mind the need of the hour, the students were taught how to speak in front of audience and it definitely brought positive change in them.
ENG. 201 COAE Communication Skills And Personality Development (42 students) 1 +1	ENG. 201 (2 batches) <ul style="list-style-type: none"> • Conversation Practice • Group discussion • Oral presentation; speech acts; welcome address; presidential address and vote of thanks 	<ul style="list-style-type: none"> • Students were prepared for oral presentation as first impression about a person is framed in the manner he speaks. • They were prepared for group discussion which is very important process for the selection process in jobs.
For P.G. programmes		
PGS-502-(COBSH, COHS, COA, COAE&T & M.B.A.) Technical Writing and Communication Skills in English (150 students) 0+1	PGS-502-(3+2) <ul style="list-style-type: none"> • Conversation practice • Group discussion • Tips for facing Interview 	<ul style="list-style-type: none"> • Students were given some imaginary situations to practice conversation. In this way they would overcome their hesitation. • They could learn pronunciation of English words because now they knew the proper use of dictionary.

6.4.6. Supervision of students in PG/PhD programmes: *Number of students being supervised by Faculty in case of Masters/Ph. D Programme (as per ICAR/UGC guidelines). Mention the realistic figure number of qualified faculty in relation to the intake of students, as per the guidelines in the matter.*

The Department does not have PG/PhD programmes.

6.4.7. Feedback of stakeholders (Students, parents, industries, employers, farmers etc.): *Mention the feedback mechanism (duly supported by the documents) from different stakeholders of the degree programme. What action the University has taken in last five years to address the issues raised in the feed back?*

There is a system of annual self appraisal report (SAR) with respect of all teaching faculty. SARs are reviewed by the Deans and Directors for performance appraisal and finally approved by the Worthy Vice-Chancellor. Any suggestions provided by them are incorporated in the curriculum. The stakeholders' feedback on the overall performance and quality of the institutions is obtained through general meetings with parents and interaction with alumni. The teachers get informal feedback from the students based on their parents' observation and suggestions. These suggestions are conveyed to the HODs and controlling officers.

6.4.8. Student intake and attrition in the programme for last five years: *Year wise information on sanctioned strength, actual intake and attrition in the last five years of the Degree Programme, in the tabular form, shall be provided.*

The Department does not have degree programmes. The details of the two diploma programmes is as under-

Name of the degree program.	Actual students admitted in last five years						Attrition (%)					
	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
PGDC-I	8	16	-	10	12	10	87.5	87.5	100	80	75	70
PGDC-II	10	15	16	11	10	8	80	60	87.5	81.8	70	25

6.4.9. ICT Application in Curricula Delivery: *The ICT is now integral part of the teaching programme. ICAR has also been promoting the use of ICT in teaching and practical. Mention whether the Degree Programme is meeting the expectations. If there is any shortfall, it shall be clearly mentioned.*

Use of ICT application in teaching and practical for curricula delivery

Courses in	Total courses	Theory	Type of ICT Application
B.Sc.	07	Lecture Method	Power point, blackboard, white board, submission of assignments
M.Sc. (PGS-502)	01	„	Power point, blackboard, white board, submission of assignments
PhD (PGS-502)	01	„	Power point, blackboard, white board, online submission of assignments

The faculty members of the Department use ICT in teaching. There is one Seminar Room with computer, LCD projector and internet connection. All faculty members have computer printer and internet connection in their offices. There is Wi-Fi facility for faculty, staff and students. This infrastructure provides opportunities for the use of ICT in quality teaching. Faculty members use power point presentations, YouTube, emails and CD ROM in teaching courses at UG and PG level.

6.4.10. The information pertaining to 6.4.1 to 6.4.9 shall be provided for each one of UG, PG and PhD Degree Programmes, separately, and to be presented College-wise.

6.4.11. Since the accreditation of Programmes is related to the All India Admission from ICAR and also having weightage for College accreditation, therefore the data presented in the section 6.4 is liable to the verification at any stage.

6.4.12. Certificate (Applicable when SSR is submitted for Programme)

I, the Dean **Prof. Rajvir Singh**, hereby certify that the information contained in the Sections 6.4.1 to 6.4.9 are furnished as per the records available in the college, and degree awarding university.



Signature of Dean of the College with Date & Seal





Computer Section





6.4. About the Section:

The Computer Centre was established in 1979. The administrative control is with the Dean, College of Basic Sciences & Humanities. The Centre is located in the College of Basic Sciences & Humanities building with a total covered area of approx. 10,000 sq. ft. It has 8 rooms (seminar room, staff room, in-charge's room, software development lab, server and switch room, Network Lab, Teaching lab (UG & PG) etc.). The Computer Section has at present more than 67 desktop PCs and 6 printers for the use of students, faculty and staff. Three HP ProLiant DL580 G5 and two Xseries 235 IBM servers running Linux and Windows 2008 operating system is being used for web server, application server and radius server.

The installation of Campus-wide GIGABIT Network is implemented by this section with funds from AHRD project. The Campus wide network spread over more than 18 K.M. through fiber optic cables and is providing Internet facility to the stakeholder through 1 GBPS (Shared) leased line provided by National Knowledge Network (NKN). A firewall (Cyberoam) has been installed to ensure the internet security.

The computer section is currently providing the **Wi-Fi** facility to the students at their hostels as well as at colleges/offices for the stakeholders. The computer section has been catering the needs of students and researchers for their data analysis through SPSS/SAS/OPSTAT /Indostat etc.

Thrust area of the Section:

- Teaching of computer courses in UG and PG Classes (**Annexure COMP I**)
- Maintenance of campus wide area network
- Providing internet/Wi-Fi connectivity to university campus
- Statistical Data Analysis using SPSS, SAS Indostat and in-house developed online statistical analysis software OPSTAT.
- Statistical guidance for students
- Need based computer trainings for faculty/students (**Annexure COMP I**)
- Need based software development.
- Implementation of state government initiatives regarding digitalization such as Aadhar Enabled Biometric Attendance System (AEBAS).
- Implementation and maintenance of Anti-Plagiarism software (Turnitin)
- Implementation of IUMS/ERP modules for the Digitization of University Work
- Creation and Maintenance of University Website

6.4.1. Brief History of the Degree Programme: *This Section does not provide Masters or Doctoral programme in the Section but offer various computer courses to the students of different colleges during their Under Graduate, Masters or Doctoral programme.*

6.4.2. Faculty Strength:

S. No.	Designation	Sanctioned	In Place	Vacant	As per Fifth Deans' Committee
1.	Professor and equivalent	-	01**	-	There is no UG programme in the college
2.	Assistant Professor and equivalent	03	02*	02	
	Total				

Note: All the faculty of this programme is assigned the responsibilities for the multiple programmes. Faculty appointed in teaching also carry extension activities. The faculty publications are listed in **Annexure COMP I**.

* One Assistant Professor from EEI, Nilokheri is presently working in Computer Section.**One Professor presently transferred to Department of Mathematics and Statistics.

Faculty Profile:

S. No.	Name	Designation	Experience	Qualification
1.	Dr. O P Sheoran	Professor	25	Ph. D.
2.	Mr. Ram Niwas Sheokand	Assistant Professor	21	MSc (Stat.), MSc (Computer Sci.), MPhil, NET
3.	Ms. Sheetal Choudhary	Assistant Professor	08 months	MCA, UGC NET

Retired Faculty:

S. No.	Name	Designation	Year of Retirement
1.	Dr. D. S. Tonk	Professor	2016

6.4.3. Technical and Supporting staff:

S. No.	Sanctioned Technical and supporting staff	Sanctioned	In position	Vacant position
1.	Junior Programmer	02	01	01
2.	Console operator-cum-Data Entry Operator	02	02	-
3.	Senior Lab Assistant		01	-
4.	Computer Programmer		05	-

Note: All the staff is assigned the responsibilities for the multiple programmes.

*Sanctioned post is in Dean Office

**Sanctioned post is in KVKs

6.4.4. Classrooms and Laboratories:

List of classroom and functional laboratories and facilities

Name of College/Department	
No. of lecture rooms with seating capacity	1 with capacity of 30
No. of labs	2 computer labs UG & PG having 30 and 15 computers respectively
Servers (5)	1. HP Prolaint DL580G5 (1) (Web Server) 2. HP Prolaint DL580G4(2) (Application Server) 3. IBM Server Xseries 235 (2) (Radius Server and Spam Server)
Firewall	Cyberoam CR1500ia 10.6.5
Controllers	WLC2800 Juniper Make (2)
Router	Juniper Make (1)
Core Switches	QFX5100 Juniper Make (3)
Network Switches (PoE) for wi-fi	Ex3300 Juniper Make (18)
Network Switches for LAN	75 (Entrasys, DLink and HP)
Access Points (Wi-fi)	Juniper Make (190)

Network access points	1400 Approximately
Desktop Computers for Labs and staff	60
UPS	5 KVA Vinitec Make (5) 3 KVA Vinitec (1) and APC (1) 2 KVA Tata Libert(1) 2 KVA Vinitec (2) Out of order

Mention theory and practical batches for UG Programme:

6.4.5. Conduct of Practical and Hands-on-Training: *It is important to have a sound grasp of the theory that underlies any professional degree. But there are some skills that can only be learned through hands-on -practice. It is important that much of the learning material in any given course should be provided in a way that allows students to get as involved as possible to increase their knowledge and abilities. Clearly mention how far students are getting desired practical and hands-on-training as per the curriculum and meeting above mentioned requirements.*

Degree programme/ Courses with Cr. Hrs	Practical and Hands-on- training courses	How far students are getting desired practical and hands-on-training as per the curriculum (bullet form)
Courses for UG – (7)		
COMP 1 COA, COHS Computer Technique-I 0 +2	COMP 1 COA,COHS <ul style="list-style-type: none"> • Introduction to computer • Concept of Memory • Introduction to Windows • MS Word & Ms Excel 	<ul style="list-style-type: none"> • Students were benefitted by knowing about the computer and memory. • Students were able to write a letter, format the letter and also able to work with their raw data and use to able to perform calculations and generate graphs on it.
COMP 2 COA, COHS Computer Technique-II 0 +3	COMP 2 COA,COHS <ul style="list-style-type: none"> • Introduction to Database • MS Access • Learn about database structure 	<ul style="list-style-type: none"> • Students were benefitted by knowing about the data base management system. • Students were able to store, retrieve, edit, view data by using database management system
COMP 21 COA, COHS Computer Technique-III 0 +2	COMP 21 COA,COHS <ul style="list-style-type: none"> • Introduction to WWW • HTML Fundamentals • Learn to create webpages using different tools 	<ul style="list-style-type: none"> • Students were benefitted by knowing about the World Wide Web and Internet basics. • Students were able to create their own webpage and able to format them.
COMP 22 COA, COHS Computer Technique-IV 0 +3	COMP 22 COA,COHS <ul style="list-style-type: none"> • Introduction to System Development Life Cycle • Financial accounting package 	<ul style="list-style-type: none"> • Students were benefitted by knowing about the Development of System and its life cycle. • Students were able to learn financial accounting package like Tally
COMP 100 COHS Computer Applications 0 +2	COMP 100 COHS <ul style="list-style-type: none"> • Introduction to Operating 	<ul style="list-style-type: none"> • Students were benefitted by knowing about the Introduction to Operating System.

	<p>System</p> <ul style="list-style-type: none"> • Learn about MS Word, MS Excel, MS Power point 	<ul style="list-style-type: none"> • Students were able to learn about Word Processing Tool, Electronics Spreadsheet and able to create presentation
<p>COMP 101 COHS Introductory Computer Applications 1 +1</p>	<p>COMP 101 COHS</p> <ul style="list-style-type: none"> • Introduction to Operating System like DOS, Windows • Learn about MS Word, MS Excel, MS Power point 	<ul style="list-style-type: none"> • Students were benefitted by knowing about the Introduction to Operating System and use them. • Students were able to learn about Word Processing Tool, Electronics Spreadsheet and able to create presentation
<p>COMP 102 COHS Introductory Agricultural Informatics 1 +1</p>	<p>COMP 102 COHS</p> <ul style="list-style-type: none"> • Introduction to Computers • Learn about MS Word, MS Excel, MS Power point, MS Access • Introduction to WWW 	<ul style="list-style-type: none"> • Students were benefitted by knowing about the Basics of Computer. • Students were able to learn about Word Processing Tool, Electronics Spreadsheet and able to create presentation • Students were able to know about the fundamentals of internet
Courses for PG (4)		
<p>COMP 501 Computer Programming in Statistical Research 2 +1</p>	<p>COMP 501</p> <ul style="list-style-type: none"> • Introduction to computer, Memory, Number System • Concept of Algorithm and Flowchart, Assignment Statement, Subroutines and variable 	<ul style="list-style-type: none"> • Students were benefitted by knowing about the computer and memory, Number System. • Students were able to know about basics of Programming.
<p>COMP 502 Computer Fundamental 1 +2</p>	<p>COMP 502</p> <ul style="list-style-type: none"> • Introduction to Computer, Organization • MS office tools like MS Word, MS Excel etc 	<ul style="list-style-type: none"> • Students were benefitted by knowing about the computer organization, Number System. • Students were able to know about Word processor, Electronics Spreadsheet, Power point presentation etc
<p>COMP 503 Programming through 'C' 2 +1</p>	<p>COMP 503</p> <ul style="list-style-type: none"> • Introduction to C Language • Programming in C using Array and structures 	<ul style="list-style-type: none"> • Students were benefitted by knowing about the Programming language like C. • Students were able to learn about programming in c using array and structures
<p>COMP 504 Scientific Data Processing 1 +2</p>	<p>COMP 504</p> <ul style="list-style-type: none"> • Introduction to Statistical Package • Data Transformation and statistical package • Handling the statistical procedure 	<ul style="list-style-type: none"> • Students were benefitted by knowing about the Statistical Packages like SPSS/SAS. • Students were able to learn about data transformation, able to handle the statistical procedure

In addition to this, computer trainings are organized which are listed in Annexure COMP I.

6.4.6. Supervision of students in PG/PhD programmes: Number of students being supervised by Faculty in case of Masters/Ph. D Programme (as per ICAR/UGC guidelines). Mention the realistic figure number of qualified faculty in relation to the intake of students, as per the guidelines in the matter.

NA

6.4.7. Feedback of stakeholders (Students, parents, industries, employers, farmers etc.): Mention the feedback mechanism (duly supported by the documents) from different stakeholders of the degree programme. What action the University has taken in last five years to address the issues raised in the feed back?

NA

6.4.8. Student intake and attrition in the programme for last five years: Year wise information on sanctioned strength, actual intake and attrition in the last five years of the Degree Programme, in the tabular form, shall be provided.

NA

6.4.9. ICT Application in Curricula Delivery: The ICT is now integral part of the teaching programme. ICAR has also been promoting the use of ICT in teaching and practical. Mention whether the Degree Programme is meeting the expectations. If there is any shortfall, it shall be clearly mentioned.

Teaching Programme (UG)			
Course No.	Title	Cr. Hrs	Teacher(s)
Comp-21 (COA) Two Sections	Computer Technique- III	0+2	O P Sheoran
Comp-21 (COHS) Two Sections	Computer Technique- III	0+2	R N Sheokand
Comp-101 (COA) (1 year 4 st year) RNT	Introductory Computer Application	1+1	R N Sheokand
Comp-22 (COA) Two Sections	Computer Techniques IV	0+3	O.P. Sheoran
Comp-22 (COHS) Two Sections	Computer Techniques IV	0+3	O.P. Sheoran
Comp 100 (Six Pr. Groups)	Computer Applications	0+2	R N Sheokand
Teaching Programme (PG)			
Course No.	Title	Cr. Hrs	Teacher(s)
Comp 501	Computer Programming in Statistical Research	2+1	O P Sheoran
Comp 502	Computer Fundamental	1+2	R N Sheokand
Comp 503	Computer Programming through 'C'	2+1	O.P. Sheoran
Comp 504	Scientific Data Processing	1+2	R.N. Sheokand

- The faculty of this section has been teaching the practical courses to the students of UG classes in the computer labs having ICT tools like computers, printers. These students learn about the ICT tools in their course like MS Word, MS Powerpoint, MS Excel, Internet, E-Mail, TALLY, Programming languages etc.
- The faculty of this section has taught the theory courses to the PG students in the seminar room equipped with ICT Tools like projector with LCD and computer, White Board.

6.4.10. The information pertaining to 6.4.1 to 6.4.9 shall be provided for each one of UG, PG and PhD Degree Programmes, separately, and to be presented College-wise.

6.4.11. Since the accreditation of Programmes is related to the All India Admission from ICAR and also having weightage for College accreditation, therefore the data presented in the section 6.4 is liable to the verification at any stage.

6.4.12. Certificate (Applicable when SSR is submitted for Programme)

I, the Dean **Prof. Rajvir Singh**, hereby certify that the information contained in the Section 6.4.1 to 6.4.9 are furnished as per the records available in the college, and degree awarding university.



Signature of Dean of the College with Date & Seal

ANNEXURES

CONTENTS

S. No.	ANNEXURES	PARTICULARS	PAGE (S)
1.	ANNEXURES - SELF STUDY REPORT OF THE COLLEGE		
1.1	COBSH-I	Students cleared examinations like NET/ARS/HPSC etc	211
1.2	COBSH-II	Students who got fellowships other than university merit fellowship	217
1.3	COBSH-III	Students Placements	221
1.4	COBSH-IV	M.Sc. Students' Participation in Seminar/ Conf./Workshop	226
1.5	COBSH-V	Ph.D. Students' Participation in Seminar/ Conf./Workshop	230
1.6	COBSH-VI	Reserch Projects of faculty from outside Agency	246
1.7	COBSH-VII	Faculty Research Publications (2012-17)	249
1.8	COBSH-VIII	Faculty Participation in Seminar/ Conf. /Workshop	318
2.	ANNEXURES - SELF STUDY REPORT OF THE PROGRAMMES		
2.1	BIOCHEM I-V	Programme # 1 (M.Sc. and Ph.D. Biochemistry)	329
2.2	BPP I-IV	Programme # 2 (M.Sc. and Ph.D. Plant Physiology)	343
2.3	CHEM I-V	Programme # 3 (M.Sc. and Ph.D. Chemistry)	351
2.4	FST I- V	Programme # 4 (M.Sc. and Ph.D. Food Science & Technology)	361
2.5	STAT I- IV	Programme # 5 (M.Sc. and Ph.D. Statistics)	379
2.6	MICRO I- IX	Programme # 6 (M.Sc. and Ph.D. Microbiology)	383
2.7	MBBB I- III	Programme # 7 (M.Sc. and Ph.D. Molecular Biology and Biotechnology; M.Sc. Bioinformatics)	396
2.8	SOC I-III	Programme # 8 (M.Sc. and Ph.D. Sociology)	420
2.9	ZOO I-VII	Programme # 9 (M.Sc. and Ph.D. Zoology)	426
2.10	COMP I	Trainings organized, publications and teaching for UG	440

Annexure COBSH I

Students cleared examinations like NET/ARS/HPSC etc.

Sr. No.	Name of student and Admn No.	Year	Department	Type of examinations
1.	P. Bhasker (2009BS63D)	2012	Botany & Plant Physiology	NET
2.	Reena Devi (2011BS61D)	2012	Biochemistry	CSIR-NET, ARS-NET
3.	Shifa Narula (2009BS140M)	2012	Microbiology	ARS- NET
4.	Annu Goel (2009BS58M)	2012	Microbiology	CSIR NET
5.	Charul Chaudhary (2011FST27D)	2012	Food Science and Technology (FST)	GATE - 2012
6.	Anuradha Srivastava (2010FST61D)	2012	FST	ARS-NET-2013 (Prel)
7.	Sonu Panwar (2010FST103D)	2012	FST	ARS-NET-2013 (Prel)
8.	Isha Kaushik (2012FST33D)	2012	FST	ARS-NET-2013 (Prel)
9.	Jyoti Soni (2008FST166M)	2012	FST	GATE - 2012
10.	Neelam Upadhyay (2008FS167M)	2012	FST	GATE - 2012
11.	Meenakshi Jain (2010BS40D)	2012	Molecular Biology, Biotechnology and Bioinformatics (MBB&B)	UGC NET
12.	Surender Khatodia (2009BS41D)	2012	MBB&B	UGC NET
13.	Jyoti Taunk (2009BS40D)	2012	MBB&B	UGC NET
14.	Sandeep Yadav (2011BS19D)	2012	MBB&B	CSIR NET
15.	Prince Saini (2010BS126M)	2012	MBB&B	CSIR NET
16.	Pradeep Kumar (2010BS38D)	2012	MBB&B	ARS NET
17.	Jitender Kumar (2007BS7D)	2012	MBB&B	ARS NET
18.	Iqbal (2009BS43D)	2012	MBB&B	CSIR NET
19.	Sunita (2014BS10D)	2013	Botany & Plant Physiology	NET
20.	Anuradha Srivastava (2010FST61D)	2013	FST	ARS-NET (Selected)
21.	Munish Siwatch (2007FST281M)	2013	FST	ARS-NET-2013 (Mains)

22.	Neelam Upadhyay 2008FS167M	2013	FST	ARS-NET-2013 (Mains)
23.	Ankit Goyal 2008FS157M	2013	FST	ARS-NET-2013 (Mains)
24.	Neelam Upadhyay 2008FS167M	2013	FST	ARS-NET-2013 (Mains)
25.	Ritu Sindhu 2013FST117M	2013	FST	ARS-NET-2013 (Mains)
26.	Vikas Joon (2009BS148M)	2013	Mathematics & Statistics	ARS-NET
27.	Hemanta Kumar Mondal (2012BS17D)	2013	Microbiology	ARS-NET
28.	Khan Mohd Sarim (2011BS13D)	2013	Microbiology	ARS-NET
29.	Rashmi Yadav (2012BS18D)	2013	Microbiology	ARS-NET
30.	Snehlata (2012BS12M)	2013	Microbiology	ARS-NET
31.	Ajay Mangtu Ram (2011BS99M)	2013	Microbiology	ARS-NET
32.	Monika (2013BS18D)	2013	Microbiology	ARS-NET
33.	Navin (2010BS41D)	2013	MBB&B	CSIR NET
34.	Mukesh (2011BS18D)	2013	MBB&B	CSIR NET
35.	Asha (2010BS43D)	2013	MBB&B	CSIR NET
36.	Rajesh (2010BS42D)	2013	MBB&B	ARS NET
37.	Anju Kharb (2014BS14D)	2013	MBB&B	CSIR NET
38.	Reema Sherwal (2011BS17D)	2013	MBB&B	ARS NET
39.	Niharika (2009BS121M)	2013	MBB&B	CSIR NET
40.	Sumit Jangra (2013BS28D)	2013	MBB&B	ARS NET
41.	Nitish Bansal	2013	Zoology & Aquaculture	NET
42.	Neha Wadhwa (2011BS63D)	2014	Biochemistry	ARS-NET
43.	Babita Rani (2012BS7D)	2014	Biochemistry	ARS-NET
44.	Reena Devi (2011BS01D)	2014	Biochemistry	CSIR-NET, ARS-NET
45.	Poonam Chaudhary (2013BS05D)	2014	Biochemistry	ARS-NET, CSIR-NET
46.	Neelam Upadhyay (2008FS167M)	2014	FST	ARS-NET-2014 (Selected)
47.	Darshana (2008FST162M)	2014	FST	ARS-NET-2014

48.	Anand (2009FST151M)	2014	FST	ARS-NET-2014
49.	Poonam (2009FST157M)	2014	FST	ARS-NET-2014
50.	Kuldeep(2009FST156M)	2014	FST	ARS-NET-2014
51.	Sonal Zanwar (2010FST243M)	2014	FST	ARS-NET-2014
52.	Aneeta Khatak (2010FST61D)	2014	FST	ARS-NET-2014
53.	Sonu Panwar (2010FST103D)	2014	FST	ARS-NET-2014
54.	Sangeeta (2011FST30D)	2014	FST	ARS-NET-2014
55.	Jyoti Parbha Bishnoi (2011FST28D)	2014	FST	ARS-NET-2014
56.	Rashmi (2011FST122M)	2014	FST	ARS-NET-2014
57.	Akanksha Jain (2012FST32D)	2014	FST	ARS-NET-2014
58.	Neeraj 2012FST34D	2014	FST	ARS-NET-2014
59.	Sucheta 2013FST33D	2014	FST	ARS-NET-2014
60.	Simran 2013FST32D	2014	FST	ARS-NET-2014
61.	Monika Dahiya 2013FST34D	2014	FST	ARS-NET-2014
62.	Priyanka Parmar (2011BS09D)	2014	Microbiology	ARS-NET
63.	Deepika Kadian (2011BS12D)	2014	Microbiology	ARS-NET
64.	Manisha Phour (2012BS14D)	2014	Microbiology	ARS-NET
65.	Anju Sehrawat (2013BS14D)	2014	Microbiology	ARS-NET
66.	Garima Arya (2010BS132M)	2014	MBB&B	CSIR NET
67.	Kuldeep Sachdeva (2014BS26M)	2014	MBB&B	CSIR NET
68.	Kavita Sharma	2014	Zoology & Aquaculture	ARS NET
69.	Savita Duhan (2012BS11D)	2015	Botany & Plant Physiology	ARS NET
70.	Suman Malik (2013BS11D)	2015	Botany & Plant Physiology	ARS NET
71.	Preeti Goyal (2011BS03D)	2015	Biochemistry	ARS-NET
72.	Ritu (2015BS4M)	2015	Chemistry	ARS NET
73.	Harshitha T. 2013FST44M	2015	FST	ARS-NET-2015
74.	Priyanka Sharma 2013FST45M	2015	FST	ARS-NET-2015

75.	Sucheta 2013FST33D	2015	FST	ARS-NET-2015
76.	Monika Mathur 2014FST29D	2015	FST	ARS-NET-2015
77.	Neeraj 2012FST34D	2015	FST	ARS-NET-2015
78.	Mujahid Khan (2015BS11D)	2015	Mathematics & Statistics	UGC-NET
79.	Umang Ahlawat (2013BS15D)	2015	Microbiology	ARS-NET
80.	Rekha (2013BS19D)	2015	Microbiology	ARS-NET
81.	AartiYadav (2013BS16D)	2015	Microbiology	ARS-NET
82.	Rinku (2014BS18D)	2015	Microbiology	ARS-NET
83.	Subha (2013BS13D)	2015	Microbiology	ARS-NET
84.	Rashmi (2012BS18D)	2015	Microbiology	ARS-NET
85.	Kavita (2015BS07D)	2015	Microbiology	ARS-NET
86.	Ruchi Sharma (2015BS10D)	2015	Microbiology	ARS-NET
87.	Suman (2014BS17D)	2015	Microbiology	ARS-NET
88.	Shikha Mehta (2012BS13D)	2015	Microbiology	ARS-NET
89.	Kuldeep (2014BS14D)	2015	Microbiology	ARS-NET
90.	Swati (2014BS13D)	2015	Microbiology	ARS-NET
91.	Aakaknsha (2011BS11D)	2015	Microbiology	ARS-NET
92.	Aastha (2016BS05D)	2015	Microbiology	ARS-NET
93.	Tanvi (2013BS17D)	2015	Microbiology	ARS-NET
94.	Sunil Kumar(2013BS18M)	2015	Sociology	NET
95.	Bijender Kumar (2017BS26D)	2015	Sociology	NET
96.	Poonam (2011BS23D)	2016	Botany & Plant Physiology	ARS NET
97.	Manohar Lal (2014BS09D)	2016	Botany & Plant Physiology	ARS NET
98.	Pooja Ahlawat (2015BS34M)	2016	Botany & Plant Physiology	ARS NET

99.	Biswabiplab Singh (2015BS33M)	2016	Botany & Plant Physiology	ARS & CSIR NET
100.	Ajeev Kumar (2016BS19D)	2016	Botany & Plant Physiology	ARS NET
101.	Naresh Kumar (2013BS7D)	2016	Biochemistry	ARS-NET
102.	Bunty Sharma (2010BS101D)	2016	Biochemistry	ARS-NET
103.	Anamika (2015BS5D)	2016	Biochemistry	CSIR-NET, ARS-NET
104.	Parvesh(2016BS2D)	2016	Chemistry	CSIR-NET
105.	Rahul (2013FST46M)	2016	FST	UGC- NET-2016
106.	Harsha (2014FST37M)	2016	FST	ARS-NET-2016
107.	Mujahid Khan (2015BS11D)	2016	Mathematics & Statistics	UGC-NET
108.	Salinder (2012BS21D)	2016	Mathematics & Statistics	UGC-NET
109.	Pankaj (2015BS13M)	2016	Microbiology	ARS-NET
110.	Suman Chaudhary (2014BS17D)	2016	Microbiology	ARS-NET
111.	Swati Sindhu (2014BS13D)	2016	Microbiology	ARS-NET
112.	Anupama Dahiya (2014BS16D)	2016	Microbiology	ARS-NET
113.	Kavita (2015BS07D)	2016	Microbiology	ARS-NET
114.	Ruchi Sharma (2015BS10D)	2016	Microbiology	ARS-NET
115.	Raman Jangra (2014BS09M)	2016	Microbiology	ARS-NET
116.	Shalu (2016BS12D)	2016	MBB&B	CSIR NET
117.	Virender (2013BS36M)	2016	MBB&B	CSIR NET
118.	Divya (2015BS29M)	2016	MBB&B	CSIR NET
119.	Kuldeep (2014BS26M)	2016	MBB&B	CSIR NET
120.	Disha (2013BS24D)	2016	MBB&B	ARS NET
121.	Priti (2013BS26D)	2016	MBB&B	ARS NET
122.	Rahul Kumar Meena (2012BS30D)	2016	MBB&B	ARS NET
123.	Asha	2016	Zoology & Aquaculture	HPSC cleared
124.	Vijayanti	2016	Zoology & Aquaculture	HPSC cleared
125.	Komal (2013BS23D)	2016	Zoology & Aquaculture	HPSC Theory cleared
126.	Itisha (2013BS22D)	2016	Zoology & Aquaculture	HPSC Theory cleared
127.	Monika (2013BS29D)	2016	Zoology & Aquaculture	HPSC Theory cleared
128.	Sonika (2007BS23D)	2016	Zoology & Aquaculture	HTET (PGT Biology)

129.	Biswabiplab Singh (2015BS33M)	2017	Botany & Plant Physiology	NET
130.	Sunita (2014BS10D)	2017	Botany & Plant Physiology	HPSC cleared
131.	Deepika (2016BS18D)	2017	Botany & Plant Physiology	HPSC cleared
132.	Nidhi Dalal (2014FST36M)	2017	FST	ARS-NET-2017
133.	Ekta Hooda (2016BS6D)	2017	Mathematics & Statistics	UGC-NET
134.	Kanika (2015BS17D)	2017	MBB&B	CSIR NET
135.	Rinku (2017BS21D)	2017	MBB&B	GATE
136.	Rahul (2016BS19M)	2017	Zoology & Aquaculture	GATE



Annexure COBSH II**Students who got fellowships other than university merit fellowship**

Sr. No.	Name of student and Admn No.	Year	Department	Type of Fellowship
1.	Ekta (2010BS55D)	2012	Biochemistry	DST-INSPIRE
2.	Neha Wadhwa (2011BS2D)	2012	Biochemistry	DST-INSPIRE
3.	Preeti Goyal (2011BS3D)	2012	Biochemistry	DST-INSPIRE
4.	Satyashree (2012BS1M)	2012	Chemistry	POSE
5.	Akanksha Jain 2012FST32D	2012	Food Science and Technology	INSPIRE, DST
6.	Sango Lule Victor 2012FST34M	2012	Food Science and Technology	ICCR Scholarship
7.	Wafula Nelson 2012FST35M	2012	Food Science and Technology	ICCR Scholarship
8.	Hemanta Kumar Mondal	2012	Microbiology	ICAR-SRF(PGS)
9.	Surender Khatodia (2009BS41D)	2012	MBB&B	UGC
10.	Meenakshi Jain (2010BS40D)	2012	MBB&B	UGC
11.	Iqbal (2009BS43D)	2012	MBB&B	National Testing Services, MHRD
12.	Ms Laxmi Tomar	2012	MBB&B	Monsanto-Beachell Borlaug
13.	Meenu Gupta (2009BS37D)	2012	MBB&B	Commonwealth
14.	Naveen (2010BS41D)	2012	MBB&B	Rajiv Gandhi National
15.	Sunita Godara (2009BS52D)	2012	Zoology & Aquaculture	INSPIRE, DST
16.	Sunita Rani (2008BS14D)	2012	Zoology & Aquaculture	Rajiv Gandhi National Fellowship (RGNF)
17.	Manju Rani (2008BS23D)	2012	Zoology & Aquaculture	Rajiv Gandhi National Fellowship (RGNF)
18.	Reena Devi (2011BS1D)	2013	Biochemistry	UGC-JRF & SRF
19.	Dimple (2013BS3M)	2013	Chemistry	POSE
20.	Susheel Gulati (2013BS1M) (2015BS1D)	2013	Chemistry	POSE in M.Sc INSPIRE DST in Ph.D

21.	Neha Gupta (2013BS1D)	2013	Chemistry	INSPIRE, DST
22.	Anjani (2013BS5D)	2013	Chemistry	CSIR-JRF
23.	P. Bhasker (2009BS63D)	2013	Botany & Plant Physiology	INSPIRE, DST
24.	Poonam (2011BS23D)	2013	Botany & Plant Physiology	INSPIRE, DST
25.	Harshitha T 2013FST44M	2013	Food Science and Technology	ICAR-JRF
26.	Madushikha K. Ransingha 2013FST43M	2013	Food Science and Technology	ICCR Scholarship
27.	Dang Linh Man 2013FST42M	2013	Food Science and Technology	ICCR Scholarship
28.	Rahul 2013FST46M	2013	Food Science and Technology	BR Ambedkar Post Matric SC/ST Scholarship
29.	Simran 2013FST32D	2013	Food Science and Technology	INSPIRE, DST
30.	Nitika Sandhu (2009BS38D)	2013	MBB&B	Monsanto-Beachell Borlaug
31.	Ms. Richa Singh	2013	MBB&B	BBSRC-DFID predoctoral
32.	Jyoti Taunk (2009BS40D)	2013	MBB&B	BBSRC-DFID predoctoral
33.	Ravi Mehndiratta (2012BS24D)	2013	MBB&B	DST-INSPIRE
34.	Amit Pippal, (2012BS29D)	2013	MBB&B	Rajiv Gandhi National
35.	Rahul Kumar Meena, (2012BS30D)	2013	MBB&B	Rajiv Gandhi National
36.	Sunita (2014BS10D)	2014	Botany & Plant Physiology	JRF, CSIR
37.	Poonam (2013BS8D)	2014	Biochemistry	DST-INSPIRE
38.	Sachin 2014FST39M	2014	Food Science and Technology	BR Ambedkar Post Matric SC/ST Scholarship
39.	Dimas Bayu Pinandoyo 2014FST44M	2014	Food Science and Technology	ICCR Scholarship
40.	Monika Mathur 2014FST29D	2014	Food Science and Technology	Rajiv Gandhi National Fellowship (RGNF)

41.	Rattan Singh 2014FST30D	2014	Food Science and Technology	Rajiv Gandhi National Fellowship (RGNF)
42.	Nitin Tanwar (2013BS20D)	2014	Mathematics & Statistics	Rajiv Gandhi National Fellowship (RGNF)
43.	Suman Chaudhary 2014BS17D	2014	Microbiology	INSPIRE, DST
44.	Chhavi (2012BS22D)	2014	Zoology & Aquaculture	INSPIRE, DST
45.	Prabha	2015	Botany & Plant Physiology	SRF, ICAR
46.	Rizwana Rehsawla	2015	MBB&B	Maulana Azad pre doctoral Fellowship
47.	Ritu (2015BS4M)	2015	Chemistry	POSE
48.	Promila (2015BS2D)	2015	Chemistry	CSIR-JRF
49.	Ezike Glad Flora 2015FST27D	2015	Food Science and Technology	ICAR Netaji Subhash International Fellowship
50.	Mohammad Sadiq 2015FST43M	2015	Food Science and Technology	ICCR Scholarship
51.	Anupama 2014BS16D	2015	Microbiology	Rajiv Gandhi National Fellowship (RGNF)
52.	Monika	2015	Microbiology	Rajiv Gandhi National Fellowship (RGNF)
53.	Rizwana Rehsawla	2015	MBB&B	Maulana Azad pre doctoral Fellowship
54.	Anju (2015BS28M)	2015	Zoology & Aquaculture	DST-POSE
55.	Nagesh CR (2016 BS3M)	2016	Biochemistry	ICAR- JRF
56.	Anamika (2015BS5D)	2016	Biochemistry	CSIR-JRF
57.	Sheenu (2016BS4M)	2016	Biochemistry	POSE fellowship, DST Haryana
58.	Biswabiplab Singh (2015BS33M)	2016	Botany & Plant Physiology	SRF, ICAR
59.	Deepika	2016	Botany & Plant Physiology	JRF, ICAR
60.	Kritika Rawat 2016FST32M	2016	Food Science and Technology	ICAR-JRF
61.	Meenu Roperia 2016FST30M	2016	Food Science and Technology	Scholarship of AFST(I) Education & Publication Trust
62.	Ajay Kumar (2015BS13D)	2016	Mathematics & Statistics	Rajiv Gandhi National Fellowship (RGNF)
63.	Aathira S. Kumar 2016BS03D	2016	Microbiology	ICAR-SRF (PGS)

64.	Shalu Chaudhary	2016	MBB&B	CSIR-JRF
65.	Sunil Kumar (2015BS23D)	2016	Sociology	UGC-JRF
66.	Renu (2016BS17M)	2016	Zoology & Aquaculture	DST-POSE
67.	Revanasiddappa (2017 BS7M)	2017	Biochemistry	ICAR-JRF
68.	Comfort Wion Carthy 2017FST54M	2017	Food Science and Technology	ICAR-Africa Fellowship
69.	Tshiamo Seiphithhile 2017FST59M	2017	Food Science and Technology	ICAR-India Africa Fellowship Prog.-III
70.	Modiri Dirisca Setlhoka 2017FST60M	2017	Food Science and Technology	ICAR-India Africa Fellowship Prog.-III
71.	Mujahid Khan (2015BS11D)	2017	Mathematics & Statistics	UGC-JRF
72.	Hembade Vivekanand Laxman	2017	MBB&B	ICAR
73.	Ajay (2016BS18M)	2017	Zoology & Aquaculture	Post Matric Fellowship
74.	Parveen Gill (2015BS16D)	2017	Zoology & Aquaculture	Rajiv Gandhi National Fellowship (RGNF)



Annexure COBSH- III

Students Placements

Sr. No.	Name of student	Degree Programme	Placement details
Biochemistry			
1.	Ms.Suman Yadav	M.Sc	School lecturer, Navodya Vidhyalya, Faridabad, 2013
2.	Mr. Karamvir	M.Sc	Biochemist, Meghraj International Guar Gum, Panihar Chowk, Hisar, 2016
3.	Dr Ajay Pal	Ph.D	Assistant Professor, CCSHAU, Hisar 2012
4.	Dr. Nisha Ahlawat	Ph.D	Assistant Professor, CCSHAU, Hisar 2012
5.	Dr. Shiwani Mandhania	Ph.D	Assistant Professor, CCSHAU, Hisar 2012
6.	Ms Neha Wadhwa	M.Sc	SRF, Department of G&PB, CCSHAU, Hisar, 2015
7.	Ms. Bunty	M.Sc	SRF, Department of G&PB, CCSHAU, Hisar, 2015 Assistant Professor Chitkara University, Punjab, 2016
8.	Dr. Preeti Goyal	Ph.D	Assistant Professor, Chaudhary Bansi Lal University, Biwani, 2014
9.	Ms. Poonam	M.Sc	Scientist CIPHET through ARS (ICAR), 2016
10.	Ms. Babita	M.Sc	Research Associate, Department of G&PB, CCSHAU, Hisar, 2016
11.	Dr. Naresh Kumar	Ph.D	SRF, CSSRI, Karnal, 2017
Botany & Plant Physiology			
12.	Dr. Sunder Singh	Ph.D	Assistant Professor, MDU 2012
13.	Dr. Vikender Kaur	Ph.D	Scientist, ASRB 2012
14.	Dr. Anita Kumari	Ph.D	Scientist, ASRB 2012 Asth. Scientist HAU 2014
15.	Dr. Champa	Ph.D	Treasure Officer, Govt. of Haryana 2013
16.	Mr. Manohar	M.Sc	Gramin Bank 2013 VLDA, Haryana Govt 2017
17.	Dr. Sarita Devi	Ph.D	Assistant Scientist, CCSHAU, Hisar, 2014
18.	Sukham Madaan		PGT Biology in Haryana Govt. 2014
19.	Vinita Arora		PGT Biology in Haryana Govt. 2014
20.	Asha Rani		PGT Biology in Haryana Govt. 2014 Assistant Professor HPSC, Haryana 2017
21.	Unnikuton	M.Sc.	Agriculture Officer, 2017
22.	P. Bhasker	Ph.D	Technical Assistant, Nasik, 2016
23.	Sunita		Assistant Professor HPSC, Haryana 2017
24.	Deepika Rani		Assistant Professor HPSC, Haryana 2017
Chemistry			
25.	Dr Sushil	Ph.D	Assistant Professor, CCSHAU, Hisar 2012
26.	Dr Reena Chauhan	Ph.D	Research Associate Department of Entomology, CCSHAU, Hisar, 2013
27.	Isha Singh	Ph.D	Junior Lecturer, Govt School of Haryana, 2014
28.	Mr. Dusyant	Ph.D	Assistant Professor, Govt. College Hisar, 2016
29.	Ms. Sushma Bisht	Ph.D	Senior Technical Assistant, HARSAC, 2016

30.	Dr. Savita Bishnoi	Ph.D	Research Associate Department of Entomology, CCSHAU, Hisar, 2017
31.	Dr. Jyoti Punia	Ph.D	SRF, Department of Entomology, CCSHAU, Hisar, 2017
Food Science and Technology			
32.	Anuradha Srivastava	Ph.D	ARS, Scientist
33.	Jyoti Prabha Bishnoi	Ph.D	Assistant Professor, Amity University Jaipur
34.	Akanksha Jain	Ph.D	Food Technology Transfer Professional, National Research Development Corporation, New Delhi
35.	Charul Chaudhary	Ph.D	Assistant Professor, Dayalbagh Educational Institute, Dayalbagh, Agra
36.	Isha Kaushik	Ph.D	Food Safety Officer, FSSAI, New Delhi
37.	Neeraj	Ph.D	Assistant Professor, Mewad University, Chitodhgarh, Rajasthan
38.	Simran Arora	Ph.D	SRF, CIPHET, Ldh
39.	Sucheta	Ph.D	Assistant Professor, MCM DAV College, Chandigarh
40.	Naseer Ahmed	Ph.D	Assistant Professor, RIMT University, Govindgarh Mandi, Punjab
41.	Snehlata	M.Sc	School Teacher
42.	Vikas Goyal	M.Sc	Nestle Foods, Moga
43.	Pardeep Kumar	M.Sc	Food Auditor, USR Certification Ltd. Noida
44.	Toshma Kumari	M.Sc	School Teacher
45.	Yatin M. Sonkusale	M.Sc	Senior Executive, Dry Tech. Processes (I), Pvt. Ltd. Padhurna (MP)
46.	Sonal R. Zanwar	M.Sc	Guest Lecturer MIP College of Food Technology, Marathwada Agri. University, Maharashtra
47.	Yudhbir Singh	M.Sc	Del Monte, Delhi
48.	Sushil Kumar	M.Sc	Coaching Centre, Enlive Coaching Institute, Sec.-13, Hisar
49.	Jitender	M.Sc	Senior Production Manager, Haldiram
50.	Sunil Kumar	M.Sc	Jr. Production Executive, Modern Bread, HUL, Bengaluru
51.	Jyoti Kumari	M.Sc	School Teacher
52.	Harshitha T.	M.Sc	Asstt. Prof., Food Processing Technology, University of Agricultural Sciences, Dharwad, Karnataka
53.	Priyanka Sharma	M.Sc	Research Associate, FICCI, New Delhi
54.	Rahul	M.Sc	Pharmacist in Haryana Government, Kali Ramna, Hisar
55.	Nidhi Dalal	M.Sc	Asstt. Prof., Rai University, Ahmedabad
56.	Harsha Rohila	M.Sc	Quality Analyst, NDDDB, Delhi
57.	Sachin	M.Sc	R.J. Corporation, Varun Beverages Ltd., Pepsi, Panipat
58.	Mansi Duggal	M.Sc	Intern at Mother Dairy , Delhi
59.	Monika Kakkar	M.Sc	Rooms coordinator, Andaz Delhi , a concept by Hyatt
60.	Sumit Kumar	M.Sc	Head constable in Haryana Police, Panchkula
61.	Monika	M.Sc	Assistant Incharge, Production, U.B. Foods Pvt. Ltd., Manesar
62.	Mohit Kumar	M.Sc	Family Business

Mathematics and Statistics			
63.	Vikas Joon	M.Sc.	Asstt. Scientist, ICAR
64.	Swati	M.Sc.	Statistician, Zafin Software Centre of Excellence Pvt Ltd
65.	Salinder	Ph.D.	Statistical Assistant, Department of Agriculture & Farmers' Welfare, Haryana
66.	Naveen	M.Sc.	Junior Technical Assistant, Central Ware-Housing Corporation
67.	Poonam	M.Sc.	Associate Analyst, Google, Gurugram
68.	Mujahid Khan	Ph.D.	Asstt. Professor, SKN Agricultural University, Jobner, Jaipur
Microbiology			
69.	Monika Aggrawal	M.Sc.	Quality control Inspector in FCI since 2014.
70.	Ritu Grover	M.Sc.	School teacher in Haryana Government since 2014
71.	Deepika Kadyan	Ph.D.	School lecturer in Haryana Government since 2014
72.	Deepika Chaudhary	Ph.D.	SRF in DST funded project in 2013-14
73.	Sita Ram Chaudhary	Ph.D.	Probationary officer Oriental Bank of Commerce, Karnal since 2013
74.	Anupama Deora	Ph.D.	Research associate in Animal Biotechnology, LUVAS since 2012
75.	Niti Chawla	Ph.D.	Working as Teaching Associate, in Chaudhary Bansi Lal University, Bhiwani. Since 2015
76.	Annu Goel	Ph.D.	Research Associate in Central Pollution Control Board (New Delhi) since 2013
77.	Harshpreet Kaur	Ph.D.	Research Fellow in Department of Biotechnology, MDU, Rohtak since 2015
78.	Manjeet Chhikara	M.Sc.	District Coordinator in Agriculture, Belgaum, Maharashtra since 2017
79.	Monika	Ph.D.	Asstt Professor Rai University, Gujarat since 2017
80.	Amrita Narula	Ph.D.	Asstt Professor, Modi University, Rajasthan since 2015
Molecular Biology, Biotechnology and Bioinformatics			
81.	Divya Ray	M.Sc	Faculty, Bharati Vidyapeeth Deemed University
82.	Ritesh	M.Sc	Teaching Associate, Guru Jambheshwar University of Science and Technology, Hisar
83.	Puneet	M.Sc	Legislative Officer, PARLIAMENT OF INDIA, New Delhi, India
84.	Aakanksha	M.Sc	Lecturer, GBSSS NIT 5, Faridabad
85.	Bhavna Sharma	M.Sc	Assistant commissioner, MP STATE Tax Department, Indore, India
86.	Yogender Yadav	M.Sc	Entrepreneur, RATATOUILLE SOLUTIONS, New Delhi, India
87.	Shalini Sharma	M.Sc	PGT Lecturer, OPS International School
88.	Tara Devi	M.Sc	Research Fellow, School of Agricultural Biotechnology Punjab Agricultural University, Ludhiana, Punjab, India

89.	Ritu Setia	M.Sc	Probation Officer, Indian Bank
90.	Divya	M.Sc	Assistant Professor, Ambala College of Engineering & Applied research, Mithapur, Haryana
91.	Anuja	M.Sc	Technical Assistant, Dept. of Biotechnology, Kurukshetra University, Kurukshetra
92.	Saroj	M.Sc	SRF, Directorate of Wheat Research, Karnal
93.	Deepshikha	M.Sc	Teaching Assistant, Netaji Subhash Institute(NSIT), Dwarka, New Delhi
94.	Sonika	M.Sc	Teaching Assistant, Sri Venkateswara College, New Delhi
95.	Arun	M.Sc	Scientist, Indian Council of Medical Research, New Delhi, India
96.	Ritesh Arora	M.Sc	Database Administrator, Hewlett Packard Enterprise, Bangalore, India
97.	Vandana Saini	M.Sc	Research Associate Maharishi Dayanand University, Rohtak
98.	Santosh	M.Sc	PGT Lecturer, GMS Tigri, Bhiwani
99.	Monica Vashist	M.Sc	PO, Union Bank, New Delhi
100.	Richa Sethi	M.Sc	Quality Control Inspector, Food Corporation of India
101.	Ojasvi	M.Sc	Research fellow, Translational Health Science and Technology Institute, Faridabad, Haryana
102.	Ravi Kant	M.Sc	Guest Faculty, Govt. College, Safidon
103.	Preeti	M.Sc	National Post Doctorate Fellow, National Agri-Food Biotechnology Institute (NABI), Punjab
104.	Punam	M.Sc	Assistant Manager, Central Bank of India
105.	Deepshikha	M.Sc	Assistant Professor, Jaipur National University
106.	Rekha Rani	Ph.D	PGT Lecturer
107.	Jitender Kumar	Ph.D	Technical Officer, IFFCO
108.	Rekha Malik	Ph.D	Principal Scientist, IIW&B, Karnal
109.	Nikita Sandhu	Ph.D	Project Scientist, IRRI, Philippines
110.	Surender Kumar	Ph.D	Assistant Professor, Amity University
111.	Meenu Gupta	Ph.D	Assistant Professor, Central University, Mahendergarh, Haryana
112.	Naveen Kumar	Ph.D	Research Associate, Wheat & Barley Section, CCS HAU, Hisar, Haryana
113.	Ikbal	Ph.D	Research Associate, Department of Animal Biotechnology, LUVAS, Hisar, Haryana
114.	Bharti Aneja	Ph.D	Research Associate, IIW&B, Karnal, Haryana
115.	P. Vishnu Vardhan Reddy	Ph.D	Research Associate, DRR, Hyderabad
116.	Zeenat Wadhwa	Ph.D	Guest Faculty, F. C. College, Hisar, Haryana
117.	Priyanka Walia	Ph.D	PGT Lecturer, Govt. of Haryana
118.	Monika	Ph.D	PGT Lecture, Govt. of Haryana
119.	Pardeep Kumar	Ph.D	Scientist, NBPGR
120.	Reema Sherwal	Ph.D	Scientist, ARS, ICAR

Sociology			
121.	Subhash Chander	Ph.D	Assistant Professor, CCSHAU, COA, Kaul
122.	Ajay Kumar	M.Sc	Agril. Field Officer, PNB, Kaul (Kaithal)
123.	Rahul	Ph.D	Rural Development Officer, Union Bank of India, Ajmer
124.	Sunil Kumar	Ph.D	Assistant Professor, Govt. College, Siwani
125.	Rijul Sihag	Ph.D	Guest Faculty, CRM Law College, Hisar
Zoology & Aquaculture			
126.	Dr Tejpal Dahiya	Ph.D	Assistant Professor, Zoology, DHE Tosham, Haryana
127.	Dr Aanand Kumar	Ph.D	Scientific Assistant, SFL, Madhuban, Deptt of Police, Haryana
128.	Dr Vijayanti Jakhar	Ph.D	PGT, AAROHI Model School, Haryana Assistant Professor Govt. PG College
129.	Dr Neeru Mehta	Ph.D	PGT, Directorate of School Education, Haryana
130.	Dr Monika Sangwan	Ph.D	PGT, Directorate of School Education, Haryana
131.	Dr. Sudesh	Ph.D	Assistant Professor, Zoology, MDU, Rohtak
132.	Dr Monika Geroh	Ph.D	PGT, Directorate of School Education, Haryana
133.	Dr Asha Poonia	M.Sc	PGT, Directorate of School Education, Haryana Assistant Professor Govt. PG College Sirsa
134.	Dr Ravi Kant	Ph.D	Assistant Professor, Zoology, CCSHAU, Hisar
135.	Dr Kavita Sharma	Ph.D	PDF Women Scientist, UGC Fellowship, GJU S&T, Hisar
136.	Dr Parvati Sharma	Ph.D	RA, NRCE Equines 2014
137.	Mr Dinesh Katyaal	M.Sc	Fisheries Officer, Deptt of Fisheries Haryana
138.	Dr Gajender Singh	Ph.D	Research Fellow, Haryana Farmers Commision
139.	Dr Sunita Godara	Ph.D	Assistant Professor Ad-Hoc Govt. PG College Hisar
140.	Dr Nidhi Wadhwa	Ph.D	Assistant Professor Ad-Hoc PPIMT Hisar
141.	Dr Sunita Rathi	Ph.D	Assistant Professor Ad-Hoc Govt. PG College Hisar
142.	Dr Manju	Ph.D	Assistant Professor Ad-Hoc Govt. PG College Hisar 2016 Junior Lecturer, Karnal 2017
143.	Dr. Kanika	Ph.D	RA, NRCE Equines 2015, Ad hoc faculty in PG College 2016
144.	Dr Nitish Bansal	Ph.D	RA, LUVAS
145.	Dr. Meenakshi Jindal	Ph.D	Assistant Professor Ad-Hoc DN college, Hisar
146.	Dr. Chhavi	Ph.D	Ad hoc faculty in PG College Faridabad 2017 Faculty at Miso Study, New Delhi 2018
147.	Ms. Monika	M.Sc	Assistant Professor Ad-Hoc JAT College Hisar, 2014
148.	Ms. Sonika	M.Sc	Assistant Professor Ad-Hoc FC College Hisar, 2015
149.	Ms. Hemlata	M.Sc	Assistant Professor Ad-Hoc Govt. PG College Hisar
150.	Ms. Urmila	M.Sc	Assistant Professor Ad-Hoc FC College Hisar 2016
151.	Dr. Itisha	Ph.D	Assistant Professor Ad-Hoc College Sonipat 2017 Library Coaching Institute, Sonipat 2018
152.	Dr. Reema	Ph.D	Assistant Professor Suraj Group of Education, Gurgaon 2017
153.	Dr. Komal	Ph.D	Extension Lecturer, Govt. Post Graduate College, Jind 2017
154.	Dr. Anita	Ph.D	Extension Lecturer, Govt.College, Ratia 2018

Annexure COBSH IV

M.Sc. Students' Participation in Seminar/ Conf./Workshop

Sr. No.	Name of student	Number of students	Department	Seminar/ Conf./Workshop Details
2012				
1.	Nisha Kumari	1	Biochemistry	Silver Jubilee International Symposium on Cotton production technology vis a vis climate change (October 10-12, 2012), CCS HAU, Hisar.
2.	Drishita Sharma, Mamta Rani, Savita	3	Bioinformatics	International Conference on Biotechnology: Emerging Trends (ICB-2012) (September 18-20, 2012), CCSHAU, Hisar
3.	Arvind, Anita, Asha	3	Zoology & Aquaculture	National Seminar on Sustainable Agriculture and Food Security: Challenges in Changing Climate (March 27-28, 2012), CCS HAU, Hisar
4.	Arvind	1	Zoology & Aquaculture	International Conference on Industrial Biotechnology (ICIB-2012) (November 21-23, 2012), Patiala
5.	Arvind	1	Zoology & Aquaculture	International Conference on Biotechnology: Emerging trends (ICB 2012) (September 18-20, 2012), Sirsa
2014				
6.	Babita Rani, Shilpa Chawla, Anamika, Sudha Dalal, Himani	5	Biochemistry	National seminar on Reorientation of Agricultural Research to Ensure National Food Security (January 6-7, 2014), CCS HAU, Hisar
7.	Karamvir	1	Biochemistry	National Symposium on Crop Improvement for Inclusive Sustainable Development (November 7- 9, 2014), PAU, Ludhiana
8.		5	Mathematics & Statistics	National Conference on "Recent trends and development in Statistics (NCRTDS), (February 21-23, 2014), MDU, Rohtak
9.	Sonali Sangwan	1	MBBB	6 th world congress on Biotechnology (October 5-7, 2014), New Delhi
10.	Sunita Devi, Asha, Arvind, Monika Jangra	4	Zoology & Aquaculture	National seminar on Reorientation of Agricultural Research to Ensure National Food Security (January 6-7, 2014), CCS HAU, Hisar
2015				
11.	Himani	1	Biochemistry	National Conference on Plant and Animal Molecular Biology (September 25-26, 2015), MODY University,

				Lakshmanagarh, Rajasthan
12.	Susheel Gulati	1	Chemistry	International Conference Emerging Trends in Basic & Applied Sciences (May 1-2, 2015), Maharaja Agrasen University, Baddi, H.P
13.	Sonali Sangwan	1	MBBB	1 st International Young Scientist Congress (August 8-9, 2015), Maharaja Ranjit Singh College of Professional Sciences, Indore, MP
14.	Sonali Sangwan	1	MBBB	6 th World Congress on Biotechnology (October 5-7, 2015), OMICS International, New Delhi
15.	Asha	1	Zoology & Aquaculture	National Conference on Biodiversity and Sustainable development (March 27, 2015), Chhaju Ram Memorial Jat College, Hisar
16.	Arvind	1	Zoology & Aquaculture	International Conference Emerging Trends in Basic & Applied Sciences (May 1-2, 2015), Maharaja Agrasen University, Baddi, H.P
2016				
17.	Priyanka Jangra,	1	Biochemistry	National Symposium on 'Transgenic Crops in India: Progress and Challenges' Challenges' (March 16-17, 2016), CCS HAU, Hisar
18.	P Yadav	1	Biochemistry	National Conference on Biotechnology: Emerging Trends (Feb. 11-12, 2016), Chaudhary Devi Lal University, Sirsa
19.	Mahesh Kumar, Parveen Kumar	2	Botany & Plant Physiology	National Seminar on Technological Advances in Botanical Sciences (January 21, 2016), DAV College for Women, Karnal
20.	Rajita, Parvesh	2	Chemistry	National Conference on Organic Synthesis and Catalysis (NCOSC-2016) (February 17-18, 2016), Guru Jambheshwar University of Science and Technology, Hisar
21.	Sudesh	1	Mathematics & Statistics	3rd International Conference on Recent Development in Engineering, Science, Management and Humanities (ICRESMH-16) (December 11, 2016), IFUNA, Qutub Institutional Area, Delhi
22.	Rinku, Divya	2	MBBB	National Conference and presented poster on Trends in Nanobiotechnology (NCTN-2016) (29-30 November, 2016), Department of MBB&B, CCS HAU, Hisar

23.	Anju	1	Zoology & Aquaculture	National Seminar on Animal diseases : impact on human health and control issues (August 30-31, 2016), MCM DAV college for women, Chandigarh
24.	Anju, Neetu, Sonika	3	Zoology & Aquaculture	National conference on Genetic diversity and therapeutic potential of natural products, September 17, 2016, MDU, Rohtak
25.	Monika Jangra, Sonika, Manoj, Hemlata, Sandeep, Urmila, Ritu	7	Zoology & Aquaculture	National Conference on Biotechnology: Emerging trends (February 11-12, 2016), Sirsa
26.	Anju, Monika Jangra, Sonika	3	Zoology & Aquaculture	National Conference on Evolving New Horizons of Zoological Sciences in Human Welfare (November 23-24, 2016), Kurukshetra
27.	Monika Jangra	1	Zoology & Aquaculture	National Seminar on Recent Advances in Emerging Technologies (February 23-24, 2016), Patiala
28.	Rahul	1	Zoology & Aquaculture	Author workshop conducted by MDU and Elsevier (November 18, 2016), Rohtak
2017				
29.	Simerpreet	1	Bioinformatics	Three weeks training: Use of Biotechnology & Bioinformatics Tools for Genome Analysis (July 17 to August 7, 2017), CCS Haryana Agricultural University
30.	Pooja	1	Botany & Plant Physiology	Workshop on Capacity Building on IPR Instruments (May 6, 2017), CCS Haryana Agricultural University, Hisar
31.	Sarita, Biswabiplap, Sapna, Pooja Alhawat, Pooja	5	Botany & Plant Physiology	Swarna Jyanti National conference on Biodiversity and Sustainable Utilization of Plant Resources (February 17-18, 2017), Kurukshetra University, Kurukshetra
32.	Suman, Ritu, Rajita	3	Chemistry	International Conference on Emerging areas of Environmental Science and Engineering (EAESE-2017) (February 16-18, 2017), Guru Jambheshwar University of Science & Technology, Hisar
33.	Anu	1	Chemistry	National Conference on Advanced Physical Methods in Chemical Sciences (February 22-23, 2017), Guru Jambheshwar University of Science & Technology, Hisar

34.	Sujeeta, Satish Kumar, Raman Jangra	3	Microbiology	National Conference on “Biodiversity and sustainable utilization of plant resources” held on Feb. 17-18, 2017 at KUK, Kurukshetra, Haryana .
35.	Satish Kumar, Raman Jangra	2	Microbiology	National Conference on Food Processing for Value Addition Trend and Innovation, GJUST, Hisar
36.	Ritu, Sandeep	2	Zoology & Aquaculture	International Conference on Emerging Areas on Environmental Science and Engineering (Feb 16- 18, 2017), GJU Hisar
2018				
37.	Sheenu	1	Biochemistry	International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry (February 21-23, 2018), Guru Jambheshwar University of Science and Technology, Hisar
38.	Taranjeet Kaur	1	Biochemistry	International Congress on Cotton and Other Fibre Crops (February 20-23, 2018), Umiam, Meghalaya
39.	Naina Kumari, Ritu Jakhar, Manisha	3	Bioinformatics	International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry (February 21-23, 2018), GJUS&T, Hisar
40.	Karuna	1	Zoology & Aquaculture	National Seminar on Climate Change and Food Security (January 25, 2018), Maharishi Dayanand University, Rohtak
41.	Ajay, Anju, Deepak, Neetu, Sukhbir Singh	5	Zoology & Aquaculture	International Conference on Sustainable Agriculture, Energy, Environment and Technology (ICSAEET-2018) (February 24-25, 2018), Maharishi Dayanand University, Rohtak
42.	Deepak, Sukhbir Singh	2	Zoology & Aquaculture	30 th All India Congress of Zoology and National Seminar on Advances in Zoology for Sustainable Development (February 15-17, 2018), Kurukshetra University, Kurukshetra
Grand Total		87		

Annexure COBSH V

Ph.D. Students' Participation in Seminar/ Conf./Workshop

Sr. No.	Name of student	Number of students	Department	Seminar/ Conf./Workshop Details
2012				
1.	Aneeta, Anuradha and Sonu	3	Food Science & Technology	Technology Exhibition at SAU-ICAR-CII Northern Region Meet, College of Home Science on September 4, 2012.
2.	Aneeta, Anuradha and Sonu	3	Food Science & Technology	Industrial/Entrepreneurial Motivational Campaign, CCSHAU, Hisar on November 29, 2012
3.	Surender Khatodia, Bharti Aneja	2	MBBB	VI International Conference on Legume Genetics and Genomics; 2012 October 2-7; Hyderabad
4.	Jyoti Taunk	1	MBBB	AgTech Global Summit; 2012 December 9-13; Aurangabad, Maharashtra
5.	Monika, Kanika	2	Zoology& Aquaculture	National Seminar on Sustainable Agriculture and Food Security: Challenges in Changing Climate, March 27-28, 2012, CCSHAU, Hisar
6.	Monika, Kanika	2	Zoology& Aquaculture	International Conference on Biotechnology: Emerging trends (ICB 2012), September 18-20, 2012, Sirsa
2013				
7.	Aneeta, Anuradha Charul	3	Food Science & Technology	International Conference on Innovation in Food Processing, Value Chain Management and Food Safety, January 10-12, 2013, NIFTEM, Kundli
8.	Anuradha, Jyoti, Sangeeta and Sonu	4	Food Science & Technology	National Seminar on Technological Upgradation and Modernization of Food Processing Industries in India, Pragati Maidan, New Delhi on March 15, 2013
9.	Sonu Panwar	1	Food Science & Technology	2 nd International Conference on Agriculture, Food Technologies and Environment - New Approaches: (AFTENA-2013), October 19-20, 2013, JNU, New Delhi
10.	Madushika, Neeraj, Aunradha Harshitha T	4	Food Science & Technology	International Conference on BIFDM, November 16-17, 2013, NIFTEM, Kundli
11.	Charul	1	Food Science & Technology	International Conference on Role of Plant Biochemistry & Biotechnology in Food and Nutritional Security, Dec.11-

				14, 2013, Sri Venkateswara University, Tirupati.
12.	Deepika Kadian, Manisha Phour, Harshpreet kaur	3	Microbiology	54 th Annual Conference of AMI-2013 and International Symposium on Frontier Discoveries and Innovations in Microbiology and its Interdisciplinary Relevance (FDMIR-2013) on 17-20 TH November, 2013 at Maharshi Dayanand University, Rohtak, Haryana
13.	R Singh	1	MBBB	21 st International Congress of Genetics at The sands Expo and Convention Center, Marina Bay Sands, Singapore from April 13-18, 2013
14.	Richa Singh, Jyoti Taunk	2	MBBB	Plant and Animal genome XXI; 2013 January 12-16; San Diego
2014				
15.	Nisha Kumari, Reena Devi, Mukesh Kumar, R. Kumar, Babita Rani	5	Biochemistry	National seminar on Reorientation of Agricultural Research to Ensure National Food Security (January 6-7, 2014), CCS HAU, Hisar
16.	Preeti Goyal	1	Biochemistry	4th International Science Congress, 8-9 December, 2014, Pacific University, Udaipur.
17.	Preeti Goyal	1	Biochemistry	National Symposium on Advances in Biotechnology for Crop Improvement, 12 July, 2014, <i>Eternal University</i> , Baru Sahib (H.P.)
18.	Ms. Poonam	1	Botany & Plant Physiology	National conference on Frontiers of Plant Physiology Research: Food Security and Environmental Challenges, 23-25, Nov. 2014, Bhubaneswar, Orissa
19.	Simran Arora, Jyoti Prabha	2	Food Science & Technology	Preventive measures to eliminate the crimes of 'Honour Killing' on 25-26 Feb., 2014 organized by the Department of HDFS-COHS, CCS HAU, Hisar
20.	Simran Arora, Jyoti Prabha and Charul	3	Food Science & Technology	National Seminar on Reorientation of Agricultural Research to Ensure National Food Security, January 6-7, 2014, CCSHAU, Hisar
21.	Charul Chaudhary	1	Food Science & Technology	National Education Summit 2014, Mahatma Mandir Jan.10-11, 2014, Gandhinagar Gujarat
22.	Charul	1	Food Science & Technology	International Congress on Agriculture, Food Engineering and Environmental Sciences-Sustainable Approaches, March 29-30, 2014 JNU, New Delhi

23.	Aneeta Khatak Charul Chaudhary	2	Food Science & Technology	4 th International Conference on Updating Food Technology: A challenge towards Public health nutritio” (ICUFT-2014), May 7-8, 2014, JNU, New Delhi
24.	Aneeta, Charul Jyoti Prabha	3	Food Science & Technology	National Symposium on Advances in Biotechnology for crop improvement, July 12, 2014, Eternal University, Baru Sahib, Himachal Pradesh
25.	Harishita Akanksha Jain	2	Food Science & Technology	23 rd Indian Convention of Food Scientist & Technologist, Dec 13-14, 2014, NIFTEM, Kundli, Sonipat
26.	M. Goyal	1	Mathematics & Statistics	XVI Annual Conference of the Society of Statistics, Computer and Applications’ held at BPSMV, Khanpur Kalan, Sonapat, Haryana during February 24-26, 2014.
27.	Manisha Phour, Subha, ArtiYadav Swati	4	Microbiology	National Seminar on “Reorientation of Agricultural Research to ensure National food Security” on 6-7 th January, 2014 at CCS HAU, Hisar
28.	Rahul Kumar Meena, Kirti Mehta, Aditi	3	MBBB	workshop on “Genomics in crop improvement, Maharshi Dayanand University, Rohtak 27-28 February, 2014
29.	Rahul Kumar Meena, Kirti Mehta, Aditi	3	MBBB	Training on “Bioinformatics Tools & Techniques for Gene and Protein Analysis, Department of Bio and Nanotechnology Guru Jambheshwar University, Hisar (6-7 March, 2014
30.	Rahul Kumar Meena	1	MBBB	National Conference on Contemporary Issues in Biotechnology:Progress and Future Applications and Panel Discussion on “Attracting Talent” April 02, 2014,organized by Amity Institute of Biotechnology Amity University Haryana, Gurgaon
31.	Ravi Mehndiratta	1	MBBB	Master class in Real Time PCR conducted by BioRad Laboratories at New Delhi on 30 May 2014
32.	Aditi	1	MBBB	National symposium on Advances in Biotechnology for Crop improvement, Eternal University- Baru Sahib (June, 2014
33.	Rahul Kumar Meena, Kirti Mehta	2	MBBB	National Symposium on Advances in Biotechnology for Crop Improvementorganised by Eternal

				University, Baru Sahib, Himachal Pradesh 12 th July, 2014
34.	Rahul Kumar Meena,	1	MBBB	National Workshop on “ <i>Emerging Trends in Nano Science and Biotechnology</i> on August 19, 2014
35.	Ravi Mehndiratta	1	MBBB	6 th world congress on Biotechnology held at New Delhi on Oct 5-7, 2014.
36.	Kirti Mehta	1	MBBB	International Conference on Emerging Trends in Biotechnology (ICETB), Jawaharlal Nehru University (JNU), New Delhi (6-9 th November, 2014).
37.	Anita, Monika Geroh, Kanika Reema	4	Zoology & Aquaculture	National Seminar on Reorientation of Agricultural Research to Ensure National Food Security, January 6-7, 2014, CCSHAU, Hisar
38.	Jyoti Yadav	1	Zoology & Aquaculture	International Conference on Emerging Trends in Biotechnology Nov 2-9, 2014, JNU, New Delhi
39.	Jyoti Yadav	1	Zoology & Aquaculture	International Science Congress Dec 8-9, 2014, Pacific University, Udaipur
2015				
40.	Shilpa Chawla, Anjali Dahiya, Reena Devi	1	Biochemistry	National Symposium on Germplasm to Genes: Harnessing Biotechnology for Food Security and Health Pusa Campus, New Delhi, on Aug. 9-11, 2015
41.	Reena Devi	1	Biochemistry	National symposium on Recent Advances in Chemical, Biological and Environmental Sciences, Multani Mal Modi College, Patiala, on Jan30-31, 2015
42.	Dahiiya Anjali, Ritu Saini	2	Biochemistry	Indian National Science Festival-Young Scientist (Aug, 9-11 2015), IIT Delhi,
43.	Suprita	1	Chemistry	International conference emerging trends in basic & applied sciences (May 1-2, 2015) organized by Maharaja Agrasen University, Baddi, H.P, India.
44.	Charul	1	Food Science & Technology	7 th National Conference on Recent Advances in Chemical, Biological & Environmental Sciences, Jan 30-31, 2015, M.M. Modi College, Patiala
45.	Aneeta Khatak, Charul, Akanksha Isha Kaushik, Neeraj	5	Food Science & Technology	3 rd International Conference on Impacting Food Value Chain & Leveraging Innovation Feb 26-28, 2015, NIFTEM, Kundli, Sonapat

46.	Akanksha Jain Isha Kaushik	2	Food Science & Technology	56 th Annual conference of AMI-2015 & International Symposium on Emerging Discoveries in Microbiology, December 7-10, 2015, JNU, New Delhi
47.	Akanksha Jain	1	Food Science & Technology	National Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences December 12-13, 2015, RVSKVV, Gwalior
48.	Bhushana Babu	1	Mathematics & Statistics	International conference on statistics and related areas for equity, sustainability and development during November 28-30, 2015.
49.	Bhushana Babu	1	Mathematics & Statistics	69th annual conference of Indian society of Agricultural Statistics during December 14-16, 2015.
50.	Priyanka, Hemanta Kr. Mondal	2	Microbiology	India International Sciences Festival 2015 at IIT, Delhi, from 4-8 th December, 2015
51.	Monika, Anju Sehwat, Rekha, Umang, Shikha Mehta,	5	Microbiology	56 TH AMI Conference on “Emerging discoveries in Microbiology” organized by AMI at JNU, Delhi, from 7-10 th December, 2015
52.	Priti Saini	1	MBBB	Training on “Bioinformatics Tools for Genomics Research Problems Solving”, Department of Bio and Nanotechnology Guru Jambheshwar University, Hisar 19-20 March, 2015
53.	Rahul Kumar Meena	1	MBBB	National Conference on “ <i>Biodiversity and Sustainable Development</i> ” on March 27, 2015 held at Hisar.
54.	Rahul Kumar Meena, Ravi Mehndiratta	2	MBBB	National Symposium on Germplasm to Genes: Harnessing Biotechnology for Food Security and Health from August 9-11, 2015 at National Agriculture Science Centre, Pusa New Delhi.
55.	Kirti Mehta	1	MBBB	National Conference on Emerging Challenges in Biotechnology, Chandigarh Group of Colleges Landran, Chandigarh 21-22 nd August, 2015).
56.	Rahul Kumar Meena, Aditi	2	MBBB	6 th World Congress on Biotechnology (October 5-7, 2015), OMICS International, New Delhi
57.	Kanika	1	Zoology & Aquaculture	National Seminar on Science and Technology for human development,

				(March 25-27, 2015), Jammu
58.	Kanika	1	Zoology & Aquaculture	4 th Congress on Insect Science "Entomology for Sustainable Agriculture (April 16-17, 2015), PAU, Ludhiana
59.	Jyoti Yadav	1	Zoology & Aquaculture	Training on Scientific bee keeping and Integrated Pest Management, Department of Entomology, CCS Haryana Agricultural University from Feb 18, 2015 to March 5, 2015.
60.	Arvind and Jyoti Yadav	2	Zoology & Aquaculture	Training on DNA based diagnostics and cell culture techniques, Dept. of ABT, COVS, LUVAS from July7- 27, 2015
61.	Parveen Gill	1	Zoology & Aquaculture	4th Jammu & Kashmir Agricultural Sciences Congress October 28-30, 2015, Chatha, Jammu
62.	Itisha, Komal, Reema	3	Zoology & Aquaculture	National Seminar on Emerging trends in Basic and applied Sciences, (May 1-2, 2015), Maharaja Agarsen University, Baddi
2016				
63.	N. Kumar, Reena Rana, M. Raghavendra, Naresh Kumar	4	Biochemistry	National Conference on Trends in Nanobiotechnology, CCS HAU, Hisar, November 29-30, 2016
64.	Raghavendra Midathala, Reena Devi, Poonam Choudhary	3	Biochemistry	National Symposium on ' <i>Transgenic Crops in India: Progress and Challenges</i> ' CCS HAU, Hisar, March 16-17, 2016
65.	Sonali Bajaj, Naresh Kumar	2	Biochemistry	Indian International Science Festival (IISF), 7-11 December, 2016, CSRI-National Physical Laboratory, New Delhi
66.	Sonali Bajaj	1	Biochemistry	International Conference on Innovative Research in Agriculture, Food Science, Forestry, Horticulture, Aquaculture, Animal Sciences, Biodiversity, Ecological Sciences and Climate Change (AFHABEC-2016), 22 October, 2016, Jawaharlal Nehru University, New Delhi.
67.	Ritu Saini, Anjali Dahiya	2	Biochemistry	Seventh International Conference on Growing Trends in Food Technology and Nutrition for Public Health care, 2016, Jawaharlal Nehru University, New Delhi

68.	Sonali Bajaj	1	Biochemistry	National Seminar on Coarse Cereal Development-Challenges & Opportunities in the Country, 19-20 March, 2016, CCS Haryana Agricultural University, Hisar.
69.	Poonam Choudhary, Naresh Kumar	2	Biochemistry	National Conference on Innovative Food Processing Technologies for Food and Nutritional Security, ICARCIPHET Ludhiana, September 29-30, 2016
70.	Dharamvir, Kirpa Ram, Raj Kumar, Manohar Lal, Ajeev, Poonam, Neelam, Savita Dhuan, Suman Bala	9	Botany & Plant Physiology	National Seminar on Technological Advances in Botanical Sciences (January 21, 2016), DAV College for Women, Karnal
71.	Susheel Gulati	1	Chemistry	National Conference on Emerging Trends and Future Challenges in Chemical Sciences (ETFC-2016) Kirorimal College, University of Delhi on Feb. 3-4, 2016
72.	Susheel Gulati, Suman	2	Chemistry	National Conference on Organic Synthesis and Catalysis (NCOSC-2016) on Feb. 17-18, 2016 organized by Department of Chemistry, Guru Jambheshwar University of Science and Technology, Hisar
73.	Susheel Gulati	1	Chemistry	International Conference on recent trends in Basic & Applied Sciences on May 12, 2016 organized by Maharaja Agrasen University, Baddi, Himachal Pradesh.
74.	Susheel Gulati, Suman	2	Chemistry	GIAN one week Workshop course on Greener strategies for organics and nanomaterials: Sustainable application of Nano catalysts in synthesis and Environmental remediation on 25/11/2016 to 29/11/2016 organized by Guru Jambheshwar University of Science and Technology, Hisar.
75.	Susheel Gulati	1	Chemistry	One day author workshop conducted by Vivekananda Library in association with Elsevier at Radha Krishnan Auditorium, Maharishi Dayanand University, Rohtak on Nov. 18, 2016.
76.	Susheel Gulati, Suman	2	Chemistry	Workshop on Method Development Techniques in HPTLC and HPLC held on Nov.16, 2016 organized by Department of Pharmaceutical Sciences

				and Dean, Students' Welfare, Maharishi Dayanand Univeristy, Rohtak
77.	Akanksha Jain	1	Food Science & Technology	Seminar on Recent Approaches to Sustainable Research & Development of Aromatic and Medicinal Plants, February 29 to March 01, 2016, CCSHAU, Hisar
78.	Isha Kaushik	1	Food Science & Technology	5 th National Seminar on Coarse Cereals Development-Challenges and Opportunities in the Country, March 20-21, 2016, CCS HAU, Hisar
79.	Akanksha Jain	1	Food Science & Technology	International Conference-2016 on Natural Resource Management: Ecological Perspectives, February 18-20, 2016, SKUAST, Jammu
80.	Akanksha Jain	1	Food Science & Technology	National Conference on Food Processing and Technology (Current Status and Future Prospects (NCFPT-2016) organized by School of Bioengineering and Food Technology Shoolini University, Solan from February 25 to 26, 2016
81.	Neeraj	1	Food Science & Technology	7 th International Conference organized by IIFANS on "Growing Trends in Food Technology and Nutrition for Public Health" held on 26-27 May, 2016 New Convention Centre, JNU University, New Delhi
82.	Naseer	1	Food Science & Technology	25 th Indian Convention of Food Scientists & Technologists (ICFoST-XXV) on Food Processing for Sustainable Agriculture & Industry organized by AFSTI at GNDU, Amritsar from November 10-12, 2016.
83.	Naseer, Simran, Sucheta	3	Food Science & Technology	National Conference on Trends in Nanobiotechnology (NCTN-2016) organized by College of Basic Sciences and Humanities, CCS HAU, Hisar from November 29-30, 2016
84.	Salinder	1	Mathematics & Statistics	2nd International conference on innovative trends in Engineering, Science and Management (ICITESM-16) at YMCA , Jai Singh Road, Delhi, India on 19th November, 2016.
85.	Harpreet Kaur	1	Microbiology	National conference on Trends in Nanobiotechnology (NCTN-2016) organized by Department of MBB&B,

				CCS HAU, Hisar
86.	Neha, Gagandeep, Rakshita, Preeti Saini, Rahul Kumar Meena, Aditi	6	MBBB	National Symposium on Transgenic crops in India-Progress and Challenges- Department of MBB&B, CCS HAU, Hisar (16-17 March, 2016)
87.	Aditi	1	MBBB	Workshop on “Bioprocess Technology”, Department of Bio and Nanotechnology Guru Jambheshwar University, Hisar (1-3 February, 2016)
88.	Sonali Sangwan, Disha Kamboj, Sumit Jangra, Ravi Mehndiratta, Priti Saini, Mahavir	6	MBBB	National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar
89.	Sumit Jangra	1	MBBB	5 th National Seminar on Coarse Cereals Development – Challenges and opportunities in the Country held at CCS HAU, Hisar during March 20-21, 2016.
90.	Mahavir, Amit Pippal	2	MBBB	workshop on Drug Discovery technology: a molecular modelling approach on March 28-30 2016 at GJUS&T Hisar.
91.	Kirti Mehta	1	MBBB	National Symposium on Nanotechnology’ organised by TERI University Biotechnology Society at TERI University, New Delhi (31 st March-1 st April, 2016).
92.	Disha Kamboj, Sumit Jangra, Aditi, Priti Saini, Rahul Kumar Meena	5	MBBB	Workshop on 2D electrophoresis, western Blotting and quantitative PCR, BIORAD, Department of MBB&B- CCS HAU, Hisar (29-30 August, 2016)
93.	Rahul Kumar Meena	1	MBBB	National symposium on <i>genomics-based next generation crop improvement approaches</i> , held at ICAR-IARI, during November 11-12, 2016.
94.	Sonali Sangwan, Preeti	2	MBBB	Author Workshop (jointly organized by Elsevier and Maharshi Dayanand University 2016) at Radhakrishnan Auditorium, Maharshi Dayanand University, Rohtak on Friday, November 18, 2016
95.	Kritika Sharma, Divya, Gagandeep, Preeti, Rakshita, Disha Kamboj, Sumit	12	MBBB	National Conference on Trends in Nanobiotechnology(NCTN-2016), Department of MBB&B, CCS HAU, Hisar (29-30 November, 2016)

	Jangra, Rahul Kumar Meena, Aditi, Kirti Mehta, Sonali Sangwan, Priti Saini			
96.	Sumit Jangra	1	MBBB	Indian International Science Festival held at NPL-CSIR, New Delhi during December 7-11, 2016
97.	Arvind, Monika, Sonika, Anita, Monika Geroh, Itisha, Komal, Manju Rani, Jyoti Yadav	9	Zoology & Aquaculture	National Conference on Biotechnology: Emerging trends (February 11-12, 2016), Sirsa
98.	Monika	1	Zoology & Aquaculture	National Conference in recent advances in emerging technologies February 23-24, 2016, Shri Guru Granth Sahib World University, Fatehgarh
99.	Arvind Komal	2	Zoology & Aquaculture	National Seminar in recent approaches to sustainable Research & Development of aromatic and medicinal plants, February 29, March, 1, 2016, CCSHAU, Hisar.
100.	Monika Jangra	1	Zoology & Aquaculture	National Conference on Trends in Nanobiotechnology, (November 29 - 30, 2016), CCS HAU, Hisar
101.	Monika, Komal	2	Zoology & Aquaculture	National Conference on Genetic Diversity & Therapeutic Potential of Natural Products, September 17, 2016, Maharishi Dayanand University, Rohtak
102.	Monika Sonika	2	Zoology & Aquaculture	National Conference Evolving New Horizons of Zoological Sciences in Human Welfare, November 23-24, 2016, KU Kurukshetra
103.	Jyoti Yadav	1	Zoology & Aquaculture	International Science Congress December 8-9, 2016, Rajgurunagar, Pune
2017				
104.	Naresh Kumar, Praveen Kumar	1	Biochemistry	International conference on emerging areas of environmental science and engineering, GJUS&T, Hisar, February 16-18, 2017.
105.	Naresh Kumar	1	Biochemistry	Conference on Plant physiology, IGKV, Raipur, Chattisgarh, Nov. 23-25, 2017
106.	Himani, Zeenat Wadhwa, Surina Bhadu, Praveen Kumar	4	Biochemistry	International Conference on Microbes for Health and Wealth” held at Maharshi Dayanand University, Rohtak on Nov. 14, 2017

107.	Himani, Surina Bhadu	1	Biochemistry	Third International Conference on Bioresource and Stress Management", Jaipur from Nov. 8-11, 2017
108.	Naresh Kumar, Praveen Kumar	2	Biochemistry	International Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences, Maharana Pratap University of Agriculture & Technology, Udaipur, Dec. 02-04, 2017
109.	Praveen Kumar	1	Biochemistry	Training programme in Statistical data analysis for research scholar. Directorate of Student Welfare CCSHAU Hisar, 20 th – 29 th March 2017.
110.	Praveen Kumar	1	Biochemistry	Workshop on Scientific / Technical writing. CCGHAU, Hisar, 18 th – 19 th April 2017
111.	Praveen Kumar	1	Biochemistry	Workshop on Capacity building on IPR instruments. HRM CCSHAU Hisar, 6 th May 2017
112.	Praveen Kumar	1	Biochemistry	21 days training on Tools and techniques in molecular biology bioinformatics and peptide synthesis. Dept. of Animal Biotechnology, LUVAS, Hisar, 4 th – 25 th September 2017
113.	Praveen Kumar	1	Biochemistry	3 rd International conference on bio resource and stress management. SIAM, Jaipur, 8 th – 11 th November 2017.
114.	Praveen Kumar	1	Biochemistry	Workshop on 50 years journey of Haryana: Media perspective. College of home science, CCSHAU, Hisar, 16 th November 2017.
115.	Praveen Kumar	1	Biochemistry	Workshop on Awareness and use of Indian citation index (ICI) database. Nehru library, CCSHAU, Hisar, 7 th December 2017
116.	Dharamvir, Neelam Rajkumar	3	Botany & Plant Physiology	International Conference on Emerging Areas of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar, 16-18 February. 2017
117.	Kirpa Ram, Neelam, Pooja Rani	3	Botany & Plant Physiology	Workshop on Capacity Building on IPR Instruments (May 6, 2017), CCS Haryana Agricultural University, Hisar
118.	Suman Bala	1	Botany & Plant Physiology	Swarna Jyanti National conference on Biodiversity and Sustainable Utilization

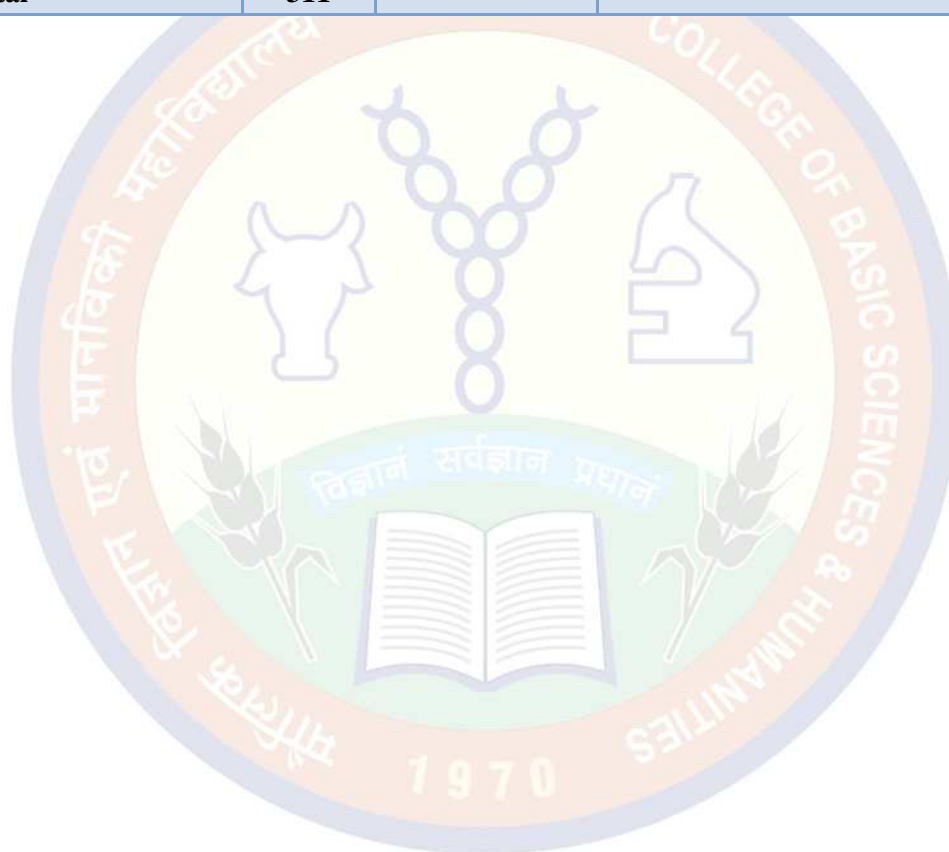
				of Plant Resources (February 17-18, 2017), Kurukshetra University, Kurukshetra
119.	Susheel Gulati, Suman, Suprita	3	Chemistry	International Conference on Emerging areas of Environmental Science and Engineering (EAESE-2017) on Feb. 16-18, 2017 organized by Department of Environmental Science & Engineering, Guru Jambheshwar University of Science & Technology, Hisar
120.	Susheel Gulati, Suman, Suprita	3	Chemistry	National conference on advanced physical methods in chemical sciences on Feb.22-23, 2017 organized by Department of Chemistry, Guru Jambheshwar University of Science & Technology, Hisar
121.	Susheel Gulati, Suman	2	Chemistry	Workshop on scientific/technical writing organized by CCSHAU, Hisar on 18-19 April, 2017
122.	Susheel Gulati, Suman	2	Chemistry	Knowledge workshop on scientific writing, e-books and publication process organized by University of Science Form, Directorate of Human Resource Management, CCSHAU, Hisar on 12 th April, 2017.
123.	Suman	1	Chemistry	National conference on analytical techniques and their applications on March.16-17, 2017 organized by Department of Chemistry, Guru Jambheshwar University of Science & Technology, Hisar
124.	Susheel Gulati, Suman	2	Chemistry	Professor Ram Chand Paul National Symposium on current advances in chemical sciences organized by Punjab University, Chandigarh on 24-25 Feb. 2017
125.	Susheel Gulati, Suman, Suprita	3	Chemistry	Workshop on awareness and use of Indian Citation Index database organized on 07/12/2017 at Nehru Library, CCSHAU, Hisar
126.	Suprita	1	Chemistry	6 th National Conference on Chemical and Environmental Sciences: Emerging Dimensions & Challenges Ahead (NCCES 2017), Panipat, Haryana, April 2017.

127.	Suman, Suprita	2	Chemistry	21 st International conference of international academy of physical sciences on October, 2017 organized by Department of Chemistry, Guru Jambheshwar University of Science & Technology, Hisar
128.	Suman, Suprita	2	Chemistry	12 th national conference on Organics, metallorganics and thermodynamics, on Nov. 2017 organized by Department of Chemistry, Guru Jambheshwar University of Science & Technology, Hisar
129.	Suman, Suprita	2	Chemistry	International conference on global trends in pure and applied chemical sciences organized by SRM university, Gaziabad, UP on 8-9 Dec. 2017.
130.	Suman, Suprita	2	Chemistry	International conference on Sustainable Agriculture, Energy, Environment and Technology, MDU, Rohtak on 24-25 Feb. 2017
131.	Simran	1	Food Science & Technology	Workshop on “Capacity building on IPR Instruments” on May 6, 2017
132.	Simran	1	Food Science & Technology	International Conference on Emerging Areas of Environmental Science and Engineering (EAESE-2017) organized by Departmental of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar from February 16-18, 2017
133.	Simran	1	Food Science & Technology	National Conference on Advances in Food Science and Technology- Current Trends and Future Perspectives (AFST-2017) organized by Department of Food Technology, Akal College of Agriculture, Eternal University, Baru Sahib, Distt. Sirmour (HP) India from March 24-25, 2017.
134.	Ratan, Simran	2	Food Science & Technology	National Symposium on Innovations in Horticulture: Production to Consumption jointly organized by Departments of Vegetable Science and Horticulture, G.B. Pant University of Agriculture and Technology, Pantnagar, U.S. Nagar, Uttarakhand from September 14-15, 2017.

135.	Naseer Ahmed	1	Food Science & Technology	3rd International Conference on "Bioresource and Stress Management" on Nov., 8-11, 2017 at Agriculture Research Institute, Jaipur.
136.	Simran Arora	1	Food Science & Technology	National Conference on "Food Processing for Value Addition: Trends and Innovations" on Nov., 27, 2017 in the Department of Food Technology Maharshi Dayanand University, Rohtak,
137.	Reema Sherwal	1	MBBB	International Conference on "Microbes for Health and Wealth" in Maharshi Dayanand University, Rohtak on 14th Nov, 2017
138.	Kamal Jeet Kaur, Sunil Kumar	2	Sociology	Workshop on Capacity building on IPR instruments. HRM CCSHAU Hisar, 6 th May 2017
139.	Kamal Jeet Kaur, Sunil Kumar, Satish Kumar, Deepika Parveen Kumar	5	Sociology	Workshop on Scientific/technical writing on April 18-19, 2017
140.	Anita, Sonika, Jyoti	3	Zoology & Aquaculture	International Conference on Emerging Areas on Environmental Science and Engineering (Feb 16- 18, 2017), GJU Hisar
141.	Monika	1	Zoology & Aquaculture	International Conference on Recent Advances for Quality Enhancement in Science and Technology (January 16-17, 2017), Jalandhar
2018				
142.	Praveen Kumar	1	Biochemistry	National Seminar on Climate Change and Food Security. Centre for biotechnology, MDU Rohtak, Haryana, 25 th January 2018.
143.	Bajaj, S.	1	Biochemistry	International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry, 21-23 February, 2018, Guru Jambheshwar University of Science and Technology, Hisar
144.	Vishnu Prasad, Manish Jangra, Ajeev, Manohar	4	Botany & Plant Physiology	National Seminar "Climate Change and Food Security" held on 25th Jan, 2018 at MDU, Rohtak
145.	Sapna, Aarti Soni	2	Botany & Plant Physiology	International Conference "Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and

				Industry”on 21-23rd Feb. 2018 at GJU, Hisar
146.	Vishnu Prasad	1	Botany & Plant Physiology	National Science Day “Climate change, Biodiversity and Sustainable Agriculture held on 27th Feb, 2018 at MNIT, Jaipur
147.	Vishnu Prasad	1	Botany & Plant Physiology	Workshop on Biosafety Capacity Building”held on 14th March, 2018 at CCS HAU, Hisar
148.	Susheel Gulati	1	Chemistry	GIAN course on vibrational spectroscopy and molecular vibrations organized by Department of Chemistry, National Institute of Technology, Kurukshetra on 15-19 Jan, 2018
149.	Suman	1	Chemistry	International conference on Emerging trends in drugs development and natural products organized by Chemistry department of Delhi University Delhi on 12-14 Jan. 2018.
150.	Suman, Suprita	2	Chemistry	DGHE sponsored national seminar on Nanochemistry, CMK college Sirsa on Feb 2018.
151.	Sumit Jangra	1	MBBB	National Seminar on Climate Change and Food Security, held at Maharshi Dayanand University, Rohtak on January 25th, 2018
152.	Sumit Jangra	1	MBBB	International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry, held at GJUS&T on February 21-23, 2018.
153.	Sonika Anita	1	Zoology & Aquaculture	National Seminar on Climate Change and Food Security, January 25, 2018, Maharishi Dayanand University, Rohtak
154.	Sonika Sumti	2	Zoology & Aquaculture	21 st Punjab Science Congress, Scientific Advances for Inclusive Development and Environmental Protection, February 7-9, 2018, PAU, Ludhiana
155.	Anita, Sonika, Vikram	3	Zoology & Aquaculture	30 th All India Congress of Zoology and National Seminar on Advances in

				Zoology for Sustainable Development (February 15-17, 2018), Kurukshetra University, Kurukshetra
156.	Sonika	1	Zoology & Aquaculture	International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry (ICBN -2018), February 21-23, 2018, GJU, Hisar
157.	Anita, Sumti Sonika	3	Zoology & Aquaculture	International Conference on Sustainable Agriculture, Energy, Environment and Technology (ICSAEET-2018), February 24-25, 2018, Maharishi Dayanand University, Rohtak
Grand Total		311		



Reserch Projects of faculty from outside Agency

Annexure COBSH VI

Sr No.	Sponsor	Title	Funds Sanctioned (Rs.)	Period	Research/Project Team
1	ICAR	Applications of microorganisms in agriculture and allied Sectors (AMAAS) priority area: Microbial diversity and identification	70.80L	2006-14	PI-Dr. Rajesh Gera CoPI: Dr. Kamlesh Kukreja
2	DBT	Creation of Bioinformatics infrastructure facility (BIF) for the promotion of biology teaching through Bioinformatics (BTBI) scheme of BTISNET	51.78 L	2006-18	Dr. Sudhir Kumar
3	ICAR	Thermal tolerance in Wheat: phenotyping for adaptive mechanisms to facilitate MAS based wheat breeding	20.0L	2009-14	Dr. Renu Munjal
4	NFSM	Selection and utilization of water-logging tolerant cultivars in pigeonpea	15.0L	2011-13	PI: Dr. Sunita Sheokand Co PIs: Dr Rakesh Kumar Dr. Ramdhari
5	DST	Molecular breeding of indica rice genotypes with aerobic rice traits	32.0 L	2010-13	RK Jain Sunita Jain
6	DST	Identification of gender-specific DNA markers and genetic diversity in paradise tree [Simarouba glauca].	22.5L	2010-13	Santosh Dhillon P.Kharb R.S. Dhillon
7	DBT	Ethanol Production from sugarcane bagasse	22.92 L	2010-13	PI- Dr. Sneh Goyal
8	DBT	Development of high-yielding aerobic rice lines with intact Basmati grain quality traits using conventional breeding and marker assisted selection strategies	~38L	2010-14	RK Jain Sunita Jain
9	RKVY	Production and Marketing of biofertilizers for different crops	59.40L	2010-14	PI: Dr. Sneh Goyal, Co PIs: Dr. Sunita Suneja, Dr. Rakesh Kumar
10	RKVY	Production & training on vermicomposting for sustainable development	30.40L	2012-14	Dr. Dharambir Singh Dr.R.K. Gupta Dr. Rachna Gulati

11	ICRISAT	Selection and utilization of water-logging tolerant cultivars in pigeonpea	4.0L	2013-14	Dr. Sunita Sheokand (PI)
12	DBT	Development of white rust resistant mustard with high oil quality	11.0 L	2015-16	Dr. R.C.Yadav, Dr. Nisha Kumari Dr. N.K. Thakral Dr. Ram Avtar Dr. A.S. Rathi
13	DST	Fish health management through herbal materials and vermitechnology for sustainable aquaculture	26.53L	2013-16	Dr.Shashank Dr.R.K. Gupta
14	SERB-DST	Molecular characterization of functional and uncultured bacterial community in semi-arid zone of Haryana	23.30L	2013-16	PI: Dr. Rakesh Kumar
15	CIMMYT	Development of Heat Tolerant Wheat for South Asia	24.0L	2014-17	Dr.Renu Munjal,PI
16	RKVY	Salt hyperaccumulation mechanism and phytoremediation potential of some halophytic species	25.40L	2015-17	Dr. Sarita Devi, PI Dr. Neeraj Kumar, Co-PI
17	ICAR	Molecular genetic analysis of resistance/tolerance to different stresses in Indian mustard	72.0L	2015-20	PI: Dr. Ram Avtar/ Dr. N.K. Thakral, Co-PIs Dr. R.C. Yadav/Neelam Yadav, Dr. A.S. Rathi, Dr. Anita Kumari,
18	RKVY	Development of chickpea genotypes to mitigate terminal heat and drought stress for enhancing productivity in rainfed areas of Haryana	55.38L	2016-18	Dr. Neeraj Kumar (PI) Dr. Krishan Kumar, Co-PI
19	RKVY	Strengthening and development of rodentology lab for catering services to the farmers in Haryana	28.0L	2016-18	Dr. Ravikant Dr. P. Bhatnagar Dr. Jai Lal Yadav
20	RKVY	Enhancement of wheat productivity under Changing Climatic conditions in Haryana	24.0L	2016-19	Dr.S.S.Dhanda,PI Dr. Renu Munjal, Co-PI Dr.S.K.Sethi, Co-PI
21	ICAR	Development of promiscuous and efficient rhizobia having wider host range -Under Emeritus Scientist Scheme	43.4L	2017-19	Dr. V. K. Sikka, Emeritus Scientist

22	CIMMYT	Scaling breeding and agronomic management for increasing wheat productivity and adaptation to climate change causing rising temperature and water scarcity in South Asia	36,000 Euro	2017-19	Dr.S.K.Sethi PI Dr.Renu Munjal,Co-PI Dr.O.P.Bishnoi, Co-PI
23	State Govt.	Ecology and management of invertebrate and vertebrate fauna of agricultural importance	6.15L	2017 onwards	Dr. Rachna Gulati Dr. R.K. Gupta Dr. Dharambir Singh Dr. Ravikant
24	DBT	Molecular Breeding of Indica Rice genotypes with aerobic rice traits	14.0L		Dr.Renu Munjal,Co-PI
25	DBT	Development of high-yielding aerobic rice lines with intact Basmati grain quality trait using conventional breeding and marker assisted selection strategies	9.0L		Dr.Renu Munjal,Co-PI
26	ICAR	Research Cum Technology Transfer Centre on Protected Cultivation”	495.66 L	2017 onwards	Dr Vinod Goyal, Co-PI- plant Physiologist



Annexure COBSH VII

Faculty Publications

Sr. No.	Research Publication (2012-17)	NAAS Rating
Biochemistry		
1.	Bhushan, B., Pal, A. and Jain, V. (2012). Isolation, screening and optimized production of extracellular xylanase under submerged condition from <i>Aspergillus flavus</i> MTCC 9390. <i>Enzyme Engineering</i> , 1 : 103-108	-
2.	Chaudhary, D.P., Sapna, Mandhania, S. and Kumar, R. (2012) Inter-relationship among nutritional quality parameters of maize (<i>Zea mays</i>) genotypes. <i>Indian Journal of Agricultural Sciences</i> , 82 (8): 681-686.	6.17
3.	Dhakar, A.K., Verma, P.K., Mittal, S.B., Yadav H.P., Dev Vart and Chugh, L.K. (2012). Inter-relationships among yield and quality parameters in pearl millet hybrids under rainfed conditions. <i>Forage Research</i> , 38 (1): 32-34.	2.50
4.	Kaur, G., Mandhania, S. and Chaudhary, D.P. (2012) calcium oxalate in Napier millet hybrid. <i>Indian Journal of Animal Nutrition</i> , 29 (1): 58-62.	5.02
5.	Kumari, N., Jain, V. and Talwar, G. (2012). Effect of salt stress on antioxidative enzymes in the leaves of salt tolerant and salt sensitive genotypes of cotton. <i>Journal of Cotton Research and Development</i> , 26 (2): 181-185.	3.41
6.	Malik, K., Dhawan, A.K. and Tokas, J. (2012). <i>In vitro</i> protocol for clonal propagation of <i>Jatropha curcas</i> : An important biodiesel plant. <i>Haryana Journal of Horticulture Sciences</i> , 41 (3&4): 129-131.	-
7.	Malik, K., Tokas, J. and Goyal, S. (2012). Microbial Pigments: A review. <i>International Journal of Microbial Research Technology</i> , 4 : 361-365.	-
8.	Parkash, O., Sapna, Mandhania, S., Singode, A. and Chaudhary, D.P. (2012) Genetic variability in nutrition profile of elite maize genotypes. <i>Indian Journal of Agricultural Biochemistry</i> , 25 (2) 106-110.	4.69
9.	Rani, B., Jain, V., Chhabra, M.L., Dhawan, K., Kumari, N. and Yadav, P. (2012). Oxidative stress and antioxidative system in <i>Brassica juncea</i> (L.) under high temperature stress. <i>Annals of Biology</i> , 28 (2):110-115.	2.98
10.	Sapna, Chaudhary, D.P., Srivastava, P., Mandhania, S. and Kumar, R. (2012) Genetic variability in nutritional profile of inbred maize germplasm. <i>Maize Journal</i> , 1 : 46-48.	-
11.	Yadav, P., Kumar, S., Jain, V. and Malhotra, S. P. (2012). Cell wall metabolism in relation to shelf life of ber (<i>Ziziphus mauritiana</i> Lamk.) fruits during ripening. <i>Food Technology and Biotechnology</i> , 50 : 467-472	7.18
12.	Chawla, S., Jain, S. and Jain, V. (2013). Salinity induced oxidative stress and antioxidant system in salt-tolerant and salt-sensitive cultivars of rice (<i>Oryza sativa</i> L.). <i>Journal of Plant Biochemistry and Biotechnology</i> , 22 : 27-34	7.35

13.	Goyal, P. and Chugh, L.K. (2013). Partial purification and characterization of peroxidase from pearl millet [<i>Pennisetum glaucum</i> (L.) R. Br.] grains. <i>Journal of Food Biochemistry</i> Pp 1-9. doi:10.1111/jfbc. 12033.	7.15
14.	Jain, V., Rani, B., Jain, S. and Sharma, S. K. (2013). Antioxidative system as affected by sodicity in Indian mustard [<i>Brassica juncea</i> (L) Czern & Coss). <i>Annals of Biology</i> , 29 : 294-300	4.08
15.	Kumari, N., Jain, V. and Malhotra, S. P. (2013). Purification and characterization of extracellular acidophilic alpha- Amylase from <i>Bacillus Cereus</i> MTCC 10205 isolated from the Soil. <i>African Journal of Microbial Research</i> , 7 (48): 5440-5448	7.0
16.	Kumari, N., Jain, V. and Talwar, G. (2013). Salinity induced changes in ascorbic acid, hydrogen peroxide and lipid peroxidation in leaves of salt tolerant and salt-susceptible cultivars of cotton (<i>Gossypium hirsutum</i> L.) <i>Research in Plant Biology</i> , 3 : 06-11	-
17.	Kandikattu, H.K., Tamatam, A., Pal, A. and Khanum, F. (2013). Neuroprotective effects of <i>Cyperus rotundus</i> on SIN-1 induced nitric oxide generation and protein nitration: Ameliorative effect against apoptosis mediated neuronal cell damage. <i>NeuroToxicology</i> (Elsevier). 34 : 150-159.	8.74
18.	Pal, A., Lobo, M. and Khanum, F. (2013). Extraction, purification and thermodynamic characterization of almond (<i>Amygdalus communis</i>) β -galactosidase for the preparation of delactosed milk. <i>Food Technology and Biotechnology</i> (Croatia), 51 (1): 53-61.	7.18
19.	Saharan, V., Mehrotra, A., Khatik, R., Rawal, P., Sharma, S.S. and Pal, A. (2013). Synthesis of chitosan based nanoparticles and their in vitro evaluation against phytopathogenic fungi. <i>International Journal of Biological Macromolecules</i> (Elsevier), 62 : 677-683.	9.14
20.	Singh, A., Avtar, R., Singh, D., Sangwan, O. and Kumari, N. (2013). Genetic divergence for seed yield and component traits in Indian mustard [<i>Brassica juncea</i> (L.) Czern and Coss.]. <i>Indian Journal of Plant Sciences</i> , 2 (3): 48-51.	-
21.	Tokas, J., Ekta, Beniwal, B.S., Kumar, J. and Malik, K. (2013). Solvent extraction of carotenoids from marigold. <i>Journal of Global Research and Analysis</i> , 2 (1): 225-228.	-
22.	Anamika, Tokas, J., Anju, Singal, H.R. and Sangwan, R.S. (2014). Biochemical analysis of cotton (<i>G. hirsutum</i> L.) genotypes resistant and susceptible to sucking pest attack. <i>International Journal of Science Engineering and Computer Technology</i> , 4 (1-2):64-67.	-
23.	Anamika, Tokas, J., Rani, A., Yashveer, S and Singal, H.R. (2014). Effect of sucking pests infestation on phosphorous content in cotton (<i>G. hirsutum</i> L.) plant. <i>Journal of Global Research and Analysis</i> , 3 (2): 232-235.	-
24.	Avtar, R., Singh, D., Thakral, N.K, Singh, A., Rani, B. and Kumari, N. (2014). Multivariate analysis for evaluation and classification of toria germplasm accessions. <i>Research on Crops</i> , 15 (1): 129-134.	6.10

25.	Bhardwaj, R.L., Nandal, U., Pal, A. and Jain, S. (2014). Bioactive compounds and medicinal properties of fruit Juices. <i>Fruits</i> , 69 (5): 391-412.	7.01
26.	Bhushan, B., Pal, A. and Kumar, S. (2014). Production and partial characterization of extracellular xylanase from acidophilic <i>Aspergillus flavus</i> MTCC 9390 grown in SSF mode. <i>Research Journal of Biotechnology</i> , 9 (5): 97-105.	6.24
27.	Chawla, S., Madan, S., Jain, V. and Munjal, R. (2014). Variation of zinc content, yield and yield components in bread and durum Wheat under zinc deficiency. <i>Annals of Biology</i> , 30 : 321-324	4.08
28.	Devi, R., Jain, V., Chawla, S. and Saxena, A. K. (2014). Acid phosphatase and α -galactosidase activities in Pigeon Pea [<i>Cajanus cajan</i> (L.) Millsp.] along with total Protein profile. <i>Annals of Biology</i> , 30 : 604-607	4.08
29.	Dhakar, A.K., Verma, P.K., Dev Vart and Chugh, L.K. (2014). Direct and indirect effects of yield components on seed yield based on genotypic correlations in pearl millet hybrids under irrigated conditions. <i>Annals of Biology</i> , 30 (4): 654-657.	2.98
30.	Gupta, P., Singh, R., Malhotra, S., Boora, K.S. and Singal, H.R. (2014). Cowpea [<i>Vigna unguiculata</i> (L.) Walp.] seed proteins: Heterogeneity in total proteins and protein fractions. <i>Legume Research</i> , 37 (1):62-67.	6.15
31.	Gupta, M., Chawla, V., Yadav, N., Munjal, R., Chugh, L. K. and Garg, P. (2014). Genetic analysis of terminal heat tolerance in wheat using microsatellite markers. In <i>Proc. National Symposium on Crop Improvement for Inclusive Sustainable Development</i> , 7- 9 November, 2014, Punjab Agricultural University, Ludhiana. Pp 668-671.	-
32.	Kandikattu, H.K., Venuprasad, M.P., Pal, A. and Khanum, F. (2014). Phytochemical analysis and exercise enhancing effects of hydroalcoholic extract of <i>Celastrus paniculatus</i> Willd. <i>Industrial Crops and Products</i> (Elsevier), 55 : 217-224.	9.45
33.	Kumar, A. and Singh, R. (2014). Synthesis and bioevaluation of 2-(2/4-chloro-/4/2-bromo-/4-methylphenyl)-6-bromo-4H-chromen-4-ones). <i>Annals of Agri-Bio Research</i> , 19 (4): 683-687.	3.97
34.	Kumar, R., Dev Vart, Chugh, L.K., Kumar, Y., Harish, S., Malik, V., Raj, K., Dalal, M.S. and Garg, P. (2014). Genetic variability and performance of pearl millet [<i>Pennisetum glaucum</i> (L.) R. Br.] Composites for yield and quality attributes. <i>Haryana Journal of Agronomy</i> , 30 (2): 138-14.	-
35.	Kumar, R., Harish, S., Dalal, M. S., Malik, V., Chugh, L. K., Garg, P. and Raj, K. (2014). Studies on variability, correlation and path analysis in pearl millet [<i>Pennisetum glaucum</i> (L.) R. Br.]. <i>Forage Research</i> 40(3): 163-167.	-
36.	Kumar, S., Yadav, P., Jain, V. and Malhotra, S. P. (2014). Isozymes of antioxidative enzymes during ripening and storage of ber (<i>Ziziphus mauritiana</i> Lamk.). <i>Journal of Food Science and Technology</i> , 51 :329-334	

37.	Kumari, N., Pal, A. and Jain, V. (2014). Immobilization of alpha-amylase purified from <i>Bacillus cereus</i> MTCC 10205 by entrapment and adsorption on various support systems. <i>Applied Biological Research</i> , 16 : 21-30	
38.	Malik, K., Tokas, J. and Goyal, S. (2014). Isolation and screening of pigment producing bacteria. <i>Annals of Biology</i> , 309 (3): 448-450.	4.08
39.	Rana, M., Khambra, K., Yadav, N., Singh, R. and Arya, N. (2014). Launderings effect on mechanical parameters of FR treated Cotton fabric with combined binders. <i>Journal of Cotton Research and Development</i> , 28 (1): 161-166.	4.69
40.	Singh, K., Khirbat, S.K., Chugh, L.K. and Jain, V. (2014). Biochemical changes in chilli against <i>Colletotrichum capsici</i> . <i>Indian Phytopathology</i> , 67 (2): 187-189.	4.59
41.	Singh, S.D., Sihag, S., Sihag, Z.S. and Chug, L.K. (2014). Effect of replacing maize with pearl millet on egg production and quality in layers. <i>Indian Journal of Animal Nutrition</i> , 31 (1): 92-96.	2.78
42.	Tokas, J and Sangwan, O. (2014). Biochemical evaluation of cotton leaves affected by red leaf disease. <i>Haryana Journal of Agronomy</i> , 30 (2): 151-156	NA
43.	Tokas, J., Kaul, G. and Kumar, V. (2014). In vitro culture of buffalo (<i>Bubalus bubalis</i>) spermatogonial stem cells: effect of serum, sertoli cell co-culture and single growth factors. <i>Buffalo Bulletin</i> , 33 (4): 307-322.	6.07
44.	Tokas, J., Malik, K. and Sangwan, R.S. (2014). Studies on biochemical composition of mango peel. <i>International Journal of Science Engineering and Computer Technology</i> , 4 (1-2):26-28.	-
45.	Tokas, J., Malik, K. Sangwan, O. and Siwach, S.S. (2014). Biochemical evaluation of cotton genotypes grown under rainfed and irrigated conditions. <i>Annals of Agri Bio Research</i> , 19 (3): 404-407.	4.08
46.	Tokas, J., Malik, K., Sangwan R.S. and Siwach, S.S. (2014). Biochemical evaluation of cotton genotypes to ascertain their basis for tolerance/susceptibility to CLCuD disease. <i>Annals of Biology</i> , 30 (4):600-603	4.08
47.	Yadav, P., Yadav, T., Kumar, S., Rani, B., Kumar, S., Jain V. and Malhotra S. P, (2014). Partial purification and characterization of ascorbate peroxidase from ripening Ber (<i>Ziziphus mauritiana</i> L) Fruits. <i>African Journal of Biotechnology</i> , 13 (32): 3323-3331	-
48.	Yashveer, S., Singh, V., Kaswan, V., Kaushik, A. And Tokas, J. (2014). Green Biotechnology, nanotechnology and biofortification: perspectives on novel environmental friendly crop improvement strategies. <i>Biotechnology and Genetic Engineering Reviews</i> , 30 (2) 113-126.	7.91
49.	Anamika, Tokas, J., Anju, Kumari, N. and Singal, H.R. (2015). Changes in potassium content of cotton (<i>Gossypium hirsutum</i> L.) leaves infested with sucking pests. <i>Annals of Biology</i> , 31 (2):187-189.	4.08

50.	Bhushan, B., Pal, A., Kumar, S. and Jain V.(2015). Biochemical characterization and kinetic comparison of encapsulated haze removing acidophilic xylanase with partially purified free xylanase isolated from <i>Aspergillus flavus</i> MTCC 9390. <i>Journal of Food Science and Technology</i> , 52 (1):191–200	7.24
51.	Bhushan, B., Pal, A. and Jain, V. (2015). Improved enzyme catalytic characteristics upon glutaraldehyde cross-linking of alginate entrapped xylanase isolated from <i>Aspergillus flavus</i> MTCC 9390. <i>Enzyme research</i> , 1-9.	-
52.	Bhushan, B., Pal, A., Kumar, S., Rajesh and Singh, A. (2015). Evaluation of post-germinative lipid peroxidation and enzymatic antioxidant potential in lead absorbing oat (<i>Avena sativa</i>) seedlings. <i>Journal of Environmental Biology</i> , 36 : 279-288.	6.53
53.	Bhushan, B., Pal, A., Narwal, R., Meena, V.S., Sharma, P.C. and Singh, J. (2015). Combinatorial approaches for controlling pericarp browning in Litchi (<i>Litchi chinensis</i>) fruit. <i>Journal of Food Science and Technology</i> (Springer), 52 (9): 5418-5426.	7.24
54.	Goyal P., Chugh L.K. and Bajaj, S. (2015). Improving shelf life of pearl millet flour through conventional plant breeding approach. In <i>Proc. Indian international Science Festival-Young Scientist' Meet</i> , Department of Science and Technology, Government of India, 4-8 December, 2015. Pp Innov61-1 to Innov61-5.	-
55.	Jain, V., Rani, B. and Jain, S. (2015). Sodicy-induced antioxidative system in roots of salt-tolerant and salt-sensitive cultivars of Indian mustard (<i>Brassica juncea</i> L.). <i>Journal of Oilseed Brassica</i> , 6 (1): 152-157	4.76
56.	Jain, V., Vart, S., Verma, E. and Malhotra, S. P. (2015). Spermine reduces salinity-induced oxidative damage by enhancing antioxidative system and decreasing lipid peroxidation in rice seedlings. <i>Journal of Plant Biochemistry and Biotechnology</i> , 24 : 316-323	7.35
57.	Kandikattu, H.K., Venuprasad, M.P., Jayashree G.V., Rachitha, P., Krupashree, K., Pal, A. and Khanum, F. (2015). <i>Celastrus paniculatus</i> Willd. Mitigates t-BHP induced oxidative and apoptic damage in C2C12 murine muscle cells. <i>Cytotechnology</i> , 67 : 955-967.	7.86
58.	Kumar, A., Goyal, S.C., Prashad, J., Ekta and Singal, H.R. (2015). Biochemical characterization of root and shoot differentiation from callus cultures in <i>Dioscorea deltoidea</i> Wall. <i>Vegetos</i> , 28 :146-154.	5.00
59.	Kumar, S., Jain, N.K., Sharma, K.C., Ranjeet, P., Mishra, B.K., Ramakrishnan, S. and Mandhania, S. (2015) Optimization, purification and characterization of pectinases from pectinolytic strain, <i>Aspergillus foetidus</i> MTCC 10559. <i>Journal of Environmental Biology</i> , 36 : 483-489.	6.53

60.	Kumari, N., Jain, V., Devi, R. and Rani, B. (2015). Effect of increasing salinity levels on different growth parameters in American cotton genotypes. <i>Journal of Cotton Research and Development</i> , 29 (1): 81-83.	3.41
61.	Malik, K., Tokas, J., Anand, R.C. and Kumari, N. (2015). Pretreated rice straw as an improved fodder for ruminants: An overview. <i>Journal of Applied and Natural Sciences</i> , 7 (1):514-520.	-
62.	Mandhania, S., Pundir, S.R., Siwach, S.S., Sangwan, R.S., Sangwan, O., Nimbai, S. and Jain, A. (2015) Nutritional quality constituents' relationship in desi (<i>Gossypium arboreum</i>) cotton. <i>Journal of Cotton Research and Development</i> , 29 (1): 87-89.	4.69
63.	Pal, A., Kumar, M., Saharan, V. and Bhushan, B. (2015). Antioxidant and free radical scavenging activity of Ashwagandha (<i>Withania somnifera</i> L.) leaves. <i>Journal of Global Biosciences</i> , 4 (1): 1127-1137.	-
64.	Rani, B., Kumari, N., Jain, V., Dhawan, K. and Avtar, R. (2015). Heat stress induced changes in protein profile of Indian mustard (<i>Brassica juncea</i> L.). <i>Journal of Oilseed Brassica</i> , 6 (2): 302-305.	3.43
65.	Saharan, V., Sharma, G., Yadav, M., Choudhary, M.K., Sharma, S.S., Pal, A., Raliya, R. and Biswas, P. (2015). Synthesis and in-vitro antifungal efficacy of Cu-chitosan nanoparticles against pathogenic fungi of tomato. <i>International Journal of Biological Macromolecules</i> (Elsevier), 75 : 346-353.	9.14
66.	Singh, A., Avtar, R., Kumari, N., Sangwan, O. and Sheoran, R.K. (2015). Principal component and hierarchical cluster analyses for classification and categorization of sesame germplasm. <i>Research on Crops</i> , 16 (2): 345-350.	6.00
67.	Tokas, J., Beniwal, B.S, Kumari, N. and Singal, H.R. (2015). Extraction and quantification of carotene from different marigold genotypes. <i>Journal of Global Research and Analysis</i> , 4 (1):1-4.	-
68.	Anamika, Tokas, J., Rani, A, Malik, K. And Singal, H.R. (2016). Variation of structural carbohydrates in cotton genotypes resistant and susceptible to sucking pests. <i>Annals of Biology</i> , 32 (2): 228-232.	4.08
69.	Avtar, R., Kumari, N., Rani, B., Narula, A., Thakral, N.K. and Singh, D. (2016). Evaluation, classification and characterization of Toria germplasm for different agro-morphological traits. <i>Journal of Oilseed Brassica</i> , 7 (1): 52-62.	3.43
70.	Avtar, R., Rani, B., Jattan, M., Manmohan, Kumari, N. and Rani, A. (2016). Genetic diversity analysis among elite gene pool of Indian mustard using SSR markers and phenotypic variations. <i>The Bioscan</i> , 11 (4): 3035-3041.	4.57
71.	Berwal, M.K., Chugh, L.K., Goyal, P. and Kumar, R. (2016). Total antioxidant potential of pearl millet genotypes: inbreds and designated B-lines. <i>Indian Journal of Agricultural Biochemistry</i> , 29 (2): 201-204. doi 10.5958/0974-4479.2016.00032.0	4.03

72.	Berwal, M.K., Chugh, L.K., Goyal, P. and Kumar, R. (2016). Variability in total phenolic content of pearl millet genotypes: inbreds and designated B-lines. <i>Journal of Agriculture and Ecology</i> , 1 (1): 41-49.	-
73.	Kadian, M., Siwach, P., Gupta, R.K. and Duhan, A. (2016). Vapor phase methylation of indole over nanocrystalline Cd _{1-x} Cr _x Fe ₂ O ₄ (x = 0, 0.25, 0.5, 0.75 and 1.0) ferrosinels. <i>Asian Journal of Chemistry</i> , 28 (7): 1474-1478.	5.00
74.	Kumar, A., Chugh, L.K., Yadav, D.V., Malik, R.S. and Kumar, M.K. (2016). Effect of farmyard manure, organic manure and balanced fertilizers application on the productivity and soil fertility in pearl millet (<i>Pennisetum glaucum</i>)- mustard (<i>Brassica juncea</i>) cropping sequence in sandy loam soil of semi-arid regions. <i>Indian Journal of Agricultural Sciences</i> , 86 (2): 220-226.	6.14
75.	Kumari, N., Avtar, R., Sharma, B. and Thakral, N.K. (2016). Antioxidant potential in seed meal of different Indian mustard genotypes. <i>Journal of Oilseed Brassica</i> , 7 (1): 63-67.	3.43
76.	Malik, K., Tokas, J. and Anand, R.C. (2016). Characterization and Cytotoxicity Assay of Pigment Producing Microbes. <i>International Journal of Current Microbiology and Applied Sciences</i> , 5 (6): 370-376.	5.38
77.	Mandhania, S., Pundir, S.R., Sangwan, R.S., Rolania, K., Sangwan, O. and Janu, A. (2016) Allelochemicals studies in cotton genotypes having differential reaction of Leafhopper (<i>Amrasca devastans</i>). <i>Ecology, Environment and Conservation</i> , 22 : S195-S198.	4.89
78.	Mandhania, S., Sangwan, O., Sangwan, R.S., Siwach, S.S., Pundir, S.R., Nimbale, S., Jain, A. and Janu, A. (2016). Determination of short term drought stress effect on yield and physiological Parameter in cotton by WSSI. <i>Ecology, Environment and Conservation</i> , 22 : S213-S218.	-
79.	Mandhania, S., Sangwan, R.S., Sangwan, O., Pundir, S.R. and Janu, A. (2016) Screening of upland cotton seed as a nutrient sources for ruminants. <i>IRA-International Journal of Applied Sciences</i> , 4 (1): 181-185.	-
80.	Narwal, R.K., Bhushan, B., Pal, A. and Malhotra, S.P. (2016) Optimization of upstream process parameters for enhanced production of thermostable milk clotting enzyme from <i>Bacillus subtilis</i> MTCC 10422. <i>Journal of Food Process Engineering</i> (Wiley Periodicals) 10.1111/jfpe.12356.	6.75
81.	Narwal, R.K., Bhushan, B., Pal, A., Malhotra, S.P., Kumar, S. and Saharan, V. (2016). Inactivation thermodynamics and iso-kinetic profiling for evaluating operational suitability of milk clotting enzyme immobilized in composite polymer matrix. <i>International Journal of Biological Macromolecules</i> , 91 : 317-328.	9.14

82.	Narwal, R.K., Bhushan, B., Pal, A., Panwar, A. and Malhotra, S. (2016). Purification, physico-chemico-kinetic characterization and thermal inactivation thermodynamics of milk clotting enzyme from <i>Bacillus subtilis</i> MTCC 10422. <i>LWT- Food Science and Technology</i> (Elsevier), 65 : 652-660.	8.71
83.	Pal, A., Bhushan, B., Kumar, S. and Saharan, V. (2016). Cost effective fermentation, purification and operational suitability of xylanase from <i>Aspergillus niger</i> KR-3 grown on agricultural by-products. <i>Lignocellulose</i> , 5 (1): 15-33.	-
84.	Pal, A., Bhushan, B., Saharan, V. and Narwal, R.K. (2016). Extraction and evaluation of antioxidant and free radical scavenging potential correlated with biochemical components of red rose petals. <i>Iranian Journal of Science and Technology</i> , Transactions A: Science. 10.1007/s40995-016-0071-2	6.13
85.	Pal, A., Bhushan, B., Saharan, V., and Sidhu, R.S. (2016). Compositional analysis and evaluation of antioxidant potential of fruits of <i>Withania somnifera</i> Dunal. <i>Journal of Advanced Research in Biochemistry and Pharmacology</i> , 2 (1): 1-11.	-
86.	Pundir, S. R., Nimbale, S., Sangwan, R.S., Siwach, S.S., Sangwan, O., Mandhania, S. and Jain, A. (2016) Combining ability study on seed cotton yield and its components in desi cotton (<i>Gossypium arboreum</i> L.). <i>Journal of Cotton Research and Development</i> , 30 (1): 32-35.	4.89
87.	Rani, B., Kumari, N., Pooja., Jain, V., Dhawan, K., Monika., Avtar, R., Kumar, A. and Sheoran, P.(2016). Antioxidative System as Influenced by High Temperature stress in <i>Brassica juncea</i> (L.) Czern & Coss. <i>Current Trends in Biotechnology and Pharmacy</i> , 10 (2): 118-125.	4.42
88.	Rao, P., Avtar, R., Kumari, N., Jattan, M., Rani, B., Manmohan and Thakral, N.K. (2016). Classification and Characterization of Different Indian Mustard Genotypes Based on Morphological and Oil Quality Traits. <i>Advances in Life Sciences</i> , 5 (22): 10445-10453.	3.56
89.	Saharan, V., Kumaraswamy, R.V., Choudhary, R.C., Kumari, S., Pal, A., Raliya, R. and Biswas, P. (2016). Cu-chitosan nanoparticles mediated sustainable approach to enhance seedling growth in maize by mobilizing reserved food. <i>ACS-Journal of Agriculture and Food Chemistry</i> , 64 :6148-6155.	8.86
90.	Sangwan, O., Pundir, S.R. and Mandhania, S. (2016) Morphological characterization of american Cotton hybrids and parental lines. <i>International Journal of Food, Agriculture and Veterinary Sciences</i> , 6 (2): 22-26.	-
91.	Singh, I., Madan, V. K., Jangra, S. S. and Singh, S. (2016). Effect of extraction techniques and solvents on various phytochemicals and antioxidant activity of clove (<i>Syzygium aromaticum</i> L.) buds. <i>Asian Journal of Chemistry</i> , 28 (4): 801-806.	6.00

92.	Singh, S., Tokas, J. and Jangra, S.S. (2016). Comparative analysis of antioxidant and antifungal activity of two varieties of coriander (<i>Coriandrum sativum</i> L.). <i>Annals of Biology</i> , 32 (2): 232-237.	4.08
93.	Singh,S., Tokas,J. and Jangra,S.S. (2016).Antibacterial Activity and Phytochemical Composition of two varieties of Coriander sativum L. <i>International Journal of Science, Engineering & Computer Technology</i> , 6 (2):157-159.	-
94.	Singh,S., Tokas,J. and Jangra,S.S. (2016).Comparative Analysis of Antioxidant and Antifungal Activity of two varieties of Coriander (<i>Coriandrum sativum</i> L.) . <i>Journal of Annals of Biology</i> , 32 (2):233-237.	-
95.	Siwach, R., Tokas, J. and Seth, R. (2016). Use of lycopene as a natural antioxidant in extending the shelf-life of anhydrous cow milk fat. <i>Food Chemistry</i> , 199 : 541–546.	10.05
96.	Berwal, M.K., Chugh, L.K., Goyal, P., Kumar, R. and Dev Vart. (2017). Protein, micronutrient, antioxidant potential and phytate content of pearl millet hybrids and composites adopted for cultivation by farmers of Haryana, India. <i>International Journal of Current Microbiology and Applied Sciences</i> 6 (3): 376-386.	5.38
97.	Berwal, M.K., Verma, K., Goyal, P., Chugh, L.K. (2017). Impact of decortication on phytate content in pearl millet grains. <i>Journal of Nutrition and Food Science</i> , 2 (1): 1-3.	-
98.	Choudhary, R.C., Kumaraswamy, R.V., Kumari, S., Sharma, S.S., Pal, A., Raliya, R., Biswas, P. and Saharan, V. (2017). Cu-chitosan nanoparticle boost defense responses and plant growth in maize (<i>Zea mays</i> L.). <i>Scientific Reports</i> DOI:10.1038/s41598-017-08571-0	11.23
99.	Goyal, P. and Chugh, L.K. (2017). Shelf life determinants and enzyme activities of pearl millet - A comparison of changes in stored flour of hybrids, CMS lines, inbreds and composites. <i>Journal of Food Science and Technology</i> (Published Online) DOI 10.1007/s13197-017-2752-z.	7.50
100.	Goyal, P., Berwal, M.K., Praduman and Chugh, L.K. (2017). Peroxidase activity, its isozymes and deterioration of pearl millet [<i>Pennisetum glaucum</i> (L.) R. BR.] flour during storage. <i>Journal of Agriculture and Ecology</i> , 3 : 41-51	-
101.	Goyal, P., Chugh, L.K. and Berwal, M.K. (2017). Storage effects on flour quality of commonly consumed cereals. <i>Journal of Applied and Natural Science</i> , 9 (1): 551 – 555.	4.84
102.	Kazal, V., Bhushan, B., Narwal, R.K., Kumar, S. and Pal, A. (2017). Evaluation of salt tolerance in different isabgol (<i>Plantago ovate</i> Forsk.) genotypes under differential salt stress imposition. <i>Indian Journal of Agricultural Biochemistry</i> , 30 (1): 41-49.	4.69
103.	Kumari, N., Avtar, R., Sharma, B., Rani, B., Jain, V. and Sheoran, R.K. (2017). Biochemical assessment of nutritional status in Indian mustard. <i>Journal of Applied and Natural Science</i> , 9 (2): 1068 – 1071.	4.84

104.	Kumari, N., Avtar, R., Sharma, B., Sushil, Babita and Thakral, N.K. (2017). Comparative evaluation of nutritive qualities in seed meal of selected genotypes of Indian mustard. <i>Research in Environment and Life Sciences</i> , 10 (4): 390-392.	3.74
105.	Kumari, P., Pahuja, S.K., Pachta, R., Arya, S., Satpal, Tokas, J. and Aruna, C. (2017) Evaluation of sorghum brown midrib lines for quality biomass production. <i>Global Journal of Bioscience and Biotechnology</i> , 6 (2):232-239.	-
106.	Kumari, N., Jain V., Malik, K. and Sushil (2017). Production and optimization of amylase from bacillus cereus using submerged fermentation. <i>International Journal of Current Microbiology and Applied Science</i> , 6 (6): 263-271.	5.38
107.	Pal, A., Kandikattu, H.K., Bhushan, B. and Saharan, V. (2017). Ashwagandha root extract inhibits acetylcholine esterase, protein modification and ameliorates H ₂ O ₂ -induced oxidative stress in rat lymphocytes. <i>Pharmacognosy Journal</i> , 9 (3):302-309.	-
108.	Nguyen, N.V., Arya, R.K., Panchta, R. and Tokas, J. (2017). Studies on genetic divergence in cowpea (<i>Vigna unguiculata</i>) by using d ₂ statistics under semi-arid conditions. <i>Forage Research</i> , 43 (3) : 197-201	
109.	Satpal, Tokas, J., Duhan, B.S., Pahuja, S.K. and Kumar, S.R. (2017). Potential productivity, forage quality and relative economics of multi-cut sorghum genotypes under different fertilizer rates. <i>Forage Research</i> , 43 (1) :39-45.	
110.	Sharma, B. and Chugh, L.K. (2017). Two isoforms of lipoxygenase from mature grains of pearl millet [<i>Pennisetum glaucum</i> (L.) R. Br.]: Purification and physicochemico-kinetic characterization. <i>Journal of Food Science and Technology</i> (published online) DOI 10.1007/s13197-017-2589-5.	7.50
111.	Sheoran, R.S., Satpal, Tokas, J., Duhan, B.S. and Jindal, Y.S. (2017). Potential fodder productivity, quality and relative economics of multi-cut oat genotypes under different levels of nitrogen. <i>Forage Research</i> , 43 (3) : 227-230	
112.	Tokas, J., Kumari, P., Thakral, N., Satpal and Himani. (2017). Evaluation of forage sorghum [<i>Sorghum bicolor</i> (L.) Moench] genotypes for quality and yield. <i>Forage Research.</i> , 43 (3) : 235-238	448
113.	Bhadu, S., Agrawal, V., Himani and Tokas, J. (2018). <i>In silico</i> Analysis for Functional prediction of <i>Salmonella typhi</i> Gene in Human Infection through Threading Model. <i>International Journal of Current Microbiology and Applied Sciences</i> , 7 (2): 3426-3431	5.38
114.	Devi R., Chaudhary C., Jain V. and Saxena A.K. (2018). Effect of soaking on anti-nutritional factors in the sun-dried seeds of hybrid pigeon pea to enhance their nutrients bioavailability. <i>Journal of Pharmacognosy and Phytochemistry</i> ; 7 (2): 675-680	5.21

115.	Kumar M., Kumar R., Jain S. and Jain V. (2018). Differential behavior of antioxidant system in response to salinity induced oxidative stress in salt-tolerant and salt-sensitive cultivars of <i>Brassica juncea</i> L. <i>Bio catalysis and Agricultural Biotechnology</i> , 13 : 12-19	
116.	Satpal, Sheoran, R.S., Tokas, J. and Jindal, Y. (2018). Quality, yield and economics of oat (<i>Avena sativa</i> L.) Genotypes for fodder under different nitrogen Levels. <i>International Journal of Chemical Studies</i> , 6 (1): 1987-1991	531
117.	Siwach, R. and Tokas, J. (2018). Analysis of purified lycopene extract obtained from fresh tomatoes. <i>International Journal of Chemical Studies</i> , 6 (1): 597-601	51
118.	Siwach, R., Tokas, J. and Seth, R. (2018). Lycopene: A natural antioxidant for anhydrous buffalo milk fat. <i>International Journal of Dairy Technology</i> , 71 (1): 164-173	61
119.	Tokas, J., Malik, K. and Himani. (2018). Analysis of carotenoid composition in petal extracts of marigold (<i>Tagetes erecta</i>). <i>International Journal of Chemical Studies</i> , 6 (1): 741-744	31
120.	Verma, E., Tokas, J. and Singal, H.R. (2018). Effect of drought on physiological parameters in chickpea cultivars and their crosses. <i>International Journal of Chemical Studies</i> , 6 (2): 830-833	5.31
Botany & Plant Physiology		
121.	Bansal, K., Munjal, R., Madan,S,. and Arora, V. (2012). Influence of high temperature stress on starch metabolism in two durum wheat varieties differing in heat tolerance. <i>Journal of Wheat Research</i> 4 (1) : 43-48	4.42
122.	Dhanda S. S. and Munjal Renu (2012) Heat tolerance in relation to acquired thermotolerance for membrane lipids in bread wheat. <i>Field Crops Research</i> 135 : 30–37	9.05
123.	Dudeja, S.S., Sheokand, S. and Kumari, S. (2012) Legume root nodule development and functioning under tropics and subtropics. Perspectives and Challenges. <i>Legume Research</i> 35 : 85-103.	6.12
124.	Kumar, N., Nandwal, A.S., Kumar, S., Singh, S., Devi, S. and Bhasker, P. (2012) Assessment of chickpea genotypes for high temperature tolerance. <i>Indian Journal Plant Physiology</i> 17 (3&4) 225-232.	5.18
125.	Kumar, N., Nandwal, A.S., Waldia, R.S., Singh, S., Devi, S., Sharma, K.D., Kumar, A. (2012) Drought tolerance in chickpea as evaluated by root characteristics, plant water status, membrane integrity and chlorophyll fluorescence techniques. <i>Experimental Agriculture</i> 48 : 378-387.	7.07
126.	Kumar, U., Singh, I., Priyanka, Vimala, Y. (2012) <i>In vitro</i> somatic embryogenesis in <i>Cassia fistula</i> l. <i>International Journal of applied Sciences and Humanities</i> 2 :6-8	-
127.	Mehrotra, S., Goyal, V. (2012) Evaluation of designer crops for biosafety-A scientist's perspective. <i>Gene</i> . 515 (2): 241-248. DOI-10.1016/j.gene.2012.12.029	8.32

128.	Pooja, Sharma K.D. and Kumar A. (2012). Improvement in plant water relation and photosynthetic activities of mungbean in response to salicylic acid under salinity stress. <i>Indian Journal Plant Physiology</i> 17 (3&4): 268.	5.18
129.	Sharma, K. D., Kumar, A., and Patro, K .S. (2012). Bio-efficiency of Hizyme G as source of essential nutrient for the improvement of physiological traits, yield and quality of wheat. <i>Haryana Journal of Agronomy</i> 28 (1&2): 53-57	6.0
130.	Sheokand, S., Devi, S., Kumari, A. and Kumar R. (2012) Studies on phytoremediation potential of <i>Azadirachta indica</i> and <i>Acacia nilotica</i> . <i>International Journal of Plant Protection</i> 7:351-355.	4.59
131.	Sheokand, S., Dhingra, H. R. and Vashishta, R. D. (2012). Effect of benzyladenine on photosynthesis, floral biology characters and yield in pigeonpea (<i>Cajanus cajan</i> L). <i>Indian Journal of Plant Physiology</i> 17: 88-92	5.18
132.	Sheokand, S., Dudeja, S. S. and Swaraj, K. (2012). Nitrogen fixation in tropical environments -Adaptive responses and benefits. <i>Research on Crops</i> 13: 743-753.	4.75
133.	Sheokand, S., Kumari, A., Gera, G. and Vashist, R. (2012). Genotypic variation in pigeonpea for yield photosynthetic rate and P uptake at varying phosphorus levels. <i>Indian Journal of Plant Physiology</i> 17: 280-285.	5.18
134.	Kumar, A., Sharma, K.D. and Yadav, A. (2013). Improving physiological traits and yield by management practices in late planted wheat. <i>Indian Journal Plant Physiology</i> 18 (3): 282-284.	5.18
135.	Kumar, S., Pannu, R.K. , Dhaka, A.K., Bhagat, B. and Sharma, K.D (2013) Effect of irrigation levels on growth and yield of Kabuli chickpea (<i>Cicer arietinum</i>) genotypes. <i>Annals of Agri Bio Research</i> 18 (1): 29-31	4.08
136.	Kumar, S., Pannu, R.K. , Dhaka, A.K., Bhagat, B. and Sharma, K.D (2013) Effect of irrigation levels on soil plant water relations of Kabuli chickpea (<i>Cicer arietinum</i>) genotypes. <i>Annals of Biology</i> 29 (1): 45-49	3.97
137.	Mathpal, P. Kumar, U., Kumar, A. And Priyanka. (2013). Biofortification: A novel attempt. <i>Indian Farming:</i> 63: 23-27.	4.08
138.	Sagari, B., Chhabra, A.K., Behl , R.K., Sikka, V.K., Bishnoi, O.P. and Munjal, R. (2013). Grain growth rate, canopy temperature depression, chlorophyll content and AGPase activity in relation to grain yield in spring wheat genotypes under late sown condition. <i>Journal of Wheat Research</i> 5 (1): 50 – 54.	4.42
139.	Son, D.H., Kumar, N., Nandwal, A.S., Kumar, S. and Sharma, S.K. (2013). Comparative physiology of two summer mungbean genotypes to salt stress. <i>International Journal of Biotechnology and Bioengineering Research</i> 4 (6): 603-608.	-
140.	Sushil Sharma, S K Sehrawat, Suneel Sharma and K D Sharma (2013). Impact of environment on time of anthesis, dehiscence and stigma receptivity of guava (<i>Psidium guajava</i> L) under semi arid region of India. <i>Annals of Biology</i> 29 (3): 257-263.	4.08
141.	Karki, K., Singh, K.P., Kumar, U. (2014) Cancer scenario with future perspectives in Uttarakhand Region of India. <i>Global Journal Research Analysis</i> 3 (12): 1-3	3.37

142.	Mehrotra, S., Goyal, V. (2014) Repetitive Sequences in Plant Nuclear DNA-Types, Distribution, Evolution and Function. <i>Genomics, Proteomics and Bioinformatics</i> 164-171. DOI- 10.1016/j.gpb.2014.07.003.	5.51
143.	Priyanka, Kumar, U., Mohammad, I.R., Deepti & Vimala, Y. (2014) In vitro salt stress induced enhancement of ascorbic acid in <i>Embllica officinalis</i> . <i>Annals Plant Sciences</i> 3 (1) 588-593.	-
144.	Sharma, K. D. and Kumar, A. (2014). Identification of physiological and yield related traits of wheat (<i>Triticum aestivum</i> L.) under varying soil moisture stress. <i>Journal of Agrometeorology</i> 16 (1): 78-84.	6.36
145.	Sharma. K. D., Kumar, A., Yadav, R. and Singh, K. (2014). Leaf water status evaluation and its associations in green gram (<i>Vigna radiata</i> L.) under rainfed environment. <i>Indian Journal of Plant Physiology</i> 19 (2): 144-148.	5.18
146.	Yogita, Madan, S., Munjal, R., Rani,B. and Reena. (2014). Response of trehalose on physiological traits and lipid peroxidation in wheat under heat stress. <i>Annals of Biology</i> 30 : 307-312	4.08
147.	Aneja, B., Yadav, N. R., Kumar, N. and Yadav, N. R. (2015). Hsp tranblocked induction is correlated with physiological changes under drought stress in Indian mustard. <i>Physiology Molecular Biology Plants</i> 14 (4): 305-316.	6.88
148.	Chand, G., Nandwal, A.S., Kumar, N., Yadav,R., Nandan, B., Bhasker, P., and Devi, S. (2015). Physiological studies for high temperature tolerance indicators in summer mungbean under subtropical conditions of Indo Gangetic plains of North-West India. <i>International Journal Basic Applied Research</i> 13 : 326-330 (Special Issue).	3.41
149.	Chikara R., Malik, K.V., Kumar, U. (2015). Identification of RAPD based genetic variability in <i>Rhizoctonia solani</i> isolates from Northern India. <i>International Journal of Recent Biotechnology</i> 3 (2): 25-30	-
150.	Garg P., Saharan R. P., Gupta M. and Munjal R. (2015). Heterosis studies for grain yield and its components in wheat (<i>Triticum aestivum</i> L. Em. thell) under normal and drought conditions. <i>The Bioscan</i> 10(2) : 721-728	5.26
151.	Gupta M., Chawla V., Garg P., Yadav N., Munjal R. and Sharma B. (2015).Genetic analysis of yield and heat stress related traits in wheat (<i>Triticum aestivum</i> L. Em. Thell) using microsatellite markers. <i>Journal of Applied and Natural Science</i> 7 (2): 739 – 744	4.84
152.	Mahla R., Shashi, M., Munjal R., Hasija R.C. (2015). Drought stress induced changes in quality and yield parameters and their association in wheat genotypes. <i>Environment & Ecology</i> 33 (4A): 1639—1643	4.18
153.	Mehrotra S, Goyal, V., Gautam V.K. (2015) Unraveling the chromosomal organization of satellite repeats using fluorescence in situ hybridization and high resolution fiber-FISH mapping provides insights into the genome evolution in Centaureinae (<i>Asteraceae</i>). <i>Chromosome Research</i> 23 (2): 397-398.	8.39
154.	Priyanka, Upendra Kumar, K.P. Singh (2015) Indirect, Direct and Secondary Somatic Embryogenesis in <i>Embllica Officinalis</i> . <i>Global Journal For Research Analysis</i> 4 (4): 1-3	3.31

155.	Shekh, I., Sharma, P., Verma, S.K., Kumar, S., Malik, S., Mathapal, P., Kumar, U., Singh, D., Kumar, S., Chugh, V., Dhaliwal, H.S. (2015) Characterization of interspecific hybrids of <i>Triticum aestivum x Aegilops sp.</i> Without 5B chromosome for induced homoeologous pairing. <i>Journal of Biochemistry and Biotechnology</i> . DOI 10.1007/s13562-0150307-9	-
156.	Summy, K.D. Sharma, K.S. Boora and Neeraj Kumar (2015). Plant water status, canopy temperature and chlorophyll fluorescence in relation to yield improvement in chickpea (<i>Cicer arietinum</i> L.) under soil moisture stress environments. <i>Journal of Agrometeorology</i> 17(1) : 11-17.	6.40
157.	Devi, S., Nandwal, A.S., Angrish, R., Arya, S.S., Kumar, N., and Sharma, S.K. (2016). Phytoremediation potential of some halophytic species for soil salinity. <i>International Journal of Phytoremediation</i> 18 : 693-696.	7.77
158.	Duhan, S., Sharma, N., Bala, S., Lal, M., and Sheokand, S. (2016). Effects of waterlogging, salinity and their combination on percent survival, chlorophyll content and chlorophyll fluorescence in pigeon pea (<i>Cajanus cajan</i> L. Millsp.) genotypes. <i>The Bioscan</i> 11 : 815-819.	5.26
159.	Kaur, V., Pulivendula, P. and Kumari, A. (2016). Excised leaf water loss in wheat (<i>Triticum aestivum</i> L.) as affected by short periods of heat and water-deficit treatment followed by recovery. <i>Frontiers of Wheat Bioscience. Wheat Information service</i> . 122 :#184, 2016. www.shigen.nig.ac.jp/ewis	-
160.	Kavita, Munjal, R., Kumar, N., Dhanda, S.S. (2016). Stress response behavior in different wheat species in relation to heat tolerance. <i>Journal Wheat Research</i> 8(2) :49-53.	4.42
161.	Kumar, A., Kumar, S., Kumar, U., Suravajhala, P., Gajula, M.N.V.P. (2016). Functional and structural insights into novel DREB1A transcription factors in common wheat (<i>Triticum aestivum</i> L.): A molecular modeling approach. <i>Computational Biology & Chemistry</i> 64 : 217-226.	8.29
162.	Kumar, U., Priyanka, M., Malik, S., Kumar, N., Kumar, S., Chugh, V., Imran, Sharma, P., Singh, T.V., Dhaliwal, H.S., Kumar, S. (2016). Evaluation of iron and zinc in grain and grain fractions of hexoploid wheat and related species for possible utilization in wheat biofortification. <i>Plant Genetic Resources: characterization & Utilization</i> 14 (2): 101-111.	6.61
163.	Kumari, P., Duhan, S., Bala, S. and Kumar, J. (2016) Effect of Ethylene and calcium carbide on ripening of mango (<i>Mangifera indica</i> L.) during storage at ambient temperature. <i>The Bioscan</i> 11(3) : 1441-1443.	5.26
164.	Kumari, P., Kumar, J. and Bala, S. (2016) Ripening of Dashehari Mango with ethephon and calcium carbide. <i>The Bioscan</i> 11(3) : 1671-1674.	5.26
165.	Lal, M., Duhan, S., Bala, S., Dinesh. and Sheokand, S. (2016). Influence of waterlogging, salinity and their combination on membrane injury, lipid peroxidation, plant biomass and yield in pigeonpea (<i>Cajanus cajan</i> L. Millsp.) genotypes. <i>The Bioscan</i> 11 : 795-800	5.26
166.	Mandal, S.N., Dhanda, S.S., Munjal R. and Pramanik C. (2016). Multivariate analysis for trait alliance of bread wheat yield under terminal heat stress conditions. <i>The Ecoscan</i> 10(1&2) : 121-127.	4.65
167.	Satpal, Duhan, S., Arya, B.S., Kumari, S., and Devi. S. (2016) Performance of single cut forage sorghum genotypes to different fertility levels. <i>Forage Research</i> 42 (3): 184-188.	4.48

168.	Sharma, K.D., Kumar, A. and Verma S.R. (2016). Variations in physiological traits as screening tool for drought tolerance in barley (<i>Hordeum vulgare</i> L.). <i>Indian Journal Plant Physiology</i> 21 (1): 93-100.	5.18
169.	Summy, K.S. Boora and Sharma, K.D. (2016). Physiological traits in relation to yield improvement in chickpea (<i>Cicer arietinum</i> L.) under depleting soil moisture environment. <i>Indian Journal of Genetics</i> 76(2) : 209.	6.28
170.	Bala, S. and Kumar, J. (2017). Effect of ethylene absorbent (KMnO ₄) on shelf-life of sapota (<i>Manilkara zapota</i> L.) <i>Green Farming</i> 8 :1227-1232.	4.38
171.	Bala, S. and Kumar, J. (2017). Export potential and packaging of some important fruits of India. <i>Journal of Plant Development Sciences</i> 9(3) : 157-164.	4.57
172.	Bala, S. and Kumar, J. (2017). Studies on antioxidant activity in pulp and peel of sapota (<i>Manilkara zapota</i> L.) fruits in different stages of ripening. <i>Journal of Plant Development Science</i> . DOI 9/3/0974-63822017	4.57
173.	Bala, S. and Kumar, J. and Savita D. (2017). Effect of drying methods on acidity and sugar content of sapota (<i>Manilkara zapota</i> L.). <i>Journal of Plant Development Sciences</i> 9(4) :329-333.	4.57
174.	Bala, S., Kumar, J. Duhan (2017). Biochemical changes in pulp and peel of sapota (<i>Manilkara zapota</i> L.) at different stages of ripening. <i>Research on Crops</i> : 18 : 260-263.	4.57
175.	Duhan, S., Kumari, A., and Sheokand, S. (2017). Effect of water logging and salinity on anti-oxidative system in pigeonpea plant leaves at different stages of development. <i>Research on crops</i> 18 :559-568.	4.75
176.	Duhan, S., Kumari, A., Bala, Sharma, S.N. and Sheokand, S. (2017). Evaluation of pigeonpea (<i>Cajanus cajan</i> L. Millsp.) genotypes for waterlogging, salinity and combined stress tolerance. <i>Green Farming</i> 8 : 282-286.	4.38
177.	Duhan, S., Sheokand, S., Kumari, A., and Sharma, Nidhi. (2017). Independent and interactive effects of waterlogging and salinity on carbohydrate metabolism and root anatomy in pigeonpea genotypes at different growth stages. <i>Indian Journal of Agriculture Research</i> 51 (3) :197-205.	4.86
178.	Duhan, S., Sheokand, S., Kumari, A., Bala, S., Sharma, N. and Kumari, P. (2017). Influence of waterlogging, salinity and their interaction on biomass and yield and its attributes of pigeonpea (<i>Cajanus cajan</i> L. Millsp.) genotypes. <i>Journal of Plant Developmental Sciences</i> 9(2) : 125-130.	4.57
179.	Islam, Anzer, Chhabra, A. K., Dhanda, S.S. and Munjal, Renu. (2017). Cell membrane stability-an important criterion for selection of heat tolerant genotypes in wheat (<i>Triticum aestivum</i> L.). <i>Journal of Applied and Natural Science</i> 9 (4) : 1894 – 1900	4.84
180.	Kumari, A., Duhan, S., Bala, S and Sheokand, S. (2017) Alleviation of toxic effects of different salinity levels on membrane injury and chlorophyll content by different NO donors in chickpea leave. <i>The Bioscan</i> 12 : 161-164.	5.26

181.	Kumari, A., Duhan, S., Bala, S. and Sheokand, S. (2017). Alleviation of toxic effects of different salinity levels on membrane injury and chlorophyll content by different NO donors in chickpea leave. <i>The Bioscan</i> . 12(1) : 161-164	5.26
182.	Kumari, A., Sheokand, S., Duhan, S. and Kaur, V. (2017). Effect of short term and long term salinity stress on physiological and oxidative metabolism in chickpea and its possible alleviation by nitric oxide. <i>Indian Journal Ecology</i> 44(2) : 250-258.	4.96
183.	Kumari, P. S., Brar, A. and Kumar, J. (2017). Effect of storage temperature on shelf life of aonla fruit (<i>Emblicaofficinalis</i> G.). <i>Journal of Plant Development Sciences</i> , 9(5) : 493-496.	4.57
184.	Kumari, P., Brar, A. and Kumar, J. (2017) Evaluation of antioxidant activity in different cultivars of aonla (<i>Emblica officinalis</i> G.) under ambient conditions. <i>Chemical Science Review and Letters</i> 6(21) : 38-42.	5.21
185.	Kumari, P., Brar, A. and Kumar, J. (2017). Evaluation of chlorophyll and cellulose content in different varieties of aonla during room temperature storage. <i>Chemical Science Review and Letters</i> 6(21) : 59-63.	5.21
186.	Kumari, P., Brar, A. and Kumar, J. (2017). Evaluation of shelf life of aonla (<i>Emblicaofficinalis</i> G.) cultivars during storage at room temperature. <i>Journal of Applied and Natural Science</i> 9(11) : 573-576.	4.84
187.	Lamba, S., Phogat, V.K. and Kumar, N. (2017). Sustainable agriculture for sustaining mankind- – A Review of International Literature. <i>Vegetos- An International Journal of Plant Research</i> 30 :477-481.	4.0
188.	Phukan, D., Goyal, V., Palit, P., Kalia, R., Koundal, M., Mithra, S.V.A., Ravi, I., Yadava, D.K., Chinnusamy, V., & Mohapatra, T. (2017). Expression analysis of candidate genes for abiotic stress tolerance in Brassica genotypes with contrasting osmotic stress tolerance. <i>Indian Journal Experimental Biology</i> 55 : 333-343.	6.00
189.	Pooja, Munjal, R. and Ram, K. (2017). Evaluation of wheat genotypes for protective mechanisms of terminal heat stress. <i>International Journal of Current Microbiology and Applied Sciences</i> . 6(11) : 2623-2633.	5.38
190.	Pooja, Nandwal, A. S., Chand, M., Kumar, A., Rani, B., Kumari, A., Kulshrestha, N. (2017). Comparative Evaluation of Changes in Protein Profile of Sugarcane Varieties under Different Soil Moisture Regimes. <i>International Journal of Current Microbiology and Applied Sciences</i> . 6(10) : 1203-1210.	5.38
191.	Priyanka M, Kumar U, Mehra P, Malik S, Dhaliwal HS, Kumar S (2017) Physical mapping and expression of Ids3 (<i>Iron Deficiency Clones3</i>) gene in hexaploid wheat. <i>Computational Biology & Chemistry</i> (accepted).	8.29
192.	Ram Kirpa, Munjal Renu, Sunita and Kumar Naveen (2017) Combine effects of drought and high temperature on water relation traits in wheat genotypes under late and very late sown condition <i>Int. J. Curr. Microbiol. App. Sci.</i> 6(8) : 567-576.	5.38

193.	Ram, K. Renu Munjal, Sunita and Naveen Kumar (2017). Combine effects of drought and high temperature on water relation traits in wheat genotypes under late and very late sown condition. <i>International Journal of Current Microbiology & Applied Sciences</i> 6(8) : 567-576	5.38
194.	Ram, K., Munjal, R., Sunita, Pooja and Kumar N. (2017). Evaluation of chlorophyll content index and normalized difference vegetation index as indicators for combine effects of drought and high temperature in bread wheat genotypes. <i>Global Journal of Bio Sciences and Biotechnology (G.J.B.B)</i> 6 (3) : 528-534	4.13
195.	Rani, P., Sharma, M.K., Rani, S., Kumar, N., Sharma, S.K. (2017) Effect of different saline environments on flowering time, chlorophyll content and photochemical efficiency of tomato. <i>Annals of Biology</i> 33 : 86-93	4.08
196.	Savitri, Saini, A., Monika, Devi, S., Arya, S.S., Singal, I. and Kumar, S. (2017). Effect of cadmium chloride on seedling growth of <i>Vigna radiata</i> L. genotypes. <i>Research on crops</i> 18 (2) : 232.236.	4.75
197.	Sharma, N., Duhan, S., Sharma, S. and Sharma K.D. (2017). Physiological studies of different citrus species and their cultivars under semi arid conditions of Hisar. <i>The Bioscan</i> 11 :297-303.	5.26
198.	Singal, I, Sharma, K.D., Devi, S., Arya S.S. (2017). Morphological variations of different ecotype of <i>Echinochloa</i> (<i>E. glabrescens</i> , <i>E. colona</i> and <i>E. crusgalli</i>) <i>Vegetos- An International Journal of Plant Research</i> 302-306: DOI: 10.5958/2229-4473.2017.00086.6	5.0
199.	Singal, I., Sharma, K.D., Devi, S, Arya S.S. (2017). Relative efficacy of different herbicides on <i>Echinochloa</i> accessions. <i>Research on Crops</i> 18 (2) : 244-248.	4.75
200.	Sunita and Munjal R. (2017). Variability in gas exchange attributes of wheat RILs subjected to high temperature stress. <i>Agriculture Science Digest</i> 37(3) : 221-225.	4.21
201.	Sunita, Munjal R., Ram, K., Kumar N., and Dhanda S.S. (2017). Heat stress implications on yield and yield component in recombinant inbred lines of bread wheat at reproductive stage. <i>International Journal Pure and Applied Biosciences</i> 5 (3) : 1001-1007.	4.74
202.	Yadav, R., Kumar, S., Dhaka, A.K. and Kumar, N. (2017). Nutrient content, update in green gram and weeds affected by different planting methods and weed management practices. <i>Annals of Biology</i> 33 (1) : 59-63.	4.08
203.	Duhan, S., Kumari, A., Bala, S., Sharma, N. and Sheokand, S. (2018). Effect of waterlogging, salinity and their combination on stress indices and yield attributes in pigeon pea (<i>Cajanus cajan</i> L.) genotypes. <i>Indian Journal of Plant Physiology</i> . 23. 10.1007/s40502-018-0352-1.	5.18
204.	Kumar, N., Kumar, Y., Ram Kirpa and Munjal Renu. 2018. Screening of barley (<i>Hordeum vulgare</i> L.) genotypes for physiological traits under drought stress. <i>International journal of Advanced Biological Research</i> . Accepted	4.64
205.	Singh, P., Jaiswal, S., Sheokand, S., Duhan, S. 2018. Morpho-physiological and oxidative responses of nitrogen and phosphorus deficiency in wheat (<i>Triticum aestivum</i> L.). <i>Indian Journal of Agricultural Research</i> .52:42-45.	4.86

206.	Verma, E., Sharma, B., Singal, H.R. and Munjal R. (2018) Purification of sucrose synthase from thermotolerant wheat grains and its characterization. <i>Journal of Environmental Biology</i> . Accepted	6.70
Food Science and Technology		
207.	Kundu, H., Grewal, R.B., Goyal, A., Upadhyay, N. and Prakash, S. (2012). Effect of incorporation of pumpkin (<i>Cucurbita moshchata</i>) powder and guar gum on the rheological properties of wheat flour. <i>Journal of Food Science and Technology</i> . 51 (10) 2600-2607.	8.02
208.	Punam, Gehlot, R., Singh, R. and Siddiqui, S. (2012). Development and evaluation of Bael-Mango ready-to-serve drink and squash. <i>Beverage & Food World</i> 39 (4): 43-45.	-
209.	Sharma, M., Gehlot, R., Singh, R. and Siddiqui, S. (2012). Changes in chemical constituents and overall acceptability of guava-jamun blends ready-to-serve drink and squash during storage. <i>Beverage & Food World</i> 39 (4): 39-42.	-
210.	Sharma, S.; Sharma, R.K., Siddiqui, S. and Goyal, R.K. (2012). Chemical changes during growth and development of ber fruits. <i>Annals of Biology</i> 28 (2) 125-129.	2.98
211.	Singh, V.K., Garg, M.K., Kumar, K and Grewal, R.B. (2012). Moisture sorption isotherms of biscuits. <i>Beverage Food World</i> 39 (9):19-20.	-
212.	Agarwal, Nisha; Yadav, B.S. and Siddiqui, S. (2013). Microbiological quality evaluation of sweets from Hisar city. <i>Beverage & Food World</i> 40 (2): 59-60.	-
213.	Dahiya, P. K., Linnemann, A. R., Nout, M. J. R., van Boekel, M. A J. S., Grewal, R. B. (2013). Nutrient composition of selected newly bred and established mung bean varieties. <i>LWT- Food Science and Technology</i> 54 : 249-256.	8.47
214.	Dahiya, P.K., Linnemann, M.J.R., van Boekel, M.A.J.S, Khetarpaul N., Grewal, R. B and Nout, M.J.R. (2013). Mung bean: technological and nutritional potential. <i>Critical Reviews in Food Science and Nutrition</i> 55 (5) 670-688.	11.18
215.	Khatak, A and Grewal, R.B. (2013). Physico-chemical and functional properties of newly developed hybrid and traditional pearl millet varieties. <i>International Journal of Agriculture and Food Science Technology</i> 4 (8): 739-740.	-
216.	Rani, V., Grewal, R.B. and Khetarpaul, N. (2013). Physical characteristics of baked and extruded products prepared using pulses and coarse cereal grains. <i>Annals of Biology</i> 29 (1): 100-105.	2.98
217.	Sharma, M.; Gehlot, R.; Singh, R. and Siddiqui, S. (2013). Development and evaluation of guava-jamun ready to serve drink and squash. <i>Beverage & Food World</i> 40 (2): 42-44.	-

218.	Sucheta, Gehlot, R., Siddiqui, S. and Grewal, R.B. (2013). Changes in chemical constituents and overall acceptability of guava-mango cheese and toffee during storage. <i>Haryana Journal of horticulture Science</i> 42 (3&4): 147-151.	-
219.	Sucheta, Gehlot, R., Siddiqui, S. and Grewal, R.B. (2013). Development and evaluation of guava-mango cheese and toffee. <i>Haryana Journal of horticulture Science</i> 42 (1&2): 47-51.	-
220.	Bhardwaj, R., Gehlot, R., Siddiqui, S. and Grewal, R.B. 2014. Studies on development and evaluation of guava-jamun jam and chutney. <i>Beverage & Food World</i> 41 (12): 44-46.	-
221.	Dahiya, P. K., Linnemann, A. R., Nout, M. J. R., van Boekel, M. A J. S., Khetarpaul, N. K., Grewal, R. B. (2014). Consumption habits and innovation potential of mung bean foods in Hisar District of Haryana State, India. <i>Ecology of Foods and Nutrition</i> . 53 (2): 171-192	6.81
222.	Dahiya, P. K., Nout, M. J. R., van Boekel, M. A J. S., Khetarpaul, N. K., Grewal, R. B. and Linnemann, A. R.. (2014). Nutritional characteristics of mung bean foods. <i>British Food Journal</i> 116 Issue: 6	6.77
223.	Goyal, A. and Siddiqui, S. (2014). Effects of ultraviolet irradiation, pulsed electric field, hot water dip and ethanol vapours treatment on keeping and sensory quality of mung bean (<i>Vigna radiata</i> L. Wilczek) sprouts. <i>Journal of Food Science and Technology</i> 51 (10): 2664-70.	8.02
224.	Goyal, A.; Siddiqui, S.; Upadhyay, N. and Soni, J. (2014). Effects of ultraviolet irradiation, pulsed electric field, hot water and ethanol vapours treatment on functional properties of mung bean sprouts. <i>Journal of Food Science and Technology</i> 51 (4): 708-714.	8.02
225.	Goyal, R., and Grewal, R.B., 2014. A study on cholesterol lowering effect of pleurotus sajor-caju mushroom in hypercholesterolemic rats. <i>Annals Food Science and Technology</i> 15 : 92-97.	3.88
226.	Kajla, P. and Siddiqui, S. (2014). Effect of Pulsed Electric Field on Drying Rate and Physical Characteristics of Potato Slices. <i>International Journal for Research in Applied Science and Engineering Technology</i> 2 (1): 49-57.	-
227.	Kumar, K., Gehlot, R., Siddiqui, S. and Grewal, R.B. 2014. Changes in chemical constituents and overall acceptability of bael-mango nectar and crush during storage. <i>Beverage & Food World</i> 41 (12): 29-32.	-
228.	Kumari, T., Gehlot, R., Siddiqui, S. and Grewal, R.B. 2014. Changes in chemical constituents and overall acceptability of guava-mango nectar and crush. <i>Beverage & Food World</i> 41 (8): 31-35.	-
229.	Rani, V and Grewal, R.B. (2014) Physical and functional properties of six varieties of lentil (<i>Lens culinaris</i> Medik). <i>Asian Journal of Dairy Food Research</i> 33 (2):126-130.	

230.	Yadav, S., Gehlot, R., Siddiqui, S. and Grewal, R.B. 2014. Changes in chemical constituents and overall acceptability of guava-mango ready-to-serve (RTS) drink and squash. <i>Beverage & Food World</i> 41 (4): 30-33 & 35.	-
231.	Younis, K. and Siddiqui, S. (2014). Production of wine from over ripe guava (<i>Psidium guajava</i> L. Cv. Safeda) and ber (<i>Zizyphus mauritiana</i> Lamk. Cv. Umran) fruits using <i>Saccharomyces crevices</i> Var. HAU-1. <i>Journal of Environmental Science, Toxicology and Food Technology</i> 8 (1): 93-96.	
232.	Gola, D., Namburath, M., Kumar, R., Kumari, A., Malik, A. and Ahammad, Z. 2015. Decolourization of the azo dye (Direct Brilliant Blue) by the isolated bacterial strain. <i>Journal of Basic and Applied Engineering Research</i> 2 (17):1462-1465.	
233.	Goyal, R., Grewal, R. B. & Goyal, R. K. 2015. Fatty acid composition and dietary fibre constituents of mushrooms of north india. <i>Emir. J. Food Agric.</i> 27 (12), 927-930.	5.34
234.	Jain, A. and Grewal, R.B. 2015. Development and quality evaluation of value added extruded snacks by supplementing amaranth and guar gum in mixed cereal flour formulation constituting maize, rice and wheat. <i>International J. Res. Scientific Res.</i> 6 (9) 6221-6227.	-
235.	Jain, A. and Grewal, R.B. 2015. Evaluation of pasting properties of wheat, amaranth and guar gum based composite blends. <i>Progressive Research-an International Journal</i> 10 (IV): 1876-1883.	3.16
236.	Kumar, R., Chaudhary, D., Kumari, A., Sihag, K. and Rashmi. 2015. Structuring microbial community from the environment: A review on methods. <i>Journal of Innovative Biology.</i> 2 :226-233.	
237.	Kumari, T., Gehlot, R., Siddiqui, S. and Grewal, R.B. (2015). Development and evaluation of guava-mango nectar and crush. <i>Beverage & Food World</i> 42 (2): 45-47.	-
238.	Ranga, S., Kumari, A., and Bishnoi, N.R. (2015). Microbial decolorization of reactive orange16 textile azo dye by bacterial consortium. <i>Progressive Research – An International Journal.</i> 10 : 2317-2320.	3.16
239.	Seema Rana; Siddiqui, S. and Goyal, A. (2015). Extension of the shelf life of guava by individual packaging with cling and shrink films. <i>Journal of Food Science and Technology</i> 52 (12):8148-55.	8.02
240.	Yadav, S., Gehlot, R., Siddiqui, S. and Grewal, R.B. (2015). Development and evaluation of ready-to-serve (RTS) drink and squash from guava-mango blends. <i>Beverage & Food World</i> 42 (5): 47-50.	-
241.	Bhardwaj, R., Gehlot, R. and Mishra, D. (2016). Study of the Effect of Storage on Chemical Constituents of Guava-Jamun Jam. <i>Biosciences Biotechnology Research Asia</i> 13 (3): 1703-1707.	4.93
242.	Bhardwaj, R., Gehlot, R., Mishra, D., Arora, S. and Sucheta (2016). Physico-chemical Quality Changes in Guava-Jamun Chutney During Storage. <i>Biosciences Biotechnology Research Asia</i> 13 (4): 2269-2272.	4.93

243.	Bishnoi, J.P., Gehlot, R. and Siddiqui, S. (2016). Change in chemical constituents and overall acceptability of frozen and dehydrated aonla pulp during storage. <i>Journal of Applied and Natural Science</i> 8 (3): 1615-1617.	5.08
244.	Bishnoi, J.P., Gehlot, R. and Siddiqui, S. (2016). Effect of different pretreatments on physico-chemical and sensory characteristics of Aonla (<i>Phyllanthus emblica</i> L.) fruit pulp. <i>Annals of Biology</i> 32 (1): 90-93 (2.98).	2.98
245.	Harshitha, T., Gehlot, R., Siddiqui, S. and Rekha (2016). Changes in chemical constituents and overall acceptability of mango ready-to-serve drink and squash during storage. <i>Progressive Research</i> 11 (2): 269-273.	3.16
246.	Harshitha, T., Gehlot, R., Siddiqui, S. and Rekha (2016). Development and evaluation of mango ready-to-serve drink and squash. <i>Progressive Research</i> 11 (3): 349-354.	3.16
247.	Harshitha, T., Gehlot, R., Siddiqui, S. and Rekha 2016. Physico-chemical composition of fresh fruits of mango cultivars. <i>Progressive Research</i> 11 (2): 139-140.	3.16
248.	Isha Kaushik, Singh, R. and S. Siddiqui (2016). Physicochemical properties of barley, barley malt, bengal gram, peanut and organoleptic acceptability of malt based nutritious beverage. <i>Progressive Research</i> 11 (7) 4851-4854.	3.16
249.	Jain, A. and Grewal, R.B. (2016). Optimization of extrusion process for production of ready to eat extruded snacks based on maize, wheat and rice blends- A response surface methodology approach. <i>Food Science Research Journal</i> 6 (2): 316-325.	2.86
250.	Jain, A., Gehlot, R., Siddiqui, S. and Harshita, T. 2016. Standardization of Optimum Blends for Processing Value Added Ready-To-Serve Drink from <i>Aloe Vera</i> , Aonla and Papaya. <i>Indian Journal of Ecology</i> 43 (1): 180-187.	4.47
251.	Kumar S., Somavat,P., Garg, M.K. and Grewal, R.B. (2016). Response of mold in stored wheat in different storage structures. <i>Green Farming</i> 7 : 1-5.	4.79
252.	Kumar, S., Grewal, R.B. and Rani, V. (2016). Standardization and quality evaluation of ready to eat extruded snacks developed using maize-oat blends and processed cowpea. <i>Int. Journal Food and Nutrition Sciences</i> 5 (4): 121-129.	5.21
253.	Man, D.L., Gehlot, R., Siddiqui, S. and Rekha. (2016). Changes in chemical constituents and overall acceptability of Guava-Mango jam and chutney during storage. <i>Beverage & Food World</i> 43 (2): 31-34.	-
254.	Man, D.L., Gehlot, R., Siddiqui, S., Rekha and Kumari, A. (2016). Studies on Development and Evaluation of Guava-Mango Jam and Chutney. <i>Beverage & Food World</i> 43 (5): 31-33 & 35.	-
255.	Sucheta, Gehlot, R. and Siddiqui, S. (2016). Review Paper on Osmotic Dehydration: A Process for Improved Quality of Fruit and Vegetable Products. <i>Beverage & Food World</i> 43 (5): 34-35.	-

256.	Sucheta, Gehlot, R., Siddiqui, S. and Grewal, R.B. (2016). Changes in texture and overall acceptability of guava-mango fruit cheese during storage. <i>Progressive Research</i> 11 (3): 1913-1915.	3.16
257.	Arora, S. Siddiqui, S. and Gehlot, R. (2017). Effects of ultraviolet irradiation, hot water dip and ethanol vapours treatment on keeping quality of moth bean (<i>Phaseolus aconitifolius</i> Jacq.) sprouts. <i>International Journal of Current Microbiology and Applied Sciences</i> 6 (8): 2143-2151.	5.38
258.	Arora, S., Siddiqui, S. and Gehlot, R. (2017). Effects of ethanol vapours, hot water dip and ultraviolet irradiation treatments on nutritional quality of chickpea sprouts. <i>Journal of Food Legumes</i> 30 (2): 77-82.	5.97
259.	Chaudhary, D., Kumar, R., Kumari, A., Rashmi and Jangra, R. (2017). Explicit Effect of Phyllospheric Microorganism on Growth Promotion of Pearl Millet (<i>Pennisetum glaucum</i>). <i>International Journal of Current Microbiology and Applied Sciences</i> 6 (3): 1046-1051.	5.38
260.	Chaudhary, D., Kumar, R., Sihag, K. Rashmi and Kumari, A. (2017). Phyllospheric microflora and its impact on plant growth: A review. <i>Agric reviews</i> . 38 (1): 51-59.	3.31
261.	Goyal, R. and Grewal, R. B. (2017). Changes in lipid profile if rats fed with <i>Agaricus bisporus</i> (white button) mushroom. <i>Nutrition & Food Science</i> 47 (2), 288-296	5.26
262.	Kaushik, I. and Grewal, R.B. (2017). Antinutrients & mineral content of Thirteen Different Varieties of Pearl Millet Locally Grown in Haryana India. <i>International Journal of Current Microbiology and Applied Sciences</i> 6 (5) : 2136-2143	5.38
263.	Kaushik, I. and Grewal, R.B. 2017. Trans Fatty Acids: Replacement Technologies in Food. <i>Advances in Research</i> 9 (5):1-14	4.77
264.	Saharan, V., Jood, S. and Kumari, A. (2017). Nutritional, sensory and shelf life of buns enriched with <i>Spirulina platensis</i> powder. <i>Annals of Agric-Bio Research</i> 22 (1): 99-104.	2.91
265.	Sharma, Arti; Sharma, R.K.; Siddiqui, S. and Hazarika, T.K. (2017). Physiological changes and hydrolyzing enzyme activities during ripening of guava (<i>Psidium guajava</i> L.) fruits on-tree and in-storage. <i>Indian Journal of Agricultural Sciences</i> 87 (12): 1706-13.	6.17
266.	Vipin Saini and Siddiqui, S. (2017). Experimental study to improve the quality of dehydrated button mushrooms (<i>Agaricus bisporus</i>). <i>Journal of Agricultural Science and Technology</i> 6 (2): 1-10.	6.82
267.	Jyoti Prabha, Gehlot, R. and Siddiqui, S. (2018). Development of low calorie aonla ladoo using <i>Stevia rebaudiana</i> . <i>Journal of Pharmacognosy and Phytochemistry</i> 7 (2): 741-745.	5.21
268.	Jyoti Prabha, Gehlot, R. and Siddiqui, S. (2018). Utilization of <i>Glycyrrhiza glabra</i> for preparation of herbal aonla ladoo. <i>Journal of Pharmacognosy and Phytochemistry</i> 7 (2): 446-450.	5.21

269.	Jyoti Prabha, Gehlot, R. and Siddiqui, S. and Isha Kaushik (2018). Processing and utilization of Satavari roots for preparation of Herbal Aonla Ladoo. <i>International Journal of Current Microbiology and Applied Sciences</i> 7(3): 2698-2706.	5.38
270.	Rahul; Gehlot, R.; Siddiqui, S.; Singh, R.; Rekha and Kumari, A. (2018). Changes in chemical constituents and overall acceptability of guava-jamun cheese and toffee during storage. <i>International Journal of Chemical Studies</i> 6(1): 1022-1025	5.31
271.	Sachin; Gehlot,R.; Siddiqui,S.; Rekha; Kumari, A. and Singh, R. (2018). Studies on development and evaluation of aonla-papaya jam and chutney. <i>International Journal of Chemical Studies</i> 6(2): 1187-1190	5.31
272.	Sachin; Gehlot,R.; Siddiqui,S.; Rekha; Kumari, A. and Singh, R. (2018). Changes in chemical constituents and overall acceptability of Aonla-Papaya jam and chutney during storage. <i>International Journal of Current Microbiology and Applied Sciences</i> 7(3): 2001-2007	5.38
273.	Seema R., Siddiqui. S. and Gandhi, K. (2018). Effect of individual vacuum and modified atmosphere packaging on shelf life of guava. <i>International Journal of Chemical Studies</i> 6(2): 966-972.	5.31
274.	Simran Arora, Siddiqui, S.; Gehlot, R. and Ahmed, N. (2018). Effects of anti-browning pretreatments on browning of banana pulp. <i>International Journal of Current Microbiology and Applied Science</i> 7(04): xxxx. doi: https://doi.org/10.20546/ijcmas.2018.704.xx	5.38
Chemistry		
275.	Duhan, A., Duhan, S. and Kumari, B. (2012). Chemical Refining of Citrullus Colocynthis and Pongamia Pinnata Seed Oil. <i>African Journal of Food, Agriculture, Nutrition and Development</i> 12(3): 6110-6122.	-
276.	Saini, S. and Madan, V. K. (2012). Effect of solvent on recovery and quality of Lemongrass (<i>Cymbopogon flexuosus</i> Stapf) oil. <i>The Asian Journal of Experimental Chemistry</i> 7(2): 80-84.	-
277.	Ahlawat, K.S, Khatkar, B.S., Sushil and Gulia, N. (2013). Effect of processing and storage on sensory properties and acemannan content of aloe vera gel. <i>Annals of Agric-bio Research</i> 18 (1): 70-73.	3.97
278.	Ahlawat, K.S., Khatkar B.S., Sushil and Gulia, N (2013). Development and shelf life Studies of Aloe Vera-Guava Jelly. <i>Annals of Biology</i> 30 (4): 705-710.	4.01
279.	Ahlawat, K.S., Sushil, Gulia, N. and Khatkar, B.S. (2013). Effect of plant maturity on leaf growth, yield and physiochemical properties of aloe vera gel. <i>Agro Food Industries Hi Tech</i> 24 (1): 70-73.	6.20
280.	Chawla, R. K., Boora, A., Singh, R., Kumari, S. and Kalidhar, S.B. (2013). Phytochemicals and plant growth inhibitory activity of ageratum conyzoides L. leaves. <i>IOSR Journal of Applied Chemistry</i> 6(2): 20-24.	-
281.	Chawla, R. K., Singh, R. and Singh, S. (2013). Isolates and herbicidal activity of fractions and extracts of stems of ageratum conyzoides. <i>Annals of Agri-Bio Research</i> 18 (1). 82-86.	3.97

282.	Goel, V., Duhan, B. S., Devraj and Madan, V. K. (2013). Effect of FYM and N on yield and quality of Kalmegh (<i>Andrographis paniculata</i> Nees). <i>Annals of Biology</i> 29 (2): 167-170.	3.80
283.	Kumar, A., Chawla, R. K., Kumari, S., Deen, M. K., Dhindsa, K. S. and Singh, R. (2013). Chemical investigation of Capparis Decidua fruits. <i>International Journal of Chemical Sciences</i> 11 (4): 1769-1774.	-
284.	Punia, S.S., Hooda, V.S., Duhan, A., Yadav, D. and Amarjeet (2013). Distribution of weed flora of greengram and blackgram in Haryana. <i>Indian Journal of Weed Science</i> 45 (4): 247-249.	5.17
285.	Punia, S.S., Yadav, D. and Duhan, A. (2013). Herbicide adoption pattern in rice and wheat among Haryana farmers. <i>Indian Journal of Weed Science</i> 45 (3): 175-178.	5.17
286.	Saini, R.K., Roshanlal, Yadav S.P. and Sushil (2013). Bioefficacy of Novaluron against <i>Helicoverpa Armigera</i> (Hubner) on Chickpea. <i>Journal of Insect Science</i> 26 (special issue): 148-150.	4.72
287.	Verma, M., Khambra, K., Yadav, N. and Singh, R. (2013). Effect of crease resistant finish on crease recovery properties of cotton fabric. <i>International Journal of Textile and Fashion Technology</i> 3 (4): 9-14.	2.94
288.	Jain, Deepika, Jain, Jigyasa, Sushil and Kumari, Beena (2014). Studies on chemical composition of <i>Aloe saponaria</i> and its antioxidant activity. <i>Pesticide Research Journal</i> 26 (1): 25-29.	5.90
289.	Kumar R., Singh R. and Walia R.K. (2014) Synthesis and Bio-evaluation of 3-(substituted phenyl)-1-(4-Hydroxy Phenyl)-2-propen-1-one and their carbamate derivatives against root knot nematode. <i>Oriental Journal of Chemistry</i> 30 (3) 1293-1302	5.0
290.	Kumar, A. and Singh, R. (2014). Synthesis and bioevaluation of 2-(2/4-chloro-/4/2-bromo-/4-methylphenyl)-6-bromo-4H-chromen-4-ones). <i>Annals Of Agri-Bio Research</i> 19 (4): 683-687.	3.97
291.	Kumari, S., Singh, R., Kumar A. and Walia, R. K. (2014). Synthesis and nematicidal bio-evaluation of substituted 2H-1-benzopyran-2-ones and their carbamates derivatives against root-knot nematode (<i>Meloidogyne javanica</i>) <i>Asian Journal of Chemistry</i> 26 (11): 3139-3143.	5.00
292.	Pinki, Singh, S., Madan, V. K. and Jangra, S.S. (2014). Phytochemical analysis and antioxidant potential of garlic (<i>Allium sativum</i> L.) extracts in different solvents, <i>International Journal of Science Technology & Management</i> 2 (1): 167-176.	3.85
293.	Singh, S., Devi, P. and Madan, V. K. (2014). Effect of different solvents on antioxidant activity of <i>Ficus religiosa</i> L. Leaf Extract. <i>International Journal of Science Technology & Management</i> 2 (2): 122-128.	3.85
294.	Singh, S., Madan, V. K. and Devi, P. (2014). Estimation of antifungal and Antioxidant Activity of <i>Tamarix aphylla</i> L. Leaf Extract, <i>International Journal of Science Technology and Management</i> 2 (1): 160-166	-
295.	Singh, S., Jangra, S.S. and Madan, V.K. (2014). Effects of solvent type on phenolics and flavonoids content and antioxidant activities of ginger (<i>Zingiber officinale</i>). <i>International Journal of Science Technology & Management</i> 2 (2): 129-136.	-

296.	Bisht, S. Kumari, B. and Singh, R. (2015) Persistence of thiodicarb in clay loam Soil under laboratory conditions. <i>Pesticide Research Journal</i> 27 (2): 212-216.	5.90
297.	Bisht, S., Chauhan, R. Kumari, B. and Singh, R. (2015). Fate of thiodicarb and its metabolite methonyl in sandy loam soil under laboratory conditions. <i>Environment Monitoring Assessment</i> 187 : 429.	7.63
298.	Duhan, A., Kumari, B. and Duhan, S. (2015). Determination of residues of fipronil and its metabolites in cauliflower by using gas chromatography-tandem mass spectrometry. <i>Bulletin of Environmental Contamination and Toxicology</i> 94 : 260–266.	7.19
299.	Jangra, S. S., Madan, V. K. and Singh, S. (2015). Effect of solvents on extraction of various phytochemicals and antioxidant activity in carrot (<i>Daucus carota L.</i>). <i>Journal of Indian Chemical Society</i> 92 (7): 1149-1154.	6.00
300.	Loura, P., Singh, R. and Meera (2015). Chemical constituents and allelopathic activity of Albizia Lebbek (L) stem. <i>International Journal of Basic and Applied Scientific & Aspect</i> 1 : 19-25.	-
301.	Punia S.S., Yadav, D., Duhan, A. and Irfan, M. (2015). Bioefficacy and phytotoxicity of herbicides in greengram and their residual effect on succeeding mustard. <i>Indian Journal of Weed Science</i> 47 (4): 386–489.	5.17
302.	Punia, S.S. and Duhan, A. (2015). Innovations in Management of Orobanche in mustard. <i>Indian Farming</i> 65 (7): 29-33.	-
303.	Punia, S.S., Dhaka, A.K. and Duhan, A. (2015). Bioefficacy of clodinafop 24% EC against grassy weeds in wheat (<i>Triticum aestivum L.</i>) and its residual carry over effect on succeeding crop. <i>Haryana Journal of Agronomy</i> 31 (1&2): 16-21.	-
304.	Sushil, Duhan, A., Singh, S.P. and Kumari, B. (2015). Bioefficacy and residues of imidacloprid in rapeseed-mustard. <i>Research on Crops</i> 16 (1): 176-181.	4.75
305.	Devi, M., Duhan, A., Kumari, B. and Yadav, G.S. (2016). Determination of dimethoate, lambda-cyhalothrin and malathion residues in guava fruits using GCMS-tandem mass spectrometry. <i>Indian Journal of Horticulture</i> 73 (2): 197-201.	6.13
306.	Duhan, Anil, Sushil, Kaur, P., Punia, S.S. and Singh, Samar (2016). Terminal Residues of Imazethapyar in clusterbean grains, straw and soil. <i>Agriculture Research Journal</i> . 53 (3): 450-453, DOI No. 10.5958/2395-146X.2016.00088.0	4.71
307.	Duhan, Anil, Sushil, Punia, S.S. and Singh, Samar (2016). Determination of harvest time residues of halosulfuron in sugarcane and soil. <i>Agriculture Research Journal</i> 53 (2):280-282.	4.71
308.	Pinki, Singh, S., Madan, V. K. and Jangra, S. S. (2016). Chemical composition and antioxidant activity of onion (<i>Allium cepa L.</i>). <i>International Journal of Basic and Applied Scientific Aspects</i> 2 (1): 1-10.	-
309.	Singh, I., Madan, V. K., Jangra, S. S. and Singh, S. (2016). Effect of extraction techniques and solvents on various phytochemicals and antioxidant activity of clove (<i>Syzygium aromaticum L.</i>) buds. <i>Asian Journal of Chemistry</i> 28 (4): 801-806.	6.0

310.	Singh, S., Madan, V. K. and Devi, P. (2016). Estimation of phytochemicals, antioxidant and antifungal activity of <i>Tamarix aphylla</i> (L.) Karst. stem-bark extract <i>International Journal of Basic and Applied Scientific Aspects</i> 2 (1):76-82.	3.45
311.	Gulati S., Madan V. K., Jangra, S. S and Yadav, I. S. (2017). Determination of total phenolics, total flavonoids and evaluation of DPPH free radical scavenging activity of <i>Ashwagandha</i> (<i>Withania somnifera</i> L.) roots. <i>Asian Journal of Chemistry</i> 29 (8): 1660-1664.	5.00
312.	Gulati S., Madan V. K., Singh S., Singh I. and Dusyant (2017). Chemical and phytochemical composition of <i>Ashwagandha</i> (<i>Withania somnifera</i> L.) roots. <i>Asian Journal of Chemistry</i> 29 (8): 1683-1686.	5.00
313.	Pravesh, Madan, V .K., and Singh, S. (2017). Variation in total phenolics, flavonoids and antioxidant activity among various solvent fractions of bark of babul (<i>Accia nilotica</i>) using different extraction techniques. <i>Asian Journal of Chemistry</i> 29 (3): 641-646.	5.0
314.	Pravesh, Madan, V. K. and Jangra, S. S. (2017). Effect of extraction techniques on total phenolics, flavonoids contents and antioxidant activity of various solvent fractions of bark of arjun (<i>Terminalia arjuna</i>). <i>Asian Journal of Chemistry</i> 29 (3): 635-640.	5.0
315.	Punia, J., Singh, R. Kumari, S. and Gurav, N. D. (2017). Phytochemical investigations and biological potential of <i>Moringa oleifera</i> pods. <i>Asian journal Chemistry</i> 29 : 123-127.	5.0
316.	Sushil, Bisht, Sushma, Yadav, S.S. and Kumari, Beena (2017). Degradation dynamics of novaluron in chickpea using QuEChERS technique. <i>International Journal of Chemical Studies</i> 5 (5): 823-827.	5.31
Mathematics & Statistics		
317.	Gritlahre, S. K., Sarial, A. K., Rai, Mangat, Aneja, D. R. and Singh, Rattan. (2012). Genetic yield potential of rice (<i>oryza. Sativa</i>) through water saving and SRI technology. <i>Indian J. of Agril Sciences</i> , 82 (3), 260-263.	6.17
318.	Kumar, Manoj, Goyal, K.C., Bhatnagar, S. and Hasija, R.C. (2012). Use of Auxiliary information in estimating population mean in symmetric or skewed population. <i>Environment and Ecology</i> , 30 (1), 60-62.	4.18
319.	Poonia, Hemant & Chaudhary, R.C. (2012). Effects of Heat transfer on MHD Free Convective Flow through Porous Medium with Viscous Dissipation. <i>Journal of Energy Heat and Mass Transfer</i> , 34 (2), 103-120.	-
320.	Poonia, Hemant & Chaudhary, R.C. (2012). The influence of radiative heat transfer on MHD oscillating flow in a planner channel with slip condition, <i>Int.J.of Energy &Technology</i> , Vol. 4(2), 1-7.	-
321.	Verma, Urmil, Koehler, W. and Goyal, M. (2012). A study on yield trends of different crops in Germany using ARIMA analysis, <i>30(4A), Environment and Ecology</i> , 30 (4A), 1459-63.	4.18

322.	Verma, Urmil, Piepho, H.P., Kalubarme, M.H. and Goyal, M. (2012). Development of agro-meteorological and spectral wheat yield models using various statistical procedures in Haryana State. <i>Advances and Applications in Statistics</i> , 26(2), 113-136.	-
323.	Verma, Urmil, Piepho, H.P., Ogutu, J.O., Kalubarme, M.H. and Goyal, M. (2012). Multi-level mixed modelling for weather-crop-yield relationships on agro-climatic zone basis in Haryana. <i>Advances and Applications in Statistics</i> , 28(1), 1-22.	-
324.	Aneja, D.R. and Rai, Lajpat (2013). Estimation of cotton yield through growth indices of plant biometrical characters. <i>J. Cotton Res. Dev.</i> , 27 (1), 134-137.	4.69
325.	Kumar, Manoj, Singh, Labh, Dhillon, Ashok, Anita and Hasija, R.C (2013): Application of Regression technique to estimate the determinants on which consumption of Milk and Milk products depends. <i>Annals of Agri Bio Research</i> Vol 18(2), 260-262.	3.97
326.	Poonia, Hemant, Umashanker and Dhayal, S. (2013). Hydro magnetic heat transfer flow of a viscous incompressible fluid past an exponentially accelerated vertical plate with variable surface temperature, <i>J. of Engineering, Science & Management Technology</i> , 3, 59-63.	-
327.	Verma, Urmil, Aneja, D. R. and Rai, Lajpat (2013). Forecasting of yield of Bt-cotton using biometrical characters in Hisar district of Haryana, India. <i>Environment and Ecology</i> , 31(2) , 527-531.	4.18
328.	Verma, Urmil, Goyal, M. and Goyal, A. (2013). Forecasting Sugarcane Yield in Haryana (India)- A Time Series Analysis. <i>Environment and Ecology</i> , 31(4A), 1942-45.	4.18
329.	Kumar, Hemant and Hooda, B.K. (2014): Prediction of milk production using artificial neural network. <i>Current Advances in Agricultural Sciences</i> , 6(2): 173-175	4.69
330.	Poonia, Hemant and Chaudhary, R. C. (2014). Effects of MHD laminar flow between a fixed Impermeable disk and a porous rotating disk. <i>Int. J. of Engineering Research & Technology</i> , 3, 736-743.	-
331.	Tonk, M.S. and Kaushik, Indu (2014). Converse of an external problem in polynomials. <i>PEDANTIC- An International Refereed Research Journal</i> , 1(1), 126-130.	-
332.	Verma, S.S., Verma, P.K. and Verma, Urmil (2014). Standardization of seed germination techniques in Khurasani-Ajavayan (<i>Hyoscyamus niger</i> .) seeds. <i>Indian Journal of Agricultural Sciences</i> , 84(11), 1382-85.	6.17
333.	Verma, S.S., Verma, Urmil and Pahuja, S.K. (2014). Studies on seed viability and vigour of fodder sorghum [<i>Sorghum bicolor</i> (L.) Moench] seeds stored under ambient conditions. <i>Forage Research</i> , 40(2), 80-85.	4.48

334.	Verma, Urmil, Goyal, A., Verma, P., Sharma, M.P. and Parwasi, R. (2014). Autoregressive Integrated Moving Average models for wheat yield forecasting in Haryana. <i>Annals of Agri Bio Research</i> , 19(3), 530-33.	3.97
335.	Verma, Urmil, Hooda, B.K. and Aneja, D.R. (2014). Role of weather variables in wheat yield prediction for western zone of Haryana (India). <i>Annals of Agri Bio Research</i> , 19 (2), 312-15.	3.97
336.	Verma, Urmil, Piepho, H.P., Goyal, M. Goyal, A. and Verma, P. (2014). Impact of climatic variables on sugarcane yield prediction in Haryana (India). <i>Advances and Applications in Statistics</i> , 39(1), 25-35.	-
337.	Verma, Urmil, Piepho, H.P., Ogutu, J.O., Kalubarme, M.H. and Goyal, M. (2014). Development of agromet models for district-level cotton yield forecasts in Haryana State. <i>International J. of Agricultural and Statistical Sciences</i> , 10(1), 59-65.	5.13
338.	Chaudhary, S., Sagar, P., Hooda, B.K. and Arya, R.K.(2015). Multivariate Analysis of Pearl Millet Data to Delineate Genetic Variation; <i>Forage Res.</i> , 40(4), 201-208.	4.48
339.	Goyal, M. and Verma, Urmil (2015). Development of weather-spectral models for pre-harvest wheat yield prediction on agro-climatic zone basis in Haryana. <i>International J. of Agricultural and Statistical Sciences</i> , 11(1): 73-79	5.13
340.	Goyal, M. and Verma, Urmil (2015). Spectral-weather-crop yield forecasting: Discriminant function analysis. <i>Journal of Applied Probability and Statistics</i> , 10(1): 1-14	
341.	Kumar, H and Hooda, B.K (2015). Comparison of penalized and multiple linear regression for prediction of milk yield in crossbred cattle. <i>Int. J. Agricult. Stat. Sci.</i> 11(1): 151-156.	5.13
342.	Kumar, Manoj, Chander, Shekhar, Hasija, R.C. (2015). Trend Analysis of Cotton Crop in Gujarat. <i>Annals of Agri. Bio Research</i> , 20(1), 75-77.	3.97
343.	Kumar, Ramesh, Verma, Urmil, Malik, V. and Dev Vart (2015). Multivariate analysis for selection of diverse genotypes in Pearl millet germplasm. <i>Forage Research</i> , 41(2), 73-77.	4.48
344.	Kumar, V., Verma, S.S., Verma, Urmil and Kumar, A. (2015). Seed viability and vigour in naturally aged seeds of coriander (<i>Coriandrum sativum L.</i>). <i>Indian Journal of Agricultural Sciences</i> , 85(4), 108-12.	6.17
345.	Poonia, Hemant, Umashanker and Dhayal, S. S. (2015).The influence of Radiative heat transfer and hall current on MHD flow in a vertical rotating channel with slip condition, <i>Int. J. of Engineering Research</i> , 4, 325-330.	-
346.	Sanjeev, Verma, Urmil and Tonk, M.S.(2015). Time series modelling for sugarcane yield estimation in Haryana. <i>International Journal of Applied Mathematics and Statistical Sciences</i> , 4(6): 53-62.	3.45

347.	Singh, B. K., Chanu, W. W. and Manoj kumar (2015). Exponential Chain Ratio Cum Dual to Ratio Estimator of Finite Population Mean under Double Sampling Scheme. <i>An International Journal of Statistics applications and probability</i> , 4 (1), 37-51.	-
348.	Verma, P. and Verma, Urmil (2015). Vector error correction modelling to estimate the factors affecting foreign direct investment in India. <i>International J. of Business and General Management</i> , 4(5), 39-48.	3.51
349.	Verma, S.S., Jain, U.K., Kumar, K. and Urmil Verma (2015). Varietal identification using SDS-PAGE marker in rice (<i>Oryza sativa L.</i>). <i>Environment & Ecology</i> , 33(1A), 375-380.	4.18
350.	Verma, Urmil, Aneja, D.R. and Hooda, B.K. (2015). Principal component technique for pre-harvest estimation of cotton yield based on plant biometrical characters. <i>J. of Cotton Research and Development</i> , 29 (2), 339-343.	4.69
351.	Verma, Urmil, Aneja, D.R. and Tonk, D.S. (2015). Parameter Estimation of pre-harvest yield forecast models for cotton crop in Haryana. <i>Book of Lead Papers and Invited Papers released in National Symposium on Future Technologies- Indian cotton in the next Decade during 17-19 December, 2015 at Acharya Nagarjuna University, Guntur, India, pp. 262-69.</i>	-
352.	Verma, Urmil, Goyal, M. and Goyal, A. (2015). ARIMA versus State Space modelling – an application in agriculture. <i>Advances in Applied Research</i> , 7(2), 1-5.	3.22
353.	Verma, Urmil, Kumar, Ramesh and Dalal, M.S. (2015). Genetic Diversity Analysis in Pearl Millet Germplasm. <i>International Journal of Agricultural and Statistical Sciences</i> , 11(2), 335-340.	5.13
354.	Verma, Urmil, Piepho, H.P., Hartung, K., Ogutu, J.O. and Goyal, A. (2015). Linear mixed modelling for mustard yield prediction in Haryana. <i>J. of Mathematics and Statistical Sciences</i> , 1(3), 96-105.	-
355.	Verma, Urmil, Thakral, N.K. and Neeru (2015). Genetic diversity analysis in Indian Mustard [<i>Brassica juncea (L.) Czern & Coss.</i>]. <i>International Journal of Applied Mathematics and Statistical Sciences</i> , 5(1), 25-34.	3.45
356.	Hooda, B.K. and Poonia, Hemant (2016). A Note on Estimation of Order Restricted Parameters of Two Uniform Distributions, <i>Statistics & Applications</i> , 14, 31-41.	4.57
357.	Khan, Mujahid, Hasija, R.C., Aneja, D.R. and Sharma, Manish (2016). A uniformity trial on Indian Mustard for determination of optimum size and shape of blocks. <i>Journal of Applied and Natural Science</i> , 8(3): 1589-1593	5.09
358.	Kumar, Manoj, Dagar, Chander, Shekhar and Manocha, Veena (2016). Maximum rainfall probability distribution pattern in Haryana-A case study. <i>Journal of Applied and Natural Science</i> . <i>Journal of Applied and Natural Science</i> 8 (4), 2029-2036.	4.84

359.	Kumar, Manoj, Paul, Ranjit Kumar and Singh, B.K. (2016). Estimating area, production and productivity of cotton crop in Haryana State, <i>J.Cotton Res.Dev.</i> 30(2), 317-323.	4.69
360.	Kumar, Manoj, S.Bhatnagar, B. K. Singh and O.P.Sheoran (2016): Estimation of population mean using median as auxiliary variable. <i>International Journal of Agriculture and Statistical sciences</i> , 12 (1), 83-87.	5.13
361.	Poonia, Hemant and R. C. Chaudhary (2016). Mass transfer with chemical reaction effects on MHD free convective flow past an accelerated vertical plate embedded in a porous medium, <i>Int. J. of Applied Mathematics & Statistical Sciences</i> , 5, 33-46.	3.45
362.	Poonia, Hemant and Umashanker (2016). Radiation effect on natural convection flow past an impulsively started infinite vertical plate through porous medium in the presence of magnetic field and first order chemical reaction, <i>Int. J. of Applied Mathematics & Statistical Sciences</i> , 5, 17-28.	3.45
363.	Poonia, Hemant, Tonk, M. S. and Jitender Kumar Bhatia (2016). A linear programming model to find optimum combination of crop farm activities for the rural farmers, <i>Annals of Agri Bio Research</i> , 21 (2), 160-163.	3.97
364.	Ravita and Verma, Urmil (2016). Application of ARIMA modeling for mustard yield prediction in Haryana. <i>International Journal of Applied Mathematics and Statistical Sciences</i> , 4(6): 23-28.	3.45
365.	Salinder and Verma, Urmil (2016). Impact of climatic variables on wheat yield estimation in southern zone of Haryana. <i>International Journal of Computer & Mathematical Sciences</i> : 5 (12): 20-25.	
366.	Salinder and Verma, Urmil (2016). Linear mixed effects models for wheat yield estimation in Haryana. <i>International Journal of Computer & Mathematical Sciences</i> , 5(12): 12-19.	
367.	Sanjeev and Verma, Urmil (2016). ARIMA versus ARIMAX modelling for sugarcane yield prediction in Haryana. <i>International J. of Agricultural and Statistical Sciences</i> , 12(2): 327-334.	5.13
368.	Sudesh, Roy, R. and Verma, Urmil (2016). Development of weather-yield models for wheat crop in western zone of Haryana. <i>International Journal of Pure and Applied Mathematical Technologies</i> , 1(2): 30-36.	
369.	Sudesh, Verma, P. and Verma, Urmil (2016). Use of Transfer Function Models for FDI Estimation in India. <i>International Journal of Pure and Applied Mathematical Technologies</i> , 1(2): 37-43.	
370.	Suman and Verma, Urmil (2016). Autoregressive Integrated Moving Average models for sugarcane yield estimation in Haryana. <i>International Journal of Computer & Mathematical Sciences</i> , 5 (12): 33-38.	
371.	Tanwar, Nitin, Kumar Sunil, Siodia, B.V.S. and Hooda, B.K. (2016) Dynamics of Socio-Economic Development of Districts of Eastern Uttar Pradesh. <i>Journal of Applied and Natural Science</i> 8(1): 5-9	5.09

372.	Umashanker; Poonia, Hemant and Sarova, Amita (2016). Influence of heat and mass transfer on visco-elastic hydro-magnetic flow through porous channel with slip condition and heat source, <i>Int. J. of Mathematics and Computer Applications Research</i> , 6, 21-32.	3.76
373.	Verma, Urmil, Piepho, H.P., Goyal, A., Ogutu, J.O. and Kalubarme, M.H. (2016). Role of Climatic Variables and Crop Condition Term for Mustard Yield Prediction in Haryana (India). <i>International J. of Agricultural and Statistical Sciences</i> , 12(1), 45-51.	5.13
374.	Verma, Urmil, Ramavtar and Pankaj (2016). Multivariate analysis for selection of diverse genotypes in Indian mustard [<i>Brassica juncea</i> (L.) Czern & Coss.]. <i>Trends in Biosciences</i> , 8(23), 6534-40.	3.94
375.	Verma, Urmil, Ramesh Kumar and Dalal, M.S. (2016). An application of multivariate techniques for divergence study in Pearl millet germplasm. <i>Statistics and Applications</i> , 14 (1&2), 63-73.	4.57
376.	Godara, P. and Aneja, D.R. (2017). Pre-harvest wheat yield prediction through agrometeorological models for western zone of Haryana. <i>Environment & Ecology</i> . 35(4D): 3395-3400	4.18
377.	Hooda, Ekta, Hooda, B.K. and Manocha, Veena. (2017). Dynamics of Inter-Districts Developmental Disparities in Haryana. <i>Journal of Applied and Natural Science</i> 9(2): 983-991	5.09
378.	Hooda, Ekta, Hooda, B.K. Manocha, Veena and Tanwar Nitin (2017). Principal Dimensions of Regional Agricultural and Socio-Economic Disparities in Haryana. <i>Advances in Research</i> , 10(6): 1-11	4.80
379.	Khan, Mujahid, Hasija, R.C., Hooda, B.K., Tanwar, Nitin and Kumar, Banti (2017). Relative Efficiency of Experimental Designs in Relation to Various Size and Shape of Plot and Blocks in Indian Mustard (<i>Brassica Juncea</i> L.) Crop. <i>Int. J. Agricul. Stat. Sci</i> 13(1): 253-258.	5.13
380.	Kumar, Manoj, Rajendra, Hasija, R.C. (2017). ARIMA Modeling and Forecasting of Cotton Productivity in India. <i>Environment and Ecology</i> , 35 (1A), 224-228.	4.18
381.	Kumar, Manoj; Anurag; Singh, Diwan and Singh, Raj (2017). Identifying best probability distribution for events of maximum rainfall-A case study of Karnal, Haryana. <i>Environment & Ecology</i> , 35(1B), 434-439	4.18
382.	Ravita and Verma, Urmil (2017). Use of crop condition based dummy regressor and weather input for parameter estimation of mustard yield forecast models in Haryana. <i>Journal of Applied and Natural Science</i> , 9(3): 1703-09	5.09
383.	Salinder and Verma, Urmil (2017). Multivariate statistical techniques for parameter estimation of weather-crop yield forecast models on agro-climatic zone basis in Haryana. <i>International J. of Agricultural and Statistical Sciences</i> , 13(1): 97-104.	5.13

384.	Tanwar, Nitin and Hooda, B.K. (2017). Estimation of Aspect Based Multi-dimensional Poverty in Rural Haryana. <i>Advances in Research</i> 10(5): 1-8.	4.80
Microbiology		
385.	Deora, A., Giri, R., Suneja, S., Goyal, S. & Kukreja, K. (2012) Isolation and characterization of pyrene degrading bacteria. <i>Pollution research</i> , 31(1), 25-32.	4.97
386.	Dua, S. and Sindhu, S.S. (2012) Effectiveness of rhizosphere bacteria for control of root rot disease and improving plant growth of wheat (<i>Triticum aestivum</i> L.). <i>Journal of Microbiology Research</i> 2(2) 26-35.	-----
387.	Gera, R., Bhatia, R. and Kumar, V. (2012). Comparison of nodC and 16S rDNA gene analysis of rhizobia associated with legumes of arid and semi-arid regions of Haryana. <i>J. Food Legumes</i> 25(4): 294-299.	4.97
388.	Gera, R., Walia, M., Kumar, V. & Goyal, S. (2012) Microbial diversity of soils under different cropping systems in semi-arid zones of Haryana. <i>Crop Research</i> , 44(3), 447-455.	4.60
389.	Kukreja, K., Gahlot, D.K. & Suneja, S. (2012) Distillery effluent- Problems and prospects-A Review. <i>Agricultural Reviews</i> , 33 (2), 122-134.	4.37
390.	Kumari, B., Wati, L., Narula, A. & Kapoor, K. K. (2012) Co-digestion of cattle dung and rice straw for biogas production. <i>Pollution Research</i> , 31(1), 11-15.	4.97
391.	Sangwan, V.P, Sindhu, S.S., Dahiya, O.S. and Kharb, R.P.S. (2012) Improvement of wheat (<i>Triticum aestivum</i> L.) yield under field conditions by inoculation of microbial strains. <i>Microbiology Research</i> 2(3) 86-95.	-----
392.	Chaudhary, D. Narula, N., Sindhu, S.S. and Behl, R.K. (2013) Plant growth stimulation of wheat (<i>Triticum aestivum</i> L.) by inoculation of salinity tolerant <i>Azotobacter</i> strains. <i>Physiology and Molecular Biology of Plants</i> . 19 (4) 515-519.	7.35
393.	Chawla, N., Suneja, S., Kukreja, K. & Kumar, R. (2013) Bioremediation: An emerging technology for remediation of pesticides. <i>Research Journal of Chemistry and Environment</i> , 17(4), 88-104.	4.00
394.	Deora, A., Giri, R., Suneja, S., Kukreja, K. & Kumar, P. (2013) Evaluation of <i>Paenibacillus</i> strains for the degradation of Pyrene- A Polycyclic Aromatic Hydrocarbon. <i>Annals of Biology</i> , 29(1), 7-14.	4.08
395.	Giri, R., Kundu, B.S., Diwan, P., Raj, K. & Wati, L. (2013) Ethanol production from direct sugarcane and juice by yeast. <i>Agricultural Science Digest</i> , 33(3), 188-192.	4.21
396.	Goel, A. & Wati, L. (2013) Ethanol production from rice (<i>Oryza sativa</i>) straw biomass by separate hydrolysis and fermentation. <i>Journal of Pure and Applied Microbiology</i> , 74(4).	5.00

397.	Kayasth, M., Kumar, V., Gera, R. & Dudeja, S.S. (2013) Isolation and characterization of salt tolerant phosphate solubilising strain of <i>Pseudomonas</i> sp. from rhizosphere soil of weed growing in saline field. <i>Annals of Biology</i> , 29(2), 224-227.	4.08
398.	Khandelwal, A. and Sindhu, S. S. (2013) ACC Deaminase containing rhizobacteria enhance nodulation and plant growth in clusterbean (<i>Cyamopsis tetragonoloba</i> L.), <i>Journal of Microbiology Research</i> , Vol. 3 No. 3, 2013, pp. 117-123.	-----
399.	Kumar, V., Kayasth, M., Chaudhary, V. & Gera, R. (2013) Diversity of diazotrophs in arid and semi-arid regions of Haryana and evaluation of their plant growth promoting potential on Bt-cotton and pearl millet. <i>Annals of Microbiology</i> , DOI 10.1007/s13213-013-0774-y.	7.23
400.	Parmar, P. and Sindhu, S.S (2013) Potassium Solubilization by Rhizosphere Bacteria: Influence of Nutritional and Environmental Conditions. <i>Journal of Microbiology Research</i> . 3(1): 25-31	-----
401.	Sonia, K., Wati, L., Kant, R., Chourasia, S.K. & Singh, U. (2013) Management of spent mushroom substrate (SMS) through enrichment of biogas plant slurry. <i>Trends in Biosciences</i> , 6(5), 589-591.	3.94
402.	Chawla, N., Phour, M., Suneja, S., Sangwaan, S. & Goyal, S. (2014). <i>Gluconacetobacter diazotrophicus</i> : An overview. <i>Research in Environment and Life Sciences</i> , 7(1), 1-10.	3.74
403.	Gera, R., Bhatia, R., Kumar, V., Kayasth, M., Walia, M., Kaur, H. & Goyal, S. (2014) Diversity and antibacterial activity of actinobacteria isolated from cotton fields in semi-arid zones of Haryana. <i>Journal of Cotton Research and Development</i> , 28(1), 129-134. (Selected for Best Paper Award)	4.69
404.	Gera, R., Kayasth, M. & Kumar, V. (2014) Diversity of free living diazotrophs in salt affected areas of Haryana. <i>Annals of Biology</i> , 30(2), 227-234.	4.08
405.	Gera, R., Kumar, V., Kayasth, M., Walia, M., Singh, S. & Goyal, S. (2014) Exploring the potential of phosphate solubilizing diazotrophic <i>Pseudomonas</i> sp. Db76 as plant growth promoter for Bt-cotton. <i>Journal of Cotton Research and Development</i> , 28(2), 311-315.	4.69
406.	Gera, R., Kumar, V., Shekhawat. K. & Goyal, S.(2014) Genotypic diversity in native rhizobial population nodulating <i>Vicia faba</i> in arid and semi-arid regions of Haryana state (India). <i>Annals of Microbiology</i> , 64, 619-626.	7.23
407.	Kayasth, M., Gera, R., Dudeja, S.S., Sharma, P.K. & Kumar, V. (2014) Studies on salinization in Haryana soils on free-living nitrogen-fixing bacterial populations and their activity. <i>Journal of Basic Microbiology</i> , 54(3), 170-179. DOI 10.1002/jobm.201200158	7.59

408.	Kayasth, M., Kumar, V. and Gera, R. (2014). <i>Gordonia</i> sp: A salt tolerant bacterial inoculant for growth promotion of pearl millet under saline soil conditions. 3 Biotech. 4: 553-557. DOI: 10.1007/s13205-013-0178-5.	6.99
409.	Khare, N., Pathak, D.V., Sangwan, S. & Chawla, N. (2014) Effect of Microbial enrichment on microbial population and nutritional status of vermicompost. Research in Environment and Life Sciences, 7(3), 153-156.	3.74
410.	Kumar, V. and Gera, R. (2014). Isolation of a multi-trait plant growth promoting <i>Brevundimonas</i> sp. and its effect on the growth of Bt-cotton. 3 Biotech. 4: 97-101. DOI 10.1007/s13205-013-0126-4.	6.99
411.	Kumari, A., Goyal, R.K., Choudhary, M. & Sindhu, S.S. (2014) Effect of different nitrogen levels and biofertilizers on growth, yield and nutrient of <i>Chrysanthemum</i> . Annals of Agricultural Research, 35(2), 156-163.	4.01
412.	Kumari, A., Goyal, R.K., Sehrawat, S.K., Choudhary, M. & Sindhu, S.S. (2014) Growth, yield and quality of <i>Chrysanthemum</i> (<i>Chrysanthemum morifolium</i> Ramat.) cv. Dolly orange as influenced by biofertilizers in combination with phosphorous. International Journal of Agriculture, Environment and Biotechnology, 7(3), 555-564.	4.69
413.	Malik, K., Tokas, J. & Goyal, S. (2014) Isolation and screening of pigment-producing bacteria. Annals of Biology, 30(3), 448-450.	4.08
414.	Narula, A. & Wati, L. (2014) Paddy straw supplementation to cattle dung for enhanced biogas production and enrichment of effluent slurry. Journal of Pure and Applied Microbiology, 8(4), 3269-72.	5.00
415.	Salma, Z., Sindhu, S.S. & Ahlawat, A.P. (2014) Suppression of <i>Fusarium</i> wilt disease in <i>Gladiolus</i> by using rhizobacterial strains. Journal of Crop and Weed, 10, 466-471.	5.28
416.	Sangwan, S., Gupta, S. Singh, P. & Chawla, N. (2014) Fuel ethanol production from molasses by indigenous yeast isolates. Sugar Technology, 16(4), 422-429.	6.62
417.	Tokas, J., Malik, K. & Siwach, S.S. (2014). Biochemical evaluation of Cotton genotype to ascertain their basis for tolerance/susceptibility to CLCuD disease. Annals of Biology, 30(4), 600-603.	4.08
418.	Tokas, J., Malik, K., Sangwan, O. & Siwach, S.S. (2014) Biochemical evaluation of cotton genotypes grown under rainfed and irrigated conditions. Annals of Agri Bio Research 19(3), 404-407.	3.97
419.	Barkodia, M., Goyal, S. & Wati, L. (2015) Alkaline pretreatment an effective approach for saccharification of sugarcane bagasse. International journal of tropical agriculture, 33, 1267-1273.	3.49
420.	Choudhary, S.R. & Sindhu, S.S. (2015). Suppression of <i>Rhizoctonia solani</i> root rot disease of clusterbean (<i>Cyamopsis tetragonoloba</i>) and plant growth promotion by rhizosphere bacteria. Plant Pathology Journal, 14, 48-57.	6.92

421.	Dahiya, S., Barkodia, M., Goyal, S. & Wati, L. (2015) Acid pretreatment of wheat straw for bioethanol production. International Journal of Tropical Agriculture. 33, 1275-1278.	3.49
422.	Garg, V., Kukreja, K., Gera, R. & Singla, A. (2015) Production of indole-3-acetic acid by berseem (<i>Trifolium alexandrinum</i> L.) rhizobia isolated from Haryana, India. Agricultural Science Digest, 35 (3), 229-232.	4.21
423.	Gola, D., Namburath, M., Kumar, R., Kumari, A., Malik, A. and Ahammad, Z. 2015. Decolourization of the azo dye (Direct Brilliant Blue) by the isolated bacterial strain. Journal of Basic and Applied Engineering Research 2(17):1462-1465.	--
424.	Grover, R., Goel, A., Wati, L. & Raj, K. (2015) Ethanol production from spent oyster mushroom substrate. Pollution Research, 34(1), 139-142.	4.97
425.	Kumar, S., Joshi, U.N., Sangwan, S., Yadav, R., Singh, J.V. & Saini, M.L. (2015) Biomolecular characterization of guar (<i>Cyamopsis tetragonoloba</i>) genotypes along with wild species, <i>C. serrata</i> and <i>C. senegalensis</i> . Plant Systematics and Evolution, 301, 1249-1262.	7.36
426.	Kumari, A., Goyal, R.K., Choudhary, M. and Sindhu, S.S. (2015) Response of single and co-inoculation of plant growth promotion rhizobacteria on growth, flowering and nutrient content of <i>Chrysanthemum</i> . African Journal of Microbiological Research, 9, 1896-1906.	-----
427.	Malik, K., Tokkas, J., Anand, R.C. & Kumari, N. (2015) Pretreated rice straw as an improved fodder for ruminants-An overview. Journal of Applied and Natural Sciences, 7(1), 514 -520.	4.84
428.	Meenakshi, Wati, L. & Raj, K. (2015) Simultaneous saccharification and fermentation of sugarcane bagasse to ethanol. Indian Journal of Scientific Research and Technology, 3(6), 7-11.	-----
429.	Patel, R., Sangwan, S. & Salar, R. K. (2015) Isolation and evaluation of yeast strain for ethanol production from cheeku (<i>Manilkara zapota</i>) Progressive Research-An International Journal, 10 (special IV), 2353-58.	3.84
430.	Priyanka & Wati, L. (2015) Assessment of endophytic bacteria for growth promotion in chickpea. Indian Journal of Scientific Research and Technology, 3(4), 25-29.	-----
431.	Putatunda, C., Malik, R. K. & Wati, L. (2015) Solid state semi-continuous anaerobic digestion of cattle dung supplemented with poultry waste. Journal of Pure and Applied Microbiology, 9(4), 2955-2960.	5.00
432.	Chaudhary, S.R. and Sindhu, S.S. (2016) Growth stimulation of clusterbean (<i>Cyamopsis tetragonoloba</i>) by coinoculation with rhizosphere bacteria and <i>Rhizobium</i> . Legume Research, 39(6)1003-1012.	6.15

433.	Garg, V., Kukreja ,K. & Gera, R. (2016) Molecular diversity of berseem (<i>Trifolium alexandrinum</i> L.) rhizobia isolated from Haryana soil. <i>Legume Research.</i> , 39 (5), 729-733.	6.15
434.	Goel, A. & Wati, L. (2016) Ethanol production from Rice (<i>Oryza sativa</i>) straw by Simultaneous saccharification and co-fermentation. <i>Indian Journal of Experimental Biology</i> , 54, 525-529.	7.17
435.	Kuldeep, Gera, R. & Padder, S, A. (2016) Evaluation of rhizobial strains for abiotic stress tolerance in pigeon pea from arid and semi-arid zones of Haryana, India. <i>The Ecoscan.</i> , 9, 401-407.	5.26
436.	Malik, K.,Tokas, J. & Anand, R.C. (2016) Characterization and cytotoxicity assay of pigment producing microbes. <i>International Journal of Current Microbiology and Applied Science</i> , 5(6), 370-376.	5.38
437.	Meenakshi, Kundu, B. S. & Wati, L. (2016) Isolation and characterization of cadmium remediating bacteria from industrial effluent. <i>Pollution Research</i> , 35 (4), 183-188.	4.97
438.	Meenakshi, Wati, L. & Raj, K. (2016) Evaluation of Alkaline Pretreatments for Delignification of Sugarcane Bagasse. <i>Environment and Ecology</i> , 34 (4D), 2523—2527.	4.18
439.	Monika & Wati,L. (2016) Evaluation of plant growth promoting traits of mungbean rhizobia. <i>Environment and Ecology</i> . 35, 117-121.	4.18
440.	Monika, Dahiya, S. & Goyal, S. (2016) Pretreatment of lignocellulosic biomass for bioethanol production. <i>Journal of agriculture science and technology</i> , 5(2),1-7.	6.82
441.	S Rakshiya, Y & Verma, Manoj & S Sindhu, S. (2016). Efficacy of antagonistic soil bacteria in management of subterranean termites (Isoptera). <i>Res. Environ. Life Sci.</i> 9. 949-955.	3.74
442.	Sindhu, S. S., Sehrawat, A., Sharma,R. and Dahiya, A. (2016) Biopesticides: Use of Rhizosphere Bacteria for Biological Control of Plant Pathogens. 1(2) 135-148.	-----
443.	Yadav,D. & Wati,L. (2016) Microbial delignification and hydrolysis of paddy straw for ethanol production. <i>Agricultural Research Journal</i> 53(4), 528-531.	4.71
444.	Chaudhary, D. and Sindhu, S.S. (2017) Amelioration of salt stress in chickpea (<i>Cicer arietinum</i> L.) by coinoculation of ACC deaminase-containing rhizospheric bacteria with Mesorhizobium strains. <i>Legume Research</i> . 40 (1)80-86	6.15
445.	Chaudhary, D., Kumar, R., Kumari, A., Rashmi & Jangra, R. (2017) Explicit effect of phyllospheric microorganisms on growth promotion of peal millet	5.38

	(<i>Pennisetum glaucum</i>). <i>International Journal of Current Microbiology and Applied Science</i> , 6(3), 1046-51.	
446.	Chaudhary, D., Kumar, R., Sihag, K., Rashmi and Kumari, A. 2017. Phyllospheric microflora and its impact on plant growth: A Review. <i>Agricultural Reviews</i> , 38: 51-59.	
447.	Dhull S. and Gera R. (2017). Assessing stress tolerant rhizobial isolates of clusterbean (<i>Cymopsis tetragonoloba</i> (L.) Taub.) Retrieved from semi arid regions of Haryana, India. <i>International Journal of Current Microbiology and Applied Science</i> . 6(4): 744-753.	5.38
448.	Kumari,N., Jain,V. ,Malik,K. & Sushil (2017) Production and optimization of amylase from <i>Bacillus cereus</i> using submerged fermentation. <i>International Journal of Current Microbiology and Applied Science</i> , 6(6), 263-271.	5.38
449.	Mehta, S., Malik K.& Mondal,H.K. (2017) Sustainable utilization of wastes for enhancement of biogas production. <i>Indian Journal of Ecology</i> , 44, 512-516.	4.96
450.	Mehta, S., Malik K.& Mondal,H.K. (2017) Sustainable utilization of wastes for enhancement of biogas production. <i>Indian Journal of Ecology</i> , 44, 512-516.	4.96
451.	Mondal, H. K., Mehta, S., Kaur, H. & Gera, R. (2017) Characterization of Stress Tolerant Mungbean Rhizobia as PGPR and Plant Growth Promotion under Abiotic Stress. <i>Indian Journal of Ecology</i> , 44, 38-42, ISSN: 0304-5250. 4.38	4.96
452.	Mondal, H.K., Gera, R. & Kumar, R. (2017) Alleviation of high abiotic stress in clusterbean using stress-tolerant rhizobia as multi-trait PGPR. <i>Green Farming</i> , 8, 394-398.	4.38
453.	Monika, Priyanka & Wati, L. (2017) Screening of rhizobial isolate from <i>Vigna radiata</i> for plant growth promoting traits. <i>Research on crops</i> , 18, 190-195.	4.75
454.	Sarim, K.M., Kukreja, K., Kumar, R & Iqbal (2017) Biological decolorization of reactive textile dye Yellow CRG. <i>International Journal of Current Microbiology and Applied Science</i> , 6(2),117-126.	5.38
455.	Sujeeta, Malik,K. Mehta,S. & Sihag,K. (2017) Isolation and screening of amylase producing fungi. <i>International Journal of Current Microbiology and Applied Science</i> , 6(4), 783-788.	5.38
Sociology		
456.	Chander, S. and Kumari, V. (2012). Education and mass media exposure vis a vis small family norms among scheduled caste of Haryana. <i>International Journal of Innovations in Engineering and Technology</i> . 1(3): 32-39.	0.67

457.	Chander, S. and Kumari, V. (2012). Effect of occupation and marriage age on small family norms among scheduled castes of Haryana. <i>Indian Journal of Health and Wellbeing</i> . 3(3): 815-819.	4.13
458.	Chander, S. and Kumari, V. (2012). Knowledge and attitude of scheduled caste of Haryana towards small family norms across different age groups. <i>International Journal of Education and Management</i> . 2(4): 455-457.	4.79
459.	Chander, S., Kumari, V. and Kaur, S. (2012). Appraisal of Gram Panchyat activities through informal leaders. <i>Journal of Global Research and Analysis</i> . 1(1): 100-107.	
460.	Jain, M.; Punia, R.K.; Punia, D. and and R.C. Hasija (2012). Job Satisfaction of Extension Personals. <i>Environment and Ecology</i> . 30(1) : 193-197.	-
461.	Kumari, V. (2012). A review-Role of women in rural economy through dynamic livestock farming. <i>Livestock International</i> . April-June 2012 issue. pp 6-8.	-
462.	Kumari, V. (2012). Dowry problem-Social awakening needed: A Review. <i>Praman Research Journal</i> . 2(1):642-649.	-
463.	Kumari, V. (2012). Effect of family type on birth practices and health problems of rural women. <i>Indian Journal of Health and Wellbeing</i> . 3(3): 820-823.	4.13
464.	Kumari, V. (2012). Factors affecting health attributes of rural women. <i>Eco Research Journal of Bio Sciences</i> . 10-11(1&2):70-78.	-
465.	Kumari, V. (2012). Socio economic factors affecting mental health profile of aged rural women. <i>Indian Journal of Health and Wellbeing</i> . 3(4): 1024-1029.	4.13
466.	Kumari, V. (2012). Understanding the mental health status of aged rural women- a sample study. <i>Indian Journal of Positive Psychology</i> . 3(4):458-462.	4.64
467.	Rekha; Punia, R.K., Punia, D and Hasija, R.C. (2012). Entrepreneurship among students. <i>Environment & Ecology</i> 30(1):172-178.	-
468.	Singh, S.; Kundu, R.S. and Chander, S. (2012). TV viewing pattern and its impact among females in a village community of Haryana – A sociological study. <i>International Journal of Education & Management</i> . 2(5): 268-269.	4.13
469.	Vandana, P. and Kathpalia, J. (2012). Association of Micro-System Variables with Linguistic Intelligence of School Going Children. <i>GYAN – The Journal of Education</i> , Vol. 8(2), p. 31-44.	-
470.	Verma, K. and Punia, D. (2012). Brand Preferences for Soaps and Detergents in Rural Haryana. <i>Annals of Agri-Bio Research</i> . 17(2) : 149-151.	3.97
471.	Vermani, S.; Chander, S. (2012). Dimensions of institutional debt among small and marginal farmers of rural Haryana. <i>Journal of global research & analysis</i> . 5(3):203-211.	-

472.	Chander, S. and Satnam, K. (2013). Socio-economic and cultural factors affecting Gram Panchayat activities. <i>International Journal of Education and Management Studies</i> . 3(1): 161-165.	4.79
473.	Kathpalia, J.; Tyagi, R. and Vermani, S. (2013). <i>Role of Education in Environment Conservation</i> cited in book by D.R. Khanna, Chopra, A.K. and Vikas Singh (Eds.) in <i>Sustainable Approaches for Environmental Conservation</i> , p. 57-64, Biotech Books Publications, New Delhi.	-
474.	Kumari, V. (2013). Studies on food habits in rural women. <i>Asian Journal of Dairy and Food Research</i> . 32(1): 74-78.	4.20
475.	Rani, J., Tyagi, R. and Kathpalia, J.. (2013). Impact of caste on vegetable cultivation in Haryana. <i>International J. of Agriculture Statistics</i> , 9(1) : 77-79.	5.13
476.	Rani, J.; Kathpalia, J. and Tyagi, R. (2013). "Empowering women through agriculture". <i>International Journal of Education & Management</i> , 3(2): 265-267.	4.79
477.	Rani, J.; Tyagi, R.; Chahal, S. and Bhateri (2013). Impact of nutritional knowledge status of adolescents on their health. <i>International J. of Innovations in Engineering and Technology</i> , 3(2) : 275-278.	0.67
478.	Singh, S.; Kumari, V. and Chander, S. (2013). Constraints and suggestions to promote women participation in Gram Panchyat activities. <i>International Journal of Social Science Review Studies</i> . 1(1): 1-3.	2.72
479.	Singh, S.; Kumari, V. and Chander, S. (2013). Knowledge and involvement of elected women in various activities of Gram Panchyat. <i>International Journal of Innovations in Engineering, Education and Technology</i> . 3(1): 296-305.	0.67
480.	Singh, S; Kumari, V. and Chander, S. (2013). Age and education of women affecting gram panchayat activities in Haryana. <i>International Journal of Education and Management Studies</i> . 3(3):381-385.	4.79
481.	Tyagi, R.; Vermani, S. and Kathpalia, J. (2013). Impact of tourism on environment. <i>ESSENCE – International Journal for Environmental Rehabilitation and Conservation</i> , Vol. IV, pp. 77-88.	-
482.	Verma, K. and Punia, D. (2013). Emerging Preferences for Processed Foods among Working and Non-working Women. <i>Annals of Agri-Bio Research</i> . 18(1) : 94-97.	3.97
483.	Vermani, S.; Kathpalia, J.; Tyagi, R. and Punia, D. (2013). "Impact Assessment of Water Conservation Techniques in Rural Haryana with Special Reference to Vegetable Cultivation with Drip Irrigation" published in book by D.R. Khanna et al. (Eds.) 'Environmental Management', p. 67-76, Daya Publications House, New Delhi.	--
484.	Chander, S., Vermani, S. and Kumar, A. (2014) Institutional debt among farmers of rural Haryana: A Sociological Analysis. <i>Annals of Agri Bio-Research</i> . 19(3): 534-541.	3.97

485.	Chander, S., Vermani, S., Kathpalia, J., and Kumar, A. (2014). Kisan credit card loan among farmers of rural Haryana. <i>Journal of Global Research & Analysis</i> , 3(2): 227-231.	
486.	Chander, S.; Vermani, S. and Dahiya, S. (2014). Non-institutional debt among farmers of rural Haryana. <i>International Journal of Agricultural and Statistical Research</i> . 10(1): 41-47.	5.13
487.	Chander, S.; Vermani, S. and Kumari, V. (2014). Impact of loan waiving scheme among farmers of rural Haryana. <i>International Journal of Social Science Review</i> , 2(2): 218-219.	2.72
488.	Goyal, S.K.; Kaur, S. and Mehla, S. (2014). Performance of Institutional credit flow to agriculture in India. <i>BVIMR Management Edge</i> ,7(4):163-173.	-
489.	Kathpalia, J., Tyagi, R. and Vermani, S. (2014). Family and gender biases regarding participatory activities of children in rural Haryana. <i>International Journal of Agricultural Sciences</i> , 5(2): 151-157.	2.60
490.	Kathpalia, J.; Chander, S. and Ritu (2014). Problem of eve-teasing among rural women in Haryana. <i>International Journal of Social Sciences Review</i> , 2(3): 436-437.	2.72
491.	Kathpalia, J.; Chander, S.; Sushila, D. and Ritu (2014). Knowledge of farmers about laser-land technology in Haryana – A sociological analysis. <i>J. of Global Research and Analysis</i> , 3(2): 165-169.	
492.	Kathpalia, J.; Punia, D. and Vermani, S. (2014). Socio-cultural factors affecting interpersonal and intrapersonal intelligence of young adolescents in changing scenario. <i>Annals of Agri-Bio Research</i> , 19(3): 542-548.	3.97
493.	Kathpalia, J.; Tyagi, Rashmi and Vermani, S. (2014). “Role of traditional media in rural society”. <i>Annals of Agriculture – Bio Research</i> , 19(1):161-163.	3.97
494.	Kumar, S.; Chander, S. and Kumari, V. (2014). Problems of Human Resource Development in Bulandshahar. <i>International Journal of Social Sciences Review</i> . 2(2): 226-230.	2.72
495.	Mukesh; Kaur, S. and Jyoti, R. (2014) Factors responsible for declining sex ratio in Haryana. <i>Annals of Biology</i> . 30(4)751-753.	3.02
496.	Punia, D.; Khatkar, R.K. and Bas Kaur. 2014. Gender Participation in Agricultural Activities during Kharif Season. <i>Annals of Agri-Bio Research</i> , 19 (2):367-370.	3.97
497.	Vermani, S.; Kathpalia, J.; Punia, D. and Tyagi, R. (2014). “Adoption and impact assessment of conservation agriculture technologies with special reference to growing of cotton crop with drip irrigation”. <i>Journal of Cotton Research Development</i> , 28(1): 154-160.	-
498.	Chander, S.; Kathpalia, J.; Vermani, S. and Dahiya, S. (2015). Problem of Debt Among Farmers of Rural Haryana. Published in Microfinance and Micro entrepreneurship – A paradigm shift for societal development. Vista International Publishing House-Delhi. Pp-332-340.	--

499.	Goyal, S.K. and Kaur, S. (2015). Impact of Trade liberalization forces on India's agriculture export performance. <i>International Journal of Management Research</i> . 6(1) : 48-62.	4.79
500.	Kathpalia, J. and Vermani, S. (2015). Lazer land technology and socio-economic changes among farmers. <i>J. of Research, Ext. and Development</i> , 3(6): 23-24.	-
501.	Kathpalia, J.; and Dahiya, S. (2015). Role of micro-finance in women empowerment. Chapter published in "Microfinance and micro entrepreneurship – A Paradigm shift for Societal Development". Vista International Publishing House, Delhi, pp. 256-262.	--
502.	Kathpalia, J.; Vermani, S.; Chander, S. and Ritu (2015). Factors affecting adoption of lazer-land technology among farmers. <i>International Journal of Agricultural Sciences</i> , 6(1): 140-146.	2.60
503.	Kathpalia, J.; Vermani, S.; Chander, S. and Ritu (2015). Problem of dowry among rural women of Haryana – A sociological analysis. <i>Journal of Global Research and Analysis</i> , 4(2): 152-157.	--
504.	Tyagi, R.; Kathpalia, J. and Ritu (2015). Impact of crime on women and their families in rural areas. <i>Asian Resonance</i> , 4(1) : 208-211.	-
505.	Chander, S.; Kathpalia, J. and Dahiya, S. (2016). Socio-economic impact of Zero Tillage Method on farmers of rural Haryana. <i>International Journal of Social Sciences Review</i> , 4(2): 256-258.	2.72
506.	Chander, S.; Kathpalia, J. and Tyagi, R. (2016). Knowledge and adoption of Zero Tillage Method among farmers of rural Haryana. <i>International Journal of Agricultural Sciences</i> , 7(1): 97-103.	2.60
507.	Chander, S.; Vermani, S. and Kathpalia, J. (2016). Agrarian crisis with reference to rate of interest on informal amount of loan among farmers of Haryana. <i>Journal of Global Research & Analysis</i> . 5(1): 7-13.	-
508.	Kathpalia, J. and Chander, S. (2016). Factors affecting adoption and non adoption of straw reaper technology among farmers in Haryana-A Sociological study. <i>International journal on agricultural sciences</i> . 7(2) : 224-228.	2.60
509.	Kathpalia, J.; Chander, S. and Dahiya, S. (2016). Eve teasing as a crime against women: A sociological study of rural Haryana. <i>Journal of Global Research and Analysis</i> , 5(1): 76-82.	--
510.	Kumari, V. (2016). Domestic violence against women – A priority issue of concern. <i>Journal of Global Research & Analysis</i> . 5(1) : 230-235.	-
511.	Singh, S. & Kumari, V. (2016). Association of caste with knowledge level of women representatives in Gram Panchayat activities. <i>International Journal of Social Science Review</i> . 4(2):220-223. .	2.72

512.	Singh, S. and Kumari, V. (2016). Association of income and occupation with knowledge level of women representatives in Gram Panchayat activities. <i>International Journal of Social Science Review</i> 4(2);181-186.	2.72
513.	Tyagi, R.; Kathpalia, J. and Chander, S. (2016). Problems of farm women labourers among rural communities of Haryana. <i>Journal of Global Research & Analysis</i> , 5(1): 69-75.	--
514.	Chander S.; Kathpalia J. and Kumari V. (2017). A sociological analysis on debt among small and marginal farmers of Southern region of Haryana. <i>International journal of Education and management studies</i> . 7(2): 207-210.	4.79
515.	Chander, S.; Kathpalia, J. and Kumari, V. (2017). Factors influencing socio-economic viability of small and marginal farmers in Southern region of Haryana. <i>International Journal of Social Sciences Review</i> . 5(2): 313-315.	2.72
516.	Chander, S.; Kathpalia, J. and Tyagi, R. (2017). Problem of dowry among rural women of Haryana : A Sociological analysis. <i>Indian Journal of Health and Well Being</i> . 8(6): 530-534.	4.13
517.	Chander, S.; Vermani, S. and Kumar, A. (2017). Role of Public distribution system in providing food security in India. <i>Indian Journal of Health and Well beings</i> . 8(4): 322-325.	4.13
518.	Deepika and Kathpalia, J. (2017). Attitude of parents and factors affecting gender discrimination in rural communities of Haryana. <i>International journal on biological sciences</i> . 8(1)48-51.	3.97
519.	Deepika and Kathpalia, J. (2017). Gender discrimination in girl child in education among parents in rural communities of Haryana. <i>Annals of Agri Bio Research</i> . 22 (1):64-67.	3.97
520.	Kamaljeet and Kumari, V. (2017). Socio-cultural factors affecting sex ratio and health deprivation of girl child – a review. <i>Indian Journal of Health and Well Being</i> . 8(4) : 310-314.	4.13
521.	Kathpalia ,J. and Chander, S. (2017). Changing crop pattern and socio-economic impact of growing <i>Bt. Cotton</i> in rural communities of Haryana. <i>International Journal on Agricultural Sciences</i> 8(1): 122-125.	2.60
522.	Kathpalia, J. and Chander ,S. (2017). Comparative study of farmers growing <i>Bt.</i> and non- <i>Bt.</i> Cotton in Haryana: A Sociological Study. <i>The Journal of Rural and Agricultural Research</i> 17(1): 65-67.	-
523.	Kathpalia, J. and Chander, S. (2017). Rural women and domestic violence – A Sociological Study of Haryana. <i>IAHRW International Journal of Social Sciences Review</i> 5(2): 283-286.	2.72
524.	Kumar, A.; Kumar, K.; Kumar, R. & Chander, S. (2017). Perception, perceived utility and implications suggested by the farmers on Krishi Mela. <i>International Journal of Education & Management Studies</i> . 7(2):239-40.	4.13

525.	Kumari, V. and Kamaljeet (2017). Opinion of college going rural girls about eve-teasing – a sociological analysis. <i>Indian Journal of Health and Well Being</i> . 8(3) : 211-213.	4.13
526.	Rahul and Tyagi, R. (2017). A study on domestic problems faced by women scientists in Hisar district of Haryana. <i>The Journal of Rural and Agricultural Research</i> . 17(1), 28-31.	-
527.	Rahul and Tyagi, R. (2017). Nature and extent of problems of women scientists in Haryana : A sociological study. <i>Annals of Agri-Bio Research</i> . 22(1) : 68-70.	3.97
528.	Rahul and Tyagi, R. (2017). Social problems and women scientists in Hisar district of Haryana. <i>Journal of Progressive Agriculture</i> . 8(1):69-73.	-
529.	Tyagi, R.; Kathpalia, J. and Chander S. (2017). Socio economic problems of women labourers – A sociological study. <i>International Journal of Agricultural and Statistical Sciences</i> . Vol. 13 No. 1.	5.13
Molecular Biology, Biotechnology & Bioinformatics		
530.	Agrawal, Ruchi, Alok S., Manav C., Amit V., Rachna S., A. K. Verma, Rajesh Kumar and K. P. Singh, (2012) <i>J. Microbiol. Biotechnol.</i> (Springer) “Rapid Detection of Cadmium-Resistant Plant Growth Promotory Rhizobacteria: A Perspective of ELISA and QCM-Based Immunosensor.22(6)849–855 http://dx.doi.org/10.4014/jmb.1108.08055 .	7.75
531.	Bharti Aneja, NR Yadav,V. Chawla & RC Yadav (2012) Sequence related amplified polymorphism(SRAP) molecular marker system and its applications in crop improvement. <i>Molecular Breeding</i> . 30:1635-1648.	8.47
532.	Anamika, Tokas, J., Rani, A., Yashveer, S., Singal, H.R. 2012. Effect of sucking pests’ infestation on phosphorous content in cotton (<i>Gossypium hirsutum</i> L.). <i>J. Global Res. & Analysis</i> , 3 (2): 2278-7665.	-
533.	Asha Yadav, R. C. Yadav, Subhash Kajla, Anil K. Poonia, I. S. Yadav and Pushpa Kharb(2013) Standardization of sterilization protocol for micropropagation of <i>Stevia rebaudaina</i> –An important medicinal plant. <i>Haryana J. Hort. Sci.</i> , 42 (1 & 2): 54-58	-
534.	Disha Sharma, Swati Chauhan, Govind Kumar, K. P. Singh and Rajesh Kumar (2012) Cadmium stabilization by plant growth promotory fluorescent <i>Pseudomonas</i> in combination with Indian mustard var. Kranti” <i>South Asian J Exp Biol</i> ; 2 (3): 128135.	4.79
535.	Disha Sharma, Swati Chauhan, Govind Kumar, K. P. Singh and Rajesh Kumar (2012) Cadmium stabilization by plant growth promotory fluorescent <i>Pseudomonas</i> in combination with Indian mustard var. Kranti” <i>South Asian J Exp Biol</i> ; 2 (3): 128135	4.79
536.	Francisco Salamanca, S. Tonse, Surabi Menon, Vishal Garg, K. P Singh et al (2012) Top-of-atmosphere radiative cooling with white roofs: experimental verification and model-based evaluation” <i>Environ. Res. Lett.</i> 7 044007 (8pp) doi:10.1088/1748-9326/7/4/044007.	10.40

537.	Jyoti Taunk, NR Yadav, RC Yadav & Ram Kumar (2012) Genetic diversity among greengram (<i>Vigna radiata</i> (L)wilczek) genotypes varying in micronutrient(Fe & Zn) content using RAPD markers. <i>Indian J. Biotechnology</i> . 11(1): 48-53	6.29
538.	Kaushik R, Vashist M, Jain S, Sikka V K and Sudhir Kumar (2012) Subtle Structural Differences Crucial for Function in Similarly Engineered ADP-Glucose Pyrophosphorylase Larger Subunit in Rice and Maize. <i>J. Pl. Biochem Biotechnol</i> . 21(2), 275-278.	6.95
539.	Meenakshi Jatan, V. Chawla, N.R Yadav and I. Sharma and M. Gupta (2012). Pathogen variability in Indian isolates of <i>Neovossia indica</i> based on host- pathogen interactions. <i>Annals of Biology</i> 28(1):56-61	4.08
540.	Meenakshi Jatan, V. Chawla, N.R Yadav and I. Sharma (2012). Molecular diversity analysis among Indian isolates of <i>Neovossia indica</i> using ISSR markers. <i>Annals of Agri-Bio Research</i> 17(1):30-36	3.97
541.	Ojha, N., Manish Naja, K. P. Singh, T. Sarangi, R. Kumar, S. Lal, M. G. Lawrence, T. M. Butler and H. C. Chandola (2012) Variabilities in ozone at a semi-urban site in the Indo-Gangetic Plain region: Association with the meteorology and regional processes, <i>J. Geophys. Res., Journal Of Geophysical Research</i> . 117, D20301, doi:10.1029/2012JD017716.	9.40
542.	Sandhu, N., Jain, S., Battan, K.R. and Jain, R.K. 2012. Aerobic rice genotypes displayed greater adaptation to water-limited cultivation and tolerance to polyethyleneglycol-6000 induced stress. <i>Physiol Mol Biol Plants</i> , 18: 33-44. <i>Physiol. Mol. Biol. Plants</i> . 21(3): 305–316	7.35
543.	Singh I, Kumar U, Singh SK, Gupta C, Singh M, Kushwaha SR (2012) Physiological and biochemical effects of 24- Epibrassinolide on cold tolerance in maize seedlings. <i>Physiology and molecular biology of plants</i> . 18(3)- 229-236.	6.88
544.	Singh I, Kumar U, Singh SK, Gupta C, Singh M, Kushwaha SR (2012) Physiological and biochemical effects of 24- Epibrassinolide on cold tolerance in maize seedlings. <i>Physiology and molecular biology of plants</i> . 18(3)- 229-236.	6.88
545.	Veena Chawla, S. Kashyap, N.R. Yadav, Sandeep Kumar and R.K. Behl (2012) In vitro and in vivo effect of methyl jasmonate and salicylic acid on karnal bunt (<i>Neovossia indica</i>) resistance in wheat. <i>IUP Journal of Genetics and Plant Breeding Vol V (1): 7-18.</i>	-
546.	Ambawat, S., Sharma, P., Yadav, N.R. and Yadav, R.C. 2013. MYB transcription factor genes as regulators for plant responses: an overview. <i>Physiol Mol Biol Plants</i> ,19(3):307–321.	7.35
547.	Aneja, B., Yadav, N.R., Yadav, R.C., Kumar, R. 2013. Sequence related amplified polymorphism (SRAP) analysis for genetic diversity and micronutrient content among gene pools in mungbean [<i>Vigna radiata</i> (L.) Wilczek]. <i>Physiol Mol Bol Plants</i> 19(3):399–407	7.35
548.	Cavanagh, C.R., Chao, S., Wang, S., Huang, B.E., Stephen, S., Kiani, S., Forrest, K., Saintenac, C., Brown-Guedira, G.L., Akhunova, A., See, D., Bai,	15.42

	G., Pumphrey, M., Tomar, L., Wong, D., Kong, S., Reynolds, M., da Silva, M.L., Bockelman, H., Talbert, L., Anderson, J.A., Dreisigacker, S., Baenziger, S., Carter, A., Korzun, V., Morrell, P.L., Dubcovsky, J., Morell, M.K., Sorrells, M.E., Hayden, M.J. and Akhunov, E. (2013) Genome-wide comparative diversity uncovers multiple targets of selection for improvement in hexaploid wheat landraces and cultivars. <i>Proceedings of National Academy of Sciences USA</i> . 110 (20): 8057-62.	
549.	Chawla, S., Jain, S. and Jain, V. 2013. Salinity induced oxidative stress and antioxidant system in salt-tolerant and salt-sensitive cultivars of rice (<i>Oryza sativa</i> L.). <i>J. Plant Biochem. Biotech.</i> 22(1): 27–34.	7.09
550.	Dawar, C., Jain, S. and Kumar, S. 2013. Insight into the 3D structure of ADP-glucose pyrophosphorylase from rice (<i>Oryza sativa</i> L.). <i>J. Mol. Model</i> , 19: 3351–3367	7.74
551.	Dhawan, C., Kharb, P., Sharma, R., Uppal, S. and Aggarwal, R.K. 2013. Development of male-specific SCAR marker in date palm (<i>Phoenix dactylifera</i> L.). <i>Tree Genet and Genomes</i> , DOI 10.1007/s1 1295-013-0617-9	8.45
552.	Jangra, S., Kharb, P., Mitra, C. and Uppal, S. 2013. Early diagnosis of sex in Jojoba (<i>Simmondsia chinensis</i> Link Schneider) by SCAR marker. <i>Proc. National Academy of Sciences, India; Section B: Biological Sciences</i> . DOI 10.1007/s40011-013-0226-2.	6.0
553.	K. P. Singh, (2013) Graphene: The Wonder Material in Food Sector Food Marketing & Technology.4.(7): 34-36.	
554.	K. P. Singh, A. Kumar, P. Singh, Sanjesh, R. Singh & H.V. Pant (2013) Selective recognition and detoxification of Deltamethrin using molecularly imprinted polymer (MIP) matrices. <i>Analytical Chemistry Letter</i> , TACL 3(1), 30-39 (Taylor & Francis) DOI: 10.1080/22297928.2013.797632.	
555.	K. P. Singh, M. K. Choudhary, Prashant Singh (2013) Polystyrene Nanoparticles Based Nanobiosensor for the Detection of Bursal Disease Virus (IBDV)” <i>Analytical Chemistry Letter</i> , TACL 3(2) 102-110 (Taylor & Francis) DOI:10.1080/22297928.2013.797635.	
556.	K.P. Singh, M. K. Choudhary, Iva Chianella, R. P. Joshi, P. Singh (2013) Development of non-labeled QCM biosensor for the detection of β -Galactosidase: a comparative study of gold and polystyrene nanoparticles. <i>Advances in Nanoparticles</i> , 2013, 2,182-190	8.13
557.	K.P. Singh, M.K. Choudhary, Sanjesh, Prashant Singh, A.K. Prusty. (2013) Detection of Infectious Bursal Disease Virus (IBDV) using nanomaterial engineered quartz crystal microbalance. <i>Anal. Chem. Lett.</i> 3(2): 102	
558.	K.P. Singh, R. K. Prajapati, Saurabh Ahlawat, Sweeti Ahlawat, S. Kumar (2013) Use of isotropuron imprinted polymer membranes as a selective recognition platform in a resistance based electrochemical sensor. <i>O.J. Applied Biosensor.</i> 2, 20-28 doi:10.4236/ojab.2013.21003.	

559.	Kaur, R.D., Yadav, R.C., Yadav, N.R., Rani, A., Saini, P. and Singh, D. 2013. <i>In vitro</i> plant regeneration from anthers of Indian mustard. <i>Cruciferae Newsletter</i> , 32: 8-10.	
560.	Kumari, P., Ahuja, U., Jain, R.K., Yadava, R.K. 2013. Genetic analysis of recombinant inbred lines (RILs) of CSR10 x Taraori Basmati. <i>Vegetos</i> , 26(1):127-142.	5.0
561.	M. K. Choudhary, Prashant Singh, and K. P. Singh (2013) Polystyrene nanoparticle based immunoassay for the detection of β -Galactosidase using quartz crystal microbalance. <i>Nano LIFE</i> , 3(1) DOI: 10.1142/S1793984413400102.	
562.	Maurya, R.P., Yadav, R.C., Godara, N.R. and Beniwal, V.S. 2013. In vitro regeneration of Rose (<i>Rosa hybrida</i> L.) cv. Benjamin Paul through various explants. <i>Journal of Experimental Biology and Agricultural Sciences</i> , 1(25): 111-119	5.07
563.	Prince Saini, Bharti Aneja, Neelam R Yadav & R. C. Yadav (2013) Isolation of genomic DNA from leaf samples of Indian mustard without liquid nitrogen for use in molecular marker analysis. Crop Improvement . 40 (1) 30-33.	-
564.	R.P Maurya,, R.C. Yadav., N.R Godara. and V.S. Beniwal. (2013) In vitro regeneration of Rose (<i>Rosa hybrida</i> L.) cv. Benjamin Paul. through various explants. <i>Journal of Experimental Biology and Agricultural Sciences</i> 1(25):111-119.	5.07
565.	Rani, T., Yadav, R.C., Yadav, N.R, Kumar, M. 2013. Effects of explant orientation on shoot regeneration in tomato. <i>Indian J of Agril Sciences</i> , 83: 367-373.	6.14
566.	Rani, T., Yadav, R.C., Yadav, N.R., Rani, A. and Singh, D. 2013. Genetic Transformation in Oilseed Brassicas – A Review. <i>Indian Journal of Agricultural Sciences</i> ,83:367-373	6.14
567.	Saharan, V., Meena, V., Jain, H.K., Yadav, R.C. 2013. Stable GUS Gene expression in three chickpea varieties viz.Pratap-1,Dahod yellow and GNG-469. <i>Legume research</i> , 36(1)15-20.	6.15
568.	Sandhu, N., Jain, S., Kumar, A., Mehla, B.S., Jain, R.K. 2013. Genetic variation, linkage mapping of QTL and correlation studies for yield, root and agronomic traits for aerobic adaptation. <i>BMC Genetics</i> , 14: 104-119	8.15
569.	Singh, R., Van Heusden, A.W., Kumar, R., Visser, R.G., Yadav, R.C. 2013. Genetic diversity of Mungbean (<i>Vigna radiata</i> L.) in iron and Zinc content as implicated by Farmers' varietal selection in Northern India. <i>Ecology of Food & Nutrition</i> , 52(2):148-62.	6.81
570.	Singh, R., Van Heusden, A.W., Kumar, R., Yadav, R.C. 2013. A comparative genetic diversity analysis in mungbean (<i>Vigna radiata</i> L) using inter-simple sequence repeat (ISSR) and amplified fragment length polymorphism (AFLP). <i>African J. Biotech.</i> , 12: 6574- 6582.	-

571.	Singh, V., Yadav, R.K., Yadav, R., Malik, R.S., Yadav, N.R., Singh, J. 2013. Stability analysis in mung bean [<i>Vigna radiata</i> (L.) wilczek] for nutritional quality and seed yield. <i>Legume Research</i> , 36(1):56-61.	6.15
572.	Singh, V., Yadav, R.K., Yadav, R., Malik, R.S., Yadav, N.R., Singh, J. and Meena, M.D. 2013. Effect of different iron and zinc application on growth, yield and quality parameters of mungbean (<i>Vigna radiata</i> L.). <i>Annals of Agri Bio Research</i> , 18(2), 164-175.	3.97
573.	Supriya Ambawat, Poonam Sharma, Neelam R. Yadav and R. C. Yadav (2013) MYB transcription factor genes as regulators for plant responses: an overview. <i>Physiol Mol Biol Plants</i> (Springer) 19(3):307–321 DOI 10.1007/s12298-013-0179-1.	6.88
574.	Srivastava P., Pandey S., M.K.M. Aslam, Singh P., Singh K. P. (2013) "Nanobiosensors: Diagnostic Tool for Pathogen Detection" <i>Int. Res. J. Biological Sci.</i> , Vol. 2(10), 1-6.	9.6
575.	Aneja, B., Yadav, N.R., Yadav, R.C., Chhabra, A.K. and Kumar, R. 2014. Genotype Identification of greengram (<i>Vigna radiata</i> L. Wilczek) genotypes based on Sequence Related Amplified Polymorphism (SRAP) marker analysis. <i>Ind J of Agricultural Sci.</i> , 84: 376-81.	6.17
576.	Brar, B., Jain, S. and Jain, R.K. 2014. Molecular profiling of rice (<i>Oryza sativa</i> L.) genotypes differing in micronutrients (iron and zinc) content. <i>Ind. J. Genet. Plant Breeding</i> , 74: 81-85.	6.28
577.	Chawla, RD., Valia, P., Yadav, N.R. and Yadav, R.C. 2014. An efficient <i>in vitro</i> regeneration from hypocotyls and cotyledon explants of <i>Brassica juncea</i> (L.) coss. <i>Journal of Agroecology and Natural Resource Management</i> , 1 (2):86-91.	-
578.	Choudhary, D., Kajla, S., Duhan, J.S., Poonia, A.K., Kumar, A. and Kharb, P. 2014. An efficient micropropagation protocol for <i>Musa paradisiaca</i> cv. Robusta: A commercial cultivar. <i>Annals of Biology</i> , 30(1): 25-31.	4.08
579.	Duhan, P., Kajla, S., Poonia, A.K., Kharb, P. and Chaudhury, A. 2014. Comparative studies on effect of different media on <i>in vitro</i> propagation of <i>Lawsonia inermis</i> . <i>Annals of Biology</i> , 30(2): 207-211.	4.08
580.	Gupta, M., Kajla, S., Poonia, A. K., Kharb, P., Chaudhury, A. 2014. Effect of Polyamines on <i>In Vitro</i> Multiplication of <i>Glycyrrhiza glabra</i> . <i>Annals of Biology</i> , 30(3): MS No 2013/206.	4.08
581.	Jangra, S., Kharb, P., Mitra, C. and Uppal, S. 2014. Early diagnosis of sex in Jojoba (<i>Simmondsia chinensis</i> Link Schneider) by SCAR marker. <i>Proc. Natl. Acad. Sci., India, Sect. B Biol.Sci.</i> , 84:251-255.	5.00
582.	K. P. Singh, A Kumar, R Tyagi, S Singh, P Singh (2014) Selective recognition of Endosulfan pesticide in environmental matrix with molecularly imprinted polymer membrane. <i>Research Journal of Chemical Sciences</i> 4 (4), 6370	

583.	K. P. Singh, A. Kumar, S. Tyagi, R. Singh and Prashant Singh (2014) Selective recognition of Endosulfan pesticide in environmental matrix with molecularly imprinted polymer membrane. <i>Res. J. Chem. Sci.</i> , 4(4): 63.	
584.	Kanchan Karki, K. P. Singh, Upendra Kumar, Manindra Mohan (2014) Cancer Scenario with Future Perspectives in Uttarakhand Region of India. <i>Global Journal for Research Analysis</i> : 3(12) 1-3.	
585.	Khatodia, S., Kharb, P., Batra, P. and Chowdhury, V.K. 2014. Development and characterization of transgenic chickpea (<i>Cicer arietinum</i> L.) plants with <i>cry1Ac</i> gene using tissue culture independent protocol. <i>Internatl. J. Advanced Res.</i> , 2(8):323-331.	-
586.	Khatodia, S., Kharb, P., Batra, P. and Chowdhury, V.K. 2014. Real time PCR based detection of transgene copy number in transgenic chickpea lines expressing Cry1Aa3 and Cry1Ac. <i>Int. J. Pure App. Biosci.</i> , 2 (4): 100-105.	4.75
587.	Khatodia, S., Kharb, P., Batra, P., Kumar, P.A. and Chowdhury, V.K. 2014. Molecular characterization of Bt chickpea (<i>Cicer arietinum</i> L.) plants carrying <i>cry1Aa₃</i> gene. <i>Internatl. J. Current Microbiol. & Applied Sci.</i> , 3(8):632-642.	5.38
588.	Kumar S, Chawla V, Yadav NR, Sharma I, Yadav P, Kumar S (2014) Identification and validation of SSR markers for Karnal bunt (<i>Neovossia indica</i>) resistance in wheat. <i>Indian Journal of Agricultural Sciences</i> . 85 (5): 712–717.	6.17
589.	Kumar U, Priyanka M, Malik S, Kumar N , Kumar S, Chugh V, Imran, Sharma P, Singh TV, Dhaliwal HS, Kumar S (2014) Evaluation and utilization of germplasm of wheat and related species for biofortification of iron and zinc in grain and grain fractions. <i>Plant Genetic Resources characterization & Utilization</i> 14 (2), 101-111.	6.6
590.	Kumar, J., Jain, S. and Jain, R.K. 2014. Linkage mapping for grain iron and zinc content in F ₂ population derived from the cross between PAU201 and Palman579 in rice (<i>Oryza sativa</i> L.). <i>Cereal Res Comm.</i> , 42(3):389-400.	6.53
591.	Kumar, S., Chawla, V., Yadav, N.R., Sharma, I., Yadav, P. and Kumar, S. 2014. Identification and validation of SSR markers for Karnal bunt (<i>Neovossia indica</i>) resistance in wheat. <i>Indian Journal of Agricultural Sciences</i> , 85 (5): 712–717	6.17
592.	Priyanka, Upendra Kumar, Mohammad Ishaq Rather (2014) <i>In vitro</i> Salt Stress Induced Enhancement of Ascorbic Acid in <i>Embllica officinalis</i> . <i>Annals of Plant Sciences</i> 3 (1), 588-593.	
593.	R Seth, M Mohan, P Singh, R Singh, R Dobhal, K P Singh, S. Gupta(2014) Water quality evaluation of Himalayan Rivers of Kumaun region, Uttarakhand. <i>Applied Water Science</i> , DOI 10.1007/s1320101402137.	
594.	R. P. Joshi, K. P. Singh, Ashavani Kumar, S Alwarappan (2014) A simple route of synthesis of graphene for electrochemical biosensing. <i>Advance Science Focus</i> , (2) 34-36.	

595.	R. Seth, M. Mohan, Prashant Singh, R. Singh, R. Dobhal, K.P. Singh and S. Gupta (2014) Water quality evaluation of Himalayan Rivers of Kumaun region, Uttarakhand, India. Appl. Water Sci., (Springer) DOI 10.1007/s13201-014-0213-7.	
596.	Rajendra P. Joshi, Krishna P. Singh, Ashavani Kumar, and Subbiah Alwarappan (2014) A Simple Route for the Synthesis of Graphene for Electrochemical Biosensing. Adv. Sci. Focus 2, 34-36 DOI: http://dx.doi.org/10.1166/asfo.2014.1073	
597.	Rani, P., Sandhu, N., Jain, S., Mahla, B.S. and Jain, R.K. 2014. Marker-assisted selection and QTL mapping for yield, root morphology and agronomic traits using MASARB25 (aerobic) × Pusa Basmati 1460 F ₃ mapping populations. <i>Indian J. Genet. Plant Breeding</i> , 74(4):602-607	6.28
598.	Sandhu, N., Singh, A., Dixit, S., Cruz, M.T.S., Maturan, P.C., Jain, R.K. and Kumar, A. 2014. Identification and mapping of stable QTL with main and epistasis effect on rice grain yield under upland drought stress. <i>BMC Genetics</i> , 15: 63-78.	8.15
599.	Sanju, R Kumar, S Ahlawat, K. P. Singh (2014) Study of Mixed membrane potential with surface modified Cellulose acetate nanofilter” Analytical Chemistry Letters 4 (3), 158-171.	
600.	Sanju, Rajeev Kumar, Saurabh Ahlawat, K. P. Singh (2014) Study of Mixed membrane potential with surface modified Cellulose acetate nanofilter. Analytical Chemistry Letters, 4:3, 158-171. doi.org/10.1080/22297928.2014.969615	
601.	Shashank P., Priyanka S., M K M Aslam, Singh K. P. (2014) Nanobiosensors: Diagnostic Tool for Pathogen Detection. International Research Journal of Biological Sciences 2 (10), 16.	3.14
602.	Singh, R., Kumar, R., Van Heusden, A.W., Yadav, R.C. and Visser, R.G. 2014. Genetic improvement of mungbean (<i>Vigna radiata</i> L.): Necessity to increase the levels of the micronutrients iron & zinc. A review. <i>Journal of current research in Science</i> , 2: 1-11.	6.87
603.	Singh, V., Jain, R.K., Yashveer, S., Mor, V.S. and Singh, B. 2014. Genetic analysis of F ₄ population derived from cross between <i>japonica</i> and <i>indica</i> rice. <i>Haryana J. Agron.</i> 30 (1): 56-60.	
604.	Srivastava P., Pandey S., Singh P., Singh K. P. (2014) Nanotechnology and its role in pathogen detection: A short review. INT J CURR SCI 2014, 13: E 9-15.	
605.	Srivastava, S Pandey, P Singh, K P Singh (2014) Nanotechnology and its role in pathogen detection: A short review. International Journal of Current Science 13, 915.	
606.	Taunk, J., Yadav, N.R., Yadav, R.C. and Kumar, R. 2014. Use of RAPD marker for genotype Identification in greengram (<i>Vigna radiata</i> L. Wilczek). <i>Annals of Biology</i> , 30 (4):574-578.	4.08

607.	Yadav, R.C., Saini, P., Aneja, B., Yadav, N.R. and Yadav, R.C. 2014. Isolation of genomic DNA from leaf samples of Indian mustard without liquid nitrogen for use in molecular marker analysis. <i>Crop Improvement</i> , 40(1): 30-33	
608.	Yashveer, S., Singh, V., Kaswan, V., Kaushik, A. and Tokas, J. 2014. Greenbiotechnology, nanotechnology and bio fortification: perspectives on novel environment friendly crop improvement strategies. <i>Biotechnology and Genetic engineering reviews</i> , 30(2): 113-126.	7.94
609.	Aneja, B., Yadav, N.R., Kumar, N. and Yadav, R.C. 2015. Hsp transcript induction is correlated with physiological changes under drought stress in Indian mustard. <i>Physiol. Mol. Biol. Plants</i> . 21(3): 305–316	7.35
610.	Anuj Nehra, K. P. Singh (2015) Current trends in nanomaterials embedded field effect transistor-based biosensor. <i>Biosensors and Bioelectronics</i> 74 731–743.	13.78
611.	Brar, B., Jain, R.K. and Jain, S. 2015. Correlation of molecular marker allele size with physio-morphological and micronutrient (Zn, Fe) traits among rice genotypes. <i>Int J Curr Sci</i> , 15:42-50	6.97
612.	Deyol, A., Taunk, J., Khirbat, S.K., Yadav, R.C. 2015. Molecular diversity and pathogenic variability in <i>Colletotrichum capsici</i> of chilli (<i>Capsicum annum</i>) in Haryana. <i>Indian J of Agricultural Sciences</i> ,85(6) 854-858.	6.17
613.	Gupta, M., Chawla, V., Garg, P., Yadav, N., Munjal, R. and Sharma, B. 2015. Genetic analysis of yield and heat stress related traits in wheat (<i>Triticum aestivum</i> L. em. Thell) using microsatellite markers. <i>Journal of Applied and Natural Science</i> , 7 (2):739 -744.	4.84
614.	Hema Joshi, Manish Naja, K. P. Singh et al (2015) Investigation of aerosol black carbon from a semi-urban site in the Indo-Gangetic Plain Region. <i>Atmospheric Environment Part B: Urban Atmosphere</i> 125, 346-359, doi:10.1016/j.atmosenv.2015.04.007.	
615.	Jain, V., Rani, B. and Jain, S. 2015. Sodicity induced antioxidative system in roots of salt-tolerant and salt sensitive cultivars of Indian mustard (<i>Brassica juncea</i> L.). <i>Journal of Oilseed Brassica</i> , 6: 152-157.	4.67
616.	Jangra, M.R., Ikbal, Batra, R., Sikka, V.K. 2015. Poly-hydroxy butyrate production in bacteria employing ecofriendly and renewable agri byproducts. <i>The Ecoscan</i> 9: 89-93.	4.56
617.	Kamboj, D., Yadav, R.C., Singh, A., Yadav, N.R. and Singh, D. 2015. Plant regeneration and <i>Agrobacterium</i> -mediated transformation in Indian mustard (<i>Brassica juncea</i> L. Czern. &Coss.). <i>Journal of oilseed Brassica</i> , 6(1):191-197.	4.67
618.	Kharb, A., Sandhu, N., Jain, S. and Jain, R.K. 2015. Linkage Mapping of Quantitative Trait Loci for Traits Promoting Aerobic Adaptation on Chromosome 8 in indica Rice (<i>Oryza sativa</i> L.). <i>Rice Genomics and Genetics</i> , 6: 1-5.	

619.	Manjul Mungali, Veena Pandey, M. Arif, K. P. Singh (2015) Construction of anti omp immobilized nanoporous membrane based electrochemical biosensor for the detection of <i>E. coli</i> . <i>Global Journal of Multidisciplinary Studies</i> ISSN: - 2348-0459 4 96-102	
620.	Passricha, N., Batra, R., Behl, R.K. and Sikka, V.K. 2015. Differential and temperature dependent regulation of ADP–glucose pyrophosphorylase by specific chromosome in wheat grains. <i>Cereal Research Communications</i> , 43(4): 591–603.	6.53
621.	Priyanka, Upendra Kumar, K. P. Singh (2015) Indirect, direct and somatic embryogenesis in <i>Embllica officinalis</i> . <i>G J Res Analysis</i> : 4 (4) 1-4.	
622.	Priyanka, Upendra Kumar, K.P. Singh (2015) Indirect, Direct and Secondary Somatic Embryogenesis in <i>Embllica Officinalis</i> . <i>Global Journal For Research Analysis</i> 4 (4), 1-3.	
623.	R. K. Chikara V. Malik, Upendra Kumar (2015) Identification of RAPD based genetic variability in <i>Rhizoctonia solani</i> isolates from Northern India. <i>International Journal of Recent Biotechnology</i> 3 (2), 25-30	
624.	Sandhu, N., Torres, R.O., Cruz, M.T.S., Maturan, P.C. and Jain R.K., Kumar, A., Henry, A. 2015. Traits and QTLs for development of dry direct-seeded rainfed rice varieties. <i>Journal of Experimental Botany</i> , 66: 225–244.	11.68
625.	Singh, V., Yadav, N.R., Arora, A., Batra, P. and Yadav, R.C. 2015. TDZ induced shoot organogenesis in wild guar (<i>Cyamopsis serrata</i> Shinz). <i>Journal of Cell and Tissue Research</i> , 15(1):4891-4896.	4.04
626.	Summy, Sharma, K.D., Boora, K.S. and Kumar, N. 2015. Plant water status, canopy temperature and chlorophyll fluorescence in relation to yield improvement in chickpea (<i>Cicer arietinum</i> L.) under soil moisture stress environments. <i>Journal of Agrometeorology</i> , 17 (1): 11-16.	6.36
627.	A Kumar, S Kumar, U Kumar, P Suravajhala, MNVP Gajula (2016) Functional and structural insights into novel DREB1A transcription factors in common wheat (<i>Triticum aestivum</i> L.): A molecular modeling approach. <i>Computational Biology & Chemistry</i> 64, 217-226.	
628.	Ambawat, S., Senthilvel, S., Hash, C.T., Nepolean, T., Rajaram, V., Eshwar, K., Sharma, R., Thakur, R.P., Rao, V.P., Yadav, R.C. and Srivastava, R.K. 2016. QTL mapping of pearl millet rust resistance using an integrated DArT- and SSR-based linkage map. <i>Euphytica</i> DOI 10.1007/s10681-016-1671-9	7.62
629.	Asha Yadav, S. Kajla, A. K. Poonia, I S Yadav & R.C. Yadav (2016) An efficient micropropagation protocol for <i>Stevia rebaudiana</i> . <i>Medicinal plants: International J. of Phytomedicines & related industries</i> , 8 (1): 65-73	-
630.	Batra, P., Kharb, P., Kajla, S. and Hooda, R.S. 2016. Direct shoot regeneration from unfertilized ovaries in heterotic maize HQPM-1 and HM-5. <i>Annals of Biol.</i> , 32(2): 141-145.	4.08

631.	Batra, P., Kharb, P., Kajla, S. and Hooda, R.S. 2016. Establishment of regenerable, embryogenic callus cultures in important heterotic hybrids of maize (<i>Zea mays</i> L.) <i>The Bioscan</i> , 11(3): 1497-1500.	5.26
632.	Dipti, Chawla, V., Yadav, N.R., Yadav, R.C. and Priyanka 2016. Comparative response of different genotypes of Brassica juncea to anther culture. <i>International Journal of Scientific Engineering and Applied Science</i> ,2(3):316-327	
633.	Ikbal, Jangra, M.R. and Sikka, V.K. 2016. Superior rhizobia infecting across strict legume host range and higher nitrogen fixation. <i>The Bioscan</i> , 11(3): 1401-1406.	5.26
634.	Jain, M., Khatodia, S., Kharb, P., Batra, P. and Chowdhury, V.K. 2016. Determination of <i>CryIAC</i> copy number in transgenic pigeonpea plants using quantitative real time PCR. <i>Legume Research</i> ,40(4): 643-648	6.15
635.	Jangra, M.R., Jain, A., Batra, R., Ahlawat, R. and Sikka, V.K. 2016. Statistical Analysis for optimization of bacterial polyhydroxy butyrate production using agriculture by products. <i>Ind. J. of Ecology</i> . 43 (Special Issue-1): 557-562	4.96
636.	Mamta Gupta, Veena Chawla, Pankaj Garg, Neelam Yadav , Renu Munjal and Bunty Sharma (2015) Genetic analysis of yield and heat stress related traits in wheat (<i>Triticum aestivum</i> L. em. Thell) using microsatellite markers <i>Journal of Applied and Natural Science</i> 7 (2): 739 – 744.	4.84
637.	Mehta, G., Verma, P.K. and Yashveer, S. 2016. Changes in ISSR patterns and correlations among yield and yield contributing traits in chickpea grown under rainfed and irrigated conditions. <i>Indian J. Ecology</i> ., 43(1): 63-65.	4.96
638.	Preeti, Singh, V., Yashveer, S., Panwar, I.S. and Phougat, D. 2016. Evaluation of phenotypic and molecular diversity in wheat cultivars and advanced breeding lines of wheat in India. <i>Research on Crops</i> , 17 (3): 605-612.	4.75
639.	Singal, M., Yashveer, S., Vikram, S. and Dhillon, S. 2016. Expression analysis of <i>HSP 101</i> gene in bread wheat (<i>Triticum aestivum</i> L.Em.Thell.). <i>Research Journal of Biotechnology</i> 11 (5): 1-9.	6.24
640.	Sumit Jangra, Rahul Kumar Meena, Monika & R C Yadav (2016) GM Crops: Effect on Non Target Environment . <i>Advances in Life Sciences</i> 5 (17) : 6482-6486	3.15
641.	Yadav, A., Kajla, S., Poonia, A.K., Yadav, I.S. and Yadav, R.C. 2016. An efficient micropropagation protocol for <i>Stevia rebaudiana</i> . <i>Medicinal plants: International J. of Phytomedicines & related industries</i> , 8 (1): 65-73.	5.12
642.	Anuj Nehra, Khyati Pandey, K. P. Singh, Saurabh Ahlawat, R. P. Joshi (2017) Determination of E. Coli by a Graphene Oxide-Modified Quartz Crystal Microbalance. <i>Analytical Letters</i> . 50, (12).	7.15

643.	Batra, R., Kumar,P., Jangra,M.R., Passricha, N. and Sikka, V.K. 2017.High precision temperature controlling AGPase in wheat affecting yield and quality traits. <i>Cereal Research Communication</i> , DOI: 10.1556/0806.45.2017.039	6.53
644.	Ikbal, Jangra, M.R., Sarim, K.M. and Sikka, V.K. 2017. Development of promiscuous rhizobia for diverse rabi legumes (Chickpea, Pea and Lentil) <i>Journal of Applied and Natural Science</i> , 9 (1): 215 – 221	4.84
645.	K. P. Singh, Sweetie Ahlawat, N.S. Dhek, Anuj Nehra, Anu Puri (2017) Garbing grapheme oxide nano-film over polycarbonate nanoporous membrane to sleuth <i>E.Coli</i> by Infrared Spectroscopy. <i>Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy</i> 170 14-18.	
646.	Kumar, S., Modi, A.R., Parekh, M. J., Mahla, H. R., Sharma, R., Fougat, R.S., Yadav, D., Yadav, N.R., Patil, G.B. 2017. Role of conventional and biotechnological approaches for genetic improvement of cluster bean. <i>Industrial Crops and Products</i> , 97:639-648.	9.45
647.	Mamatha, N.C., Tehlan, S.K., Srikanth, M. Ravikumar, T., Yashveer, S. and Kumar, M. 2017. Assessment of genetic diversity among Fenugreek (<i>Trigonella foenum-graecum L.</i>) genotypes using SSRs markers. <i>International Journal of Current Microbiology and Applied Sciences</i> , 6(6) 2565-2572.	5.38
648.	Nehra A , Chen W , Dimitrov DS , Puri A , Singh KP (2017) Graphene Oxide-Polycarbonate Track-Etched Nanosieve Platform for Sensitive Detection of Human Immunodeficiency Virus Envelope Glycoprotein. <i>ACS Appl Mater Interfaces</i> . 9(38):32621-32634. doi: 10.1021/acsami.7b12103. Epub 2017 Sep 13)	
649.	Phought D, Singh V, Panwar IS, Yashveer S (2017) Evaluating microsatellite markers for the use in genetic analysis of hexaploid wheat varieties and elite lines. <i>Vegetos</i> 30 (special): 134-139. doi: 10.5958/2229-4473.2017.00047.7	4.0
650.	Pardeep Kumar, K S Boora, N Kumar, R Batra, M Goyal, KD Sharma & R. C.Yadav (2018) Traits of significance for screening of chickpea (<i>Cicer arietinum L.</i>) genotypes under terminal drought stress. <i>J. Agrometeorology</i> . 20: 40-45	6.4
651.	Priyanka , A.S. Redhu , Veena Chawla , N. R. Yadav and Dipti (2017) Identification of Molecular Markers for Karnal Bunt Resistance by Using RGAP in Wheat (<i>Triticum aestivum L. em. Thell</i>) <i>Int. J. Pure App. Biosci.</i> 5 (4): 1850-1856	
652.	Priyanka M, Kumar U, Mehra P, Malik S, Dhaliwal HS, Kumar S (2017) Physical mapping and expression of <i>Ids3 (Iron Deficiency Clones3)</i> gene in hexaploid wheat. <i>3 Biotech</i> (accepted).	
653.	Shivaprasad, M.K., Tehlan, S.K., Kumar, M. Batra, V.K. and Yashveer, S. Correlation and Path Coefficient Studies in Coriander for Yield and Yield Attributing Traits. <i>International Journal of Current Microbiology and Applied Sciences</i> , 6(6):3593-3599.	5.38

654.	Singh, V., Yadav, N.R. and Singh, J. 2017. Role of Genomics tools for Mungbean [<i>Vigna radiate</i> (L.) Wilkzek.]. <i>Legume Research</i> , 40 (4): 601-608.	6.15
655.	Sumit Jangra, Disha Kamboj, Priti, Rahul Kumar Meena and R. C. Yadav (2017) GM CROPS: THE NEED OF TOMORROW'S . International Journal of Agriculture, Environment and Bioresearch 2(02) pp 83-94.	-
656.	Vijayata Singh, R.K Yadav, N.R Yadav, Rajesh Yadav, R.S. Malik and Jogendra Singh 2017. Identification of genomic Regions/genes for high iron and zinc content and cross transferability of SSR markers in mungbean (<i>Vigna radiata</i> L.) <i>Legume Research</i> , 40(6) : 1004-1011.	6.15
657.	Vinay K. Belwal, K. P. Singh (2017) Nanosilica supported liposome (protocell) as a drug vehicle for cancer therapy. <i>International Journal of Nanomedicine</i> :12(T-Nano 2014) 1-3.	
658.	Vivek Hegde, P.S. Partap and R.C. Yadav (2017) <i>In Vitro</i> Regeneration of Capsicum (<i>Capsicum annuum</i> L.) from Cotyledon Explants. <i>International Journal of Current Microbiology and Applied Sciences</i> . 6(5) 225-237.	5.38
659.	Vivek Hegde, P.S. Partap and R.C. Yadav & K S Baswana (2017) <i>In vitro</i> Androgenesis in Capsicum (<i>Capsicum annuum</i> L.) <i>Int.J.Curr.Microbiol.App.Sci</i> . 6(5): 925-933.	5.38
660.	Vivek Hegde, P.S. Partap and R.C. Yadav (2017) Plant Regeneration from Hypocotyl Explants in Capsicum (<i>Capsicum annuum</i> L.) <i>Int.J.Curr Microbiol.App.Sci</i> 6(7): 545- 557.	5.38
661.	Yadav S, Yashveer S, Solanki YPS, Singh V (2017) Phenotyping and microsatellite marker analysis of HD 2851 (salt sensitive) × Kharchia 65 (salt tolerant) F ₂ population for salinity tolerance. <i>Indian Journal of Plant Physiology</i> https://doi.org/10.1007/s40502-017-0319-7	5.18
662.	Anuj Kumar, Rohit Kumar, Mansi Sharma, Upendra Kumar, M. N. V. Prasad Gajula and Krishna Pal Singh (2018) Uttarakhand Medicinal Plants Database (UMPDB): A Platform for Exploring Genomic, Chemical, and Traditional Knowledge. <i>Data</i> : 3 (7); doi:10.3390/data3010007.	
663.	Rawal Hukam C., Kumar S., Amitha Mithra S.V., Solanke A. U., Nigam D., Saxena S., Tyagi A., Sureshkumar V., Kalia P., Singh N. P., Yadav Neelam R., Singh N. K., Sharma T. R., and Gaikwad K. (2018) High Quality Unigenes and Microsatellite Markers from Tissue Specific Transcriptome and Development of a Database in Clusterbean (<i>Cyamopsis tetragonoloba</i> (L.) Taub.). <i>Genes</i> 8: 13; doi:10.3390/genes8110313	9.60
664.	Rekha Patel, Ram C. Yadav , Ram Avtar , Sumit Jangra , Geeta D. Boken , Baldeep Singh , and Neelam R. Yadav (2018) Genetic Diversity Analysis for Salinity Tolerance in Indian Mustard [<i>Brassica juncea</i> (L.)] Using SSR Markers <i>Int. J. Curr. Microbiol. App. Sci</i> 7(1): 1776-1785	
665.	Taunk J. , Sehgal D., Yadav, Neelam R., Howarth C., Yadav, Ram C. and Yadav R. S. (2018) Mapping of easy to screen SSR markers for selection of	7.48

	RFLP markers-bracketed downy mildew resistance QTLs in pearl millet. European Journal of Plant Pathology (online first) https://doi.org/10.1007/s10658-017-1381-8	
666.	Vrantika Chaudhary, Sumit Jangra and Neelam R. Yadav (2018). Nanotechnology based approaches for detection and delivery of microRNA in healthcare and crop protection. <i>Journal of Nanobiotechnology</i> 16:40 https://doi.org/10.1186/s12951-018-0368-8	10.95
Zoology & Aquaculture		
667.	Asha, and Gulati, R. 2012. Control of <i>Varroa destructor</i> : A review. <i>International Journal of Agricultural Sciences</i> , 3 (1): 85-90.	4.82
668.	Asha, Gulati, R. and Sharma, S.K. 2012. Efficacy of formic acid against <i>Varroa destructor</i> Anderson and Trueman in <i>Apis mellifera</i> L. colonies. <i>International Journal of Agricultural Sciences</i> , 3 (1): 29-33.	4.82
669.	Dahiya, T., Verma, R.K. and Singh, G. 2012. Effect of probiotics on growth performance of Indian magur (<i>Clarius batrachus</i> L.). <i>Annals of Agri. Bio Res.</i> 17 (2): 121-127.	3.50
670.	Dahiya, T., Verma, R.K., Singh, G. and Sihag, R.C. 2012. Elimination of pathogenic bacterium, <i>Aeromonas hydrophila</i> by the use of probiotics. <i>J. of FisheriesSciences.com</i> 6 (3): pp. 209-214.	-
671.	Selvaraj, K., Kaushik, H. D. and Gulati, R. 2012. Evaluation of <i>Beauveria bassiana</i> (Balsamo) Vuillemin against coriander aphid <i>Hyadaphis coriandri</i> (Das) (Aphididae: Homoptera). <i>Journal of Biological Control</i> , 26 (1): 55-58.	5.34
672.	Selvaraj, K., Kaushik, H. D., Gulati, R. and Sharma, S.S. 2012. Evaluation of <i>Beauveria bassiana</i> (Balsamo) Vuillemin against <i>Aphis craccivora</i> (Koch) (Aphididae: Homoptera). <i>Biopesticides International</i> , 8 (2): 125-130	4.82
673.	Anita, Gulati, R., Kaushik, H.D. and Arvind. 2013. Effect of <i>Tyrophagus putrescentiae</i> Schrank on weight loss in stored oats and green gram. <i>Annals of Plant Protection Sciences</i> , 21 (1): 90-93.	4.82
674.	Asha, Gulati, R., Thakur, D. and Giroh, M. 2013. Effect of <i>Varroa destructor</i> Anderson and Trueman infestation on <i>Apis mellifera</i> L. adults. <i>Journal of Applied and Natural Science</i> , 5 (2): 455-458.	4.84
675.	Gupta, R.K. Bansal, N. and Kalyankar, A.D. 2013. Efficient utilization of solid organic waste through vermicomposting and its impact on growth parameters of different vegetable crops. <i>Journal of Environment Science and Sustainability</i> , 1 (3): 85-88.	-
676.	Kalyankar, A.D., Gupta, R.K. Bansal, N., Sabhlok, V.P. and Singh, D. 2013. Effect of garlic (<i>Allium staivum</i>) against <i>aeromonas hydrophila</i> and health management in sword tail, <i>Xiphophorus helleri</i> . <i>Journal of Environment Science and Sustainability</i> , 1 (2): 41-48.	-

677.	Kanika, Gulati, R. and Geroh, M. 2013. Influence of abiotic stresses on the population dynamics of two spotted spider mite (<i>Tetranychus urticae</i> Koch) in cucumber ecosystem. <i>Annals of Plant Protection Sciences</i> , 21 (2): 242-246.	4.82
678.	Verma, R.K. and Singh, G. 2013. Biological changes in <i>Cyprinus carpio</i> L. following <i>Aeromonas hydrophila</i> infection and <i>Ocimum sanctum</i> feed supplement. <i>Annals of Biology</i> 29 (3): 418-424.	2.98
679.	Verma, R.K., Kumari, M. and Singh, G. 2013. Ameliorating effect of Neem (<i>Azadirachta indica</i>) leaf powder on pathology of <i>Aeromonas hydrophila</i> infection in Common carp(<i>Cyprinus carpio</i> L). <i>Annals of Agri. Bio Res.</i> 18 (3): 301-305.	2.91
680.	Anita, Gulati, R., Kaushik, H.D. and Arvind. 2014. Efficacy of <i>Ocimum sanctum</i> and <i>Glycyrrhiza glabra</i> against stored Mite, <i>Tyrophagus putrescentiae</i> Schrank in oat flakes. <i>Biopesticides International</i> , 10 (1): 41-49.	4.82
681.	Anita, Gulati, R., Monika, Kaushik, H.D. and Arvind. 2014. Quantitative losses in green gram [<i>Vigna radiata</i> (L.) Wilczek] due to <i>Tyrophagus putrescentiae</i> (Schrank) (Acari: Acaridae). <i>Legume Research</i> , 37 (6): 670-674.	6.15
682.	Asha, Gulati, R. and Sharma, S.K. 2014. Effect of environmental factors on the population of <i>Varroa destructor</i> in <i>Apis mellifera</i> L. colonies. <i>The Ecoscan</i> , 8 (1&2): 23-25	
683.	Bansal, N., Gupta, R.K., Garg, S., Singh, G. and Sharma, K. 2014. Effect of Vermicompost as Pond Fertilizer on Growth Performance of Common carp (<i>Cyprinus carpio</i> Linn.). <i>Journal of Environment Science and Sustainability</i> , 2 (1): 23-30.	-
684.	Devi, S., Gulati, R., Tehri, K. and Asha. 2014. Diversity and abundance of insect pollinators on <i>Allium cepa</i> L. <i>Journal of Entomology and Zoology Studies</i> , 2 (6): 34-38.	5.53
685.	Geroh, M., Gulati, R. and Kanika. 2014. <i>Beauveria bassiana</i> (Balsamo) Vuillemin (Strain ITCC- 4668) as acaricide against <i>Tetranychus urticae</i> Koch (Acari: Tetranychidae). <i>Indian Journal of Agricultural Research</i> , 48 (3): 384-388.	4.86
686.	Kanika, Gulati, R. and Geroh, M. 2014. Impact of weather parameters on the population dynamics of <i>Tetranychus urticae</i> Koch on field grown cucumber. <i>Annals of Biology</i> , 30 (1): 140-145.	4.08
687.	Kanika, Gulati, R., Geroh, M., and Madan, S. 2014. Effect of two spotted spider mite infestation on some biochemical parameters of cucumber leaves. <i>Annals of Biology</i> , 30 (4) : 686-690	4.08
688.	Tehri, K. and Gulati, R. 2014. Field efficacy of some biorationals against the two spotted spider mite <i>Tetranychus urticae</i> Koch (Acari: Tetranychidae). <i>Journal of Applied and Natural Science</i> , 6 (1): 62-67.	4.84

689.	Tehri, K., Gulati, R. and Geroh, M. 2014. Damage potential of <i>Tetranychus urticae</i> Koch to cucumber fruit and foliage: Effect of initial infestation density. <i>Journal of Applied and Natural Science</i> , 6 (1): 170-176.	4.84
690.	Tehri, K., Gulati, R. and Geroh, M. 2014. Host plant responses, biotic stress and management strategies for the control of <i>Tetranychus urticae</i> Koch (Acarina: Tetranychidae). <i>Agricultural Reviews</i> , 35 (4): 250-260.	4.37
691.	Tehri, K., Gulati, R., Geroh, M. and Madan, S. 2014. Biochemical responses of cucumber to <i>Tetranychus urticae</i> Koch (Acari: Tetranychidae) mediated biotic stress. <i>Journal of Applied and Natural Science</i> , 6 (2): 687-692.	4.84
692.	Arvind, Gulati, R. and Anita. 2015. Comparative susceptibility and weight loss of wheat grains and flour due to <i>Tyrophagus putrescentiae</i> (Schrank). <i>Annals of Plant Protection Sciences</i> , 23 (2): 246-249.	4.82
693.	Asha, Gulati, R., Sharma, S.K. and Aneja, D.R. 2015. Comparative evaluation of sticky paper and hive debris as sampling methods for population assessment of <i>Varroa destructor</i> in <i>Apis mellifera</i> colonies. <i>Indian Journal of Agricultural Research</i> , 49 (6): 503-508.	4.86
694.	Bansal, N., Gupta, R.K., Singh, D. and Shashank. 2015. Comparative study of antibacterial activity of two different earthworm species, <i>Perionyx excavates</i> and <i>Pheretima posthuma</i> against pathogenic bacteria. <i>Journal of Applied and Natural Science</i> , 7 (2): 666-671.	4.84
695.	Devi, S., Gulati, R., Tehri, K. and Poonia, A. 2015. Effect of different modes of pollination on yield parameters of <i>Allium cepa</i> L. <i>Journal of Entomological Research</i> , 39 (2): 111-117	5.05
696.	Devi, S., Gulati, R., Tehri, K. and Poonia, A. 2015. The pollination biology of onion (<i>Allium cepa</i> L.)- A Review. <i>Agricultural Reviews</i> , 36 (1): 1-13.	4.37
697.	Geroh, M., Gulati, R. and Kanika. 2015. Determination of lethal concentration and lethal time of entomopathogen <i>Beauveria Bassiana</i> (Balsamo) Vuillemin against <i>Tetranychus urticae</i> Koch. <i>International Journal of Agricultural Sciences</i> , 7 (5): 523-528.	4.82
698.	Geroh, M., Gulati, R. and Kanika. 2015. Safety of fungal biocontrol agent, <i>Beauveria bassiana</i> (Balsamo) Vuillemin to spider mite natural enemy, <i>Stethorus punctillum</i> Weise under field conditions. <i>Journal of Entomological Research</i> , 39 (4): 333-336.	5.05
699.	Godara, S., Sihag, R.C. and Gupta, R.K. 2015. Effect of pond fertilization with vermicompost and some other manures on the growth performance of Indian Major Carps. <i>Journal of Fisheries and Aquatic Science</i> , 10 (3): 199-211.	
700.	Godara, S., Sihag, R.C. and Gupta, R.K. 2015. Effect of pond fertilization with vermicompost and some other manures on the hydrobiological parameters of treated pond waters. <i>Journal of Fisheries and Aquatic Science</i> , 10 (4): 212-231.	-

701.	Godara, S., Sihag, R.C. and Gupta, R.K. 2015. Effect of pond fertilization with vermicompost and some other manures on the pathogenic bacterial populations of treated waters. <i>Research Journal of Microbiology</i> , 10 (6): 230-245.	-
702.	Rani, S., Gupta, R.K and Tehri, K. 2015. Zinc and cadmium induced changed in the proteolytic and amylolytic enzyme activity in Indian major carps. <i>The Bioscan</i> , 10 (2): 613-616.	5.26
703.	Rani, S., Gupta, R.K. and Rani, M. 2015. Heavy metal induced toxicity in fish with special reference to zinc and cadmium. <i>International Journal of Fisheries and Aquatic Studies</i> , 3 (2): 118-123.	-
704.	Tehri, K. and Gulati, R. 2015. Might of the Mite: A review. <i>International Journal of Current Science</i> . 15 : 1-14.	-
705.	Tehri, K., Gulati, R., Geroh, M. and Dhankhar, S.K. 2015. Dry weather: a crucial constraint in the field efficacy of entomopathogenic fungus <i>Beauveria bassiana</i> against <i>Tetranychus urticae</i> Koch (Acari: Tetranychidae). <i>Journal of Entomology and Zoology Studies</i> , 3 (3): 287-291.	5.53
706.	Arvind, Gulati, R. and Poonia, A. 2016. Effects of infestations by <i>Tyrophagus putrescentiae</i> [Schrank] [Acari: Acaridae] on biochemical composition of wheat grains. <i>International Journal of Agricultural Sciences</i> , 8 (50): 2133- 2136.	4.82
707.	Bansal, N., Gupta, R.K. and Shashank. 2016. Antimicrobial activity of earthworm Extract, <i>Eudrilus eugeniae</i> against fish bacterial pathogens. <i>The Ecoscan</i> , 10 (1 and 2): 01 – 06.	4.65
708.	Rani, S., Gupta, R.K. and Rani, M. 2016. Biochemical alterations in blood serum ions of Indian major carps induced by zinc and cadmium toxicity. <i>The Bioscan</i> , 11 (3): 1473-1476.	5.26
709.	Tehri, K., Gulati, R. and Geroh, M. 2016. Host plant responses to <i>Tetranychus urticae</i> Koch mediated biotic stress and management strategies. In: <i>Dynamics of Crop Protection and Climate Change</i> (eds. Chattopadhyaya, C. and Prasad, D.), Studera Press, New Delhi: 93-114	
710.	Duhan K, Gulati, R., Malik, A. and Singh, S. 2017. Comparative evaluation of population dynamics of <i>Tyrophagus putrescentiae</i> Schrank (Acari: Acaridae) on fruiting body of <i>Pleurotus sajor caju</i> at different composition. <i>Journal of Entomology and Zoology Studies</i> , 5 (3): 1565-1567	5.53
711.	Duhan K, Gulati, R., Malik, A. and Singh, S. 2017. Comparative evaluation of medicinal plants against stored product mite, <i>Tyrophagus putrescentiae</i> in <i>Pleurotus sajor caju</i> compost. <i>International Journal of Basic and Applied Agricultural Research (Formerly Pantnagar Journal)</i> : accepted	5.20
712.	Duhan K, Gulati, R., Malik, A. and Singh, S. 2017. Qualitative losses in nutritional contents of <i>Pleurotus sajor-caju</i> (Oyster mushroom) in both compost and fruiting body by <i>Tyrophagus putrescentiae</i> (Acari: Acaridae) at different infestation levels. <i>Chemical Sciences and Reviews (International)</i> , 6 (21): 88-93.	5.20

713.	Duhan K. and Gulati, R. 2017. Review article on lignocellulose biomass as substrate for <i>Pleurotus</i> (oyster mushroom) cultivation. <i>International Journal of Technical Research and Science</i> , 2(III): 137-141.	Impact Factor 1.50
714.	Duhan K. and Gulati, R. 2017. Review: Application of molecular markers in the study of genetic diversity in Acarology. <i>International Journal of Technical Research and Science</i> , 2(VI): 399-401.	Impact Factor 1.50
715.	Hem Lata, Singh, D., Yadav, J. and Sandeep. 2017 Impact of herbicides on biomolecular constituents of <i>Eisenia fetida</i> . <i>Journal of Entomology and Zoology Studies</i> , 5(2): 1375-1378.	5.53
716.	Itisha, Gulati, R., Anita and Manoj 2017. Damage potential of <i>Tyrophagus putrescentiae</i> Schrank (Acari: Acaridae) in mushrooms. <i>Emergent Life Science Research</i> , 3(2): 6-15	
717.	Itisha, Gulati, R., Manoj, Anita and Singh, S. 2017. <i>Tyrophagus putrescentiae</i> as causative agent of wet bubble disease in <i>Agaricus bisporus</i> . <i>International Journal of Current Microbiology and Applied Sciences</i> , 6(10): 1172-1177.	5.38
718.	Jangra, M., Gulati, R. and Sonika. 2017. Incidence of chilli mite, <i>Polyphagotarsonemus latus</i> (Banks) on chilli fruit parameters under field conditions. <i>Emergent Life Sciences Research</i> , 3(2): 26-31.	
719.	Jangra, M., Gulati, R., Sonika, and Batra, V.K. 2017. Bioecological studies of <i>Polyphagotarsonemus latus</i> (Banks) (Acari: Tarsonemidae): A Review. <i>Annals of Biology</i> , 33(2): 319-324.	
720.	Jangra, M., Gulati, R., Sonika, and Batra, V.K. 2017. Influence of environmental factors on population builds up of <i>Polyphagotarsonemus latus</i> (Banks) infesting chilli. <i>Royal</i> , VI(I): 41-47.	
721.	Malik, A, Gulati, R., Duhan K. and Poonia, A. 2017. Comparative efficacy of different concentrations of <i>Withania somnifera</i> , <i>Pongamia pinnata</i> and <i>Azadirachta indica</i> against <i>Tyrophagus putrescentiae</i> (Schrank) (Acari: Acaridae) in wheat grains. <i>Journal of Entomology and Zoology Studies</i> , 5(4): 996-1001.	5.53
722.	Nain, J., Singh, R., Rathee, M. and Gulati, R. 2017. Biology of two spotted mite <i>Tetranychus urticae</i> Koch on okra genotypes. <i>Indian Journal of Entomology</i> , 79(2): 138-142.	5.89
723.	Nain, J., Singh, R., Rathee, M. and Gulati, R. 2017. Field incidence and effect of weather parameters on two spotted spider mite <i>Tetranychus urticae</i> Koch (Acarina: Tetranychidae) on different genotypes of okra. <i>Indian Journal of Entomology</i> : Accepted (in press)	5.89
724.	Nain, J., Singh, R., Rathee, M. and Gulati, R. 2017. Population dynamics of two spotted spider mite <i>Tetranychus urticae</i> Koch (Acarina: Tetranychidae) on okra. <i>Indian Journal of Entomology</i> , 79(1): 21-26.	5.89
725.	Rani, M., Gupta, R.K. and Yadav, J. 2017. Heavy metal induced alterations in acetylcholinesterase activity of Indian major carps. <i>Journal of Entomology and Zoological studies</i> , 5(4): 818-821.	5.53

726.	Rani, M., Gupta, R.K., Kumar, S., Yadav, J. and Rani, S. 2017. Pesticides' induced alterations in blood serum ions of Indian major carps. Accepted for publication in <i>The Bioscan</i> .	5.26
727.	Rani, M., Gupta, R.K., Yadav, J. 2017. Effects of Dimethoate, Chlorpyrifos and Malathion on Growth Parameters of Indian Major Carps (Accepted for publication in <i>Ecology, Environment and Conservation</i>	
728.	Rani, M., Gupta, R.K., Yadav, J. and Kumar, S. 2017. Assessment of organophosphates' induced acetylcholinesterase inhibition in Indian major carps. <i>Journal of Entomology and Zoological studies</i> . 5(2): 1369-1371.	5.53
729.	Rani, M., Gupta, R.K., Yadav, J. and Kumar, S. 2017. Comparative analysis of proteolytic and amylolytic activity in pesticides exposed Indian major carps. <i>The Bioscan</i> . 12(1): 195-197.	5.26
730.	Rani, R., Singh, D., Yadav, J. and Neetu. 2017. Pesticides' induced toxicity on survivability of <i>Eisenia fetida</i> . <i>The Bioscan</i> , 12(2): 761-764.	5.26
731.	Sandeep, Singh, D. and Yadav, J. 2017. Comparative impact of phorate and cartap on biomolecules of <i>E. fetida</i> . <i>International Journal of Agriculture Sciences</i> , 8(16): 4117-4119.	4.57
732.	Sandeep, Singh, D., Yadav, J. and Urmila. 2017. Assessment of nutrient status of vermicompost of leaf litter using <i>Eisenia fetida</i> . <i>Journal of Entomology and Zoology studies</i> , 5(2): 1135-1137.	5.53
733.	Shefali, Yadav, J., Gupta, R.K. and Singh, D. 2017. Earthworms as the modulators of soil properties. <i>Research Journal of Agriculture and Forestry Sciences</i> , 5(6): 20-23.	-
734.	Sonika, Gulati, R. and Jangra, M. 2017. Bioecological Studies of <i>Tetranychus urticae</i> Koch (Acari: Tetranychidae): A Review. <i>Annals of Biology</i> , 33(2): 331-337.	
735.	Sonika, Gulati, R. and Jangra, M. 2017. Incidence of <i>Tetranychus urticae</i> Koch on brinjal under field and screen house conditions. <i>Emergent Life Sciences Research</i> , 3(2): 16-22.	
736.	Yadav, J. and Gupta, R.K. 2017. Dynamics of nutrient profile during vermicomposting. <i>Ecology, Environment and Conservation</i> , 23(1): 516-521.	5.02
737.	Yadav, J. and Gupta, R.K. 2017. Effects of Cd and Zn toxicity on biomolecules of <i>Eisenia fetida</i> . <i>Pollution Research</i> , 36(2): 291-295.	4.96
738.	Yadav, J., Gupta, R.K. and Kumar D. 2017. Chances in C:N of different substrates during vermicomposting. <i>Ecology, Environment and Conservation</i> , 23(1): 368-372.	5.02
739.	Yadav, J., Gupta, R.K. and Kumar, Deepak. 2017. Heavy metals' toxicity on growth and reproduction of <i>Eisenia fetida</i> . <i>Research in Environment and Life Sciences</i> , 10(6): 565-568.	4.09
740.	Duhan K, Gulati, R., Malik, A. and Singh, S. 2018. Loss estimation in oyster mushroom compost and fruiting bodies due to infestation of <i>Tyrophagus putrescentiae</i> (Acari: Acaridae). <i>Agriculture Research Journal</i> , 55 (1) : 175-178	

Computer Section		
741.	O.P. Sheoran, Lajpat Rai, R.N. Sheokand, Balbir Singh and R.C. Hasija (2012). Significance of Change in Sectoral Development in Haryana – An Inter-tehsil Temporal Analysis. <i>Annals of Agri-Bio Research</i> 17(1):67-74.	3.97
742.	O.P. Sheoran Lajpat Rai, K.K. Saxena (2012). Structural Equation Modelling with latent variables for assessment of agricultural development of Haryana State. <i>Int. J. of Agric. and Statistical Sciences</i> 8(2):415-431.	5.13
743.	Ghanghas B S, Yadav Krishan, Hooda R S and Sheokand R N (2013) Information drawn from different communication sources by extension personnel and farmers, <i>Annals of Agri-Bio Research</i> 18(1); ISSN: 09719660; 106-109, 2013.	3.97
744.	Khatak Sunita, Dhillon S, Yadav O P, Grewal Anita and Sheokand R N (2013) Agro-morphological and RAPD Marker based characterization of Genetic diversity in different genotypes of <i>Withania Somnifera</i> L Dunal; <i>International Journal of Bio Technology and Research (IJBTR)</i> ; ISSN 2249-6858; Vol 3, Issue 4, Oct.2013, 1-16.	3.80
745.	Kumar Y, Lamba R A S, Verma S R and Ram Niwas (2013) Genetic variability for yields and its components in Barley (<i>Hordeum Vulgare</i> L.); <i>Forage Research</i> , 39(2) : pp 67-70 (2013)	4.48
746.	O.P. Sheoran, Lajpat Rai, Balbir Singh, Parminder Singh and R.C. Hasija (2013). Identification of Level of Regional Development in Haryana : An Inter-district Statistical Analysis. <i>Annals of Biology</i> 29(1): 93-99.	4.08
747.	Parvender Sheoran, Virender Sardana, Sher Singh, O.P. Sheoran and Dev Raj (2013). Optimizing sulphur application in sunflower (<i>Helianthus annuus</i>) under irrigated semi-arid tropical condition. <i>Indian Journal of Agronomy</i> 58(3): 384-390.	5.46
748.	Parvinder Sheoran, O.P. Sheoran and Virender Sardana (2013). Modeling Sunflower Productivity and Profitability in Relation to Adequate and Limited Sulphur Availability under Semi Irrigated Condition. <i>International Journal of Agronomy. Vol. (2013) Article ID 738263m 4 pages.</i>	*
749.	Pawan Kumar, Ramesh Kumar Yadava, Babita Gollen and O.P. Sheoran (2013). Gene effect for different traits of spike morphology in wheat (<i>Triticum aestivum</i>). <i>Indian Journal of Agricultural Sciences</i> 83(7):748-57.	6.17
750.	Sheokand R N and Singh Surender (2013) Web based initiatives for Climate Resilient Farming; <i>Journal of agrometeorology</i> Vol. 15 (Special Issue – I);ISSN : 0972-1665 : 217-219 (March 2013)	6.36
751.	Singh, G., Singh, S. and O.P. Sheoran (2013). Inheritance of Mungbean Yellow Mosaic Virus (MYMV) Resistance in Mungbean [<i>Vigna radiate</i> (L.) Wilczek]. <i>Legume Res.</i> , 36(2):131-137.	6.15

752.	Chaudhary Mahesh, Beniwal B S, Dalal R P S and Ram Niwas 2014. Path coefficient analysis studies in marigold (Tagets Species); Annals of Biology, ISSN : 0970-0153; 30 (2) : 375-375, 2014;	2.98
753.	Dalal V, Dhillon R S and Sheokand R N 2014. Penology and breeding System of Jatropha Curcas; Environment & Ecology 32 (2); ISSN 0970-0420 : 444—449, April—June 2014;	4.09
754.	Dhillon R S, Saharan R P, Jattan M and Sheokand R N 2014. Molecular Characterization of induced mutagenesis through gamma radiation using RAPD markers in Jatropha Curcas L, African Journal of Biotechnology, Vol 13(7), pp 806-813, 12 FEB, 2014, ISSN 1684-5315 ©2014 Academic Journals	*
755.	Dhillon R S, Rani T., Beniwal R S, Bangarwa K S, Sheokand R N and Dalal V 2015. Molecular Evaluation of Poplar Clones using RAPD Markers; Environment & Ecology 34 (2) : 526—530, April—June 2015, ISSN 0970-420;	4.09
756.	Krishan Yadav, O.P. Sheoran, Pardeep Kumar Chahal and R.S. Hudda (2015). Access, Awareness and Usage of Internet by Public Relations Professionals: Comparative Group Analysis of Haryana and Himachal Pradesh Governments. International Research Journal of Mathematics, Engineering & IT. 2(3):1-8. (ISSN: 2349-0322);	5.48
757.	Krishan Yadav, O.P. Sheoran, Pardeep Kumar Chahal and R.S. Hudda (2015). Impact of On-Line and Off-Line Public Relations Tools in Crisis Communication Management: A Comparative Study of Haryana and Himachal Pradesh Governments. GE-International Journal of Management Research. 3(3): 276-283. (ISSN: 2321-1709)	5.77
758.	Kumar Anil, Hooda Virender Singh, Vijya Rani, Mukesh S, Sheokand R N and Singh Ajit 2015. Evaluation of alternative tillage and crop establishment methods in rice (Oryza sativa) cultivation; Indian Journal of Agricultural Sciences; 85(8) : 1109-13; ISSN 0019-5022;	6.18
759.	O.P. Sheoran, Rajpat Rai and K.K. Saxena (2015). Estimation of Structural Equation Models Through K-Means Cluster Approach – An Application for Assessing Socio-Economic Development in Haryana. <i>International Research Journal of Mathematics, Engineering & IT</i> . 2(2):11-24. (ISSN: 2349-0322);	5.48
760.	Sheokand R N and Vinay 2015. A Comparative Study of Content Management Systems : Joomla, Drupal and Wordpress; International Journal of Advance Research In Science And Engineering, IJARSE, Vol. No.4, Special Issue (01), April 2015 ISSN-2319-8354(E) : pp 176-18;	2.83
761.	Vinay and Sheokand R N (2015) Study of Content Management System :Joomla; International Journal of Advance Research In Science And Engineering, IJARSE, Vol. No.4, Special Issue (01), April 2015 ISSN-2319-8354(E) : pp 184-190;	2.83

762.	Bhardwaj K K, Dhillon R S, Godara A S, Bangarwa K S, Sushil Kumari and Sheokand R N 2016. Effect of different Spacing of Poplar based Agroforestry System on Soil Chemical Properties and Nutrient Status in North-West India; Indian Journal of Ecology 43 (Special Issue-1) : 312-317; ; ISSN 0304-5250;	4.47
763.	Bhardwaj K K, Dhillon R S, Godara A S, Bangarwa K S, Sushil Kumari and Sheokand R N 2016. Nutrient Status and Soil Chemical Properties under Different Spacings of Eucalyptus Based Agroforestry Systems in Semi-arid Ecosystem of India; Indian Journal of Ecology 43 (Special Issue-II) : 756-760; Manuscript Number 2371; ISSN 0304-5250;	4.47
764.	Dhillon R S, Bhardwaj K K, Beniwal R S, Bangarwa K S, Sushil Kumari and Sheokand R N 2016. Performance of Wheat as Intercrop under different Spacing of Poplar Plantations in Semi-Arid Ecosystem of North India; ; Indian Journal of Ecology 43 (Special Issue-1) : 323-327; ISSN 0304-5250;.	4.47
765.	Malik Urmila, Sunita, Ram Niwas and Bansal Indu 2016. Relationship between self concept of working and non working children with their temperament; Global Academic Research Journal; Vol-IV, Issue-II; 58-67; ISSN: 2347-3592;.	5.56
766.	Manoj Kumar, S. Bhatnagar, B. K. Singh and O. P. Sheoran (2016). Estimation of Population Mean using Median as Auxiliary Variable. Int. J. Agricult. Stat. Sci. 12(1). 83-87.	5.13
767.	Phougat Divya , Godara Anuradha, Sethi S K and Sheokand R N 2016. Genetic diversity and association studies for grain yield and its attributing traits in Tetraploid Wheat (T. Turgidumsubsp. Durum) The Bioscan – The International Quarterly Journal of Life Sciences 11(4): 3015-3019,2016;	5.26
768.	Sheoran, S . Beniwal, B.S.; Dudi, O.P.; Sheoran, O.P. and Dalal, R.P.S. (2016). Effect of Nitrogen and Spacing on Flower Yield and Bulb Production of Tuberose cv. Prajwal. Annals of Agri-Bio Research 21(2) : 155-159.	4.08
769.	Deswal Sumit, Malik T P, Tehlan S K, Yadav Preeti and Sheokand R N 2017. Characterization and evaluation of fennel (Foeniculum vulgare L.) germplasm; Green Farming Int. Journal - International Journal of Applied Agricultural & Horticultural : Vol. 8 (3) : 753-755 ; May-June, 2017 ISSN 0974-0775;	4.38
770.	Dhillon R S, Bangarwa K S, Beniwal R S, Bhardwaj K K, Handa A K, Kumari Sushil, Chavan S B, Rizvi R H, Sirohi Chhavi and Sheokand R N 2017. Effect of spacing on crop yield and soil nutrient status under poplar based agroforestry systems in semi-arid ecosystem; Indian Journal of Agroforestry and likely to appear in next issue of Indian Journal of Agroforestry- Vol 19 (1).42-47, 2017;ISSN No. 0972-0715;	4.53
771.	Manoj Kumar, S. Bhatnagar, B. K. Singh and O. P. Sheoran (2016). Estimation of Population Mean using Median as Auxiliary Variable. Int. J. Agricult. Stat. Sci. 12(1). 83-87.	5.13

772.	Rani, M.; Sheoran, O.P.; Sheoran, R.K.; and Chander, S. (2017) Genetic Variability, Character Association and Path Analysis for Agronomic Traits in Sunflower (<i>Helianthus annuus</i> L.). <i>Annals of Agri Bio Research</i> . 22(1): 31-35.	3.97
773.	Rani, M.; Sheoran, O.P.; Sheoran, R.K.; Jambholkar, S. and Chander, S. (2017) Studies on Genetic Variability and Interrelationship of Seed Yield and Quality Traits in Germplasm Collection of Sunflower (<i>Helianthus annuus</i> L.). <i>Annals of Biology</i> 33(1): 82-85,	4.08

Books

1.	Saharan V. and Pal, A (2016). Chitosan based nano-materials in plant growth and production Pp 1-55. Springer.
2.	Tokas, J. (2014). Immunology and Molecular Diagnostics. Laxmi Publications ISBN No. 9789383828555
3.	Yadav P., Kumar S. and Jain V. eds (2016). Recent Advances in Plant Stress Physiology. Pp 1-545. Daya Publishing House, New Delhi, India
4.	Sheokand, S. (2013). Genotypic variation in pigeon pea at varying phosphorus levels. Lambert Academic Publishing. Germany. ISBN: 978-3-659-36205-7
5.	Conventional Terminology on Microbes (Sharma SK and Pathak DV) Agrotech Pub., Udaipur ISBN 81-8321-031-7.
6.	Kanchua Paalan avam Jaivik Kheti (Pathak DV, Saini RS and Singh S). Pointer publishers, Jaipur ISBN 978-81-7132-629-7.
7.	Introductory Microbiology (DV Pathak, A Tikku and S Goyal) 2015. Astral International Pvt. Ltd., New Delhi ISBN 978-93-5124-326-7.
8.	Narwal, R.P., Waldia, R.S., Singh, D., Srivastava, R.B., Dhankar, S.S., Gulati, R. and Sheoran, R.K. 2012. <i>National Seminar on Sustainable Agriculture and Food Security: Challenges in Changing Climate</i> , CCS HAU, Hisar: 56 pp.
9.	Narwal, R.P., Balyan, R.S., Singh, J., Kumar, R., Gulati, R., Nandwal, A.S., Rakha, N.K., Sheoran, R.K. and Solanki, Y.P.S. 2012. <i>Forty Years of Agricultural Research</i> , CCS HAU, Hisar: 244 pp.
10.	Narwal, R.P., Singh, D., Gulati, R., Singh, J., Solanki, Y.P.S., Balyan, R.S., Kumar, R., Dhankar, S.S., Grewal, R.B. and Singh, S. 2012. <i>Abstracts-National Seminar on Sustainable Agriculture and Food Security: Challenges in Changing Climate</i> , CCS HAU, Hisar: 372 pp.
11.	Gulati, R. and Kumari, B. 2013. <i>Pest Management and Residue Analysis in Horticultural crops: An Integrated Approach</i> . New India Publishing Agency, New Delhi. 378 pp
12.	Siwach, S.S., Nandwal, A.S., Saharan, R.P., Kumar, R., Singh, J., Gulati, R., Yadav, B. and Solanki, Y.P.S. 2014. <i>National Seminar on Reorientation of Agricultural Research to Ensure National Food Security</i> , CCSHAU, Hisar (January 6-7, 2014). 144 pp
13.	Siwach, S.S., Nandwal, A.S., Saharan, R.P., Kumar, R., Singh, J., Gulati, R., Yadav, B. and Solanki, Y.P.S. 2014. <i>Abstracts-National Seminar on Reorientation of Agricultural Research to Ensure National Food Security</i> , CCSHAU, Hisar (January 6-7, 2014). 340 pp

Book Chapters

1.	Geroth, M., Gulati, R., Asha and Kanika 2012. Effects of Radiation on Honeybees. In: <i>Proceedings of International Conference on Emerging Frontiers & New Challenges in Radiation Biology</i> (January 24-25, 2012), Govt Dungar College, Bikaner, Rajasthan: 157-164.
2.	Asha, Gulati, R., and Geroth, M. 2012. Effects of Cell Phone Radiations on Honeybees. In: <i>Proceedings of International Conference on Emerging Frontiers & New Challenges in Radiation Biology</i> (January 24-25, 2012), Govt Dungar College, Bikaner, Rajasthan: 92-98.
3.	Gill, P., Singh, D. and Gupta, R.K. 2015. Production of high quality vermicompost from different organic waste by using <i>Eisenia fetida</i> . 4 th Jammu and Kashmir Agricultural Sciences Congress held on 28-30 October in Chatha, Jammu. pp: 153
4.	Jangra, M., Gulati, R. and Batra, V.K. 2016. Management of Chilli mite <i>Polyphagotarsonemus latus</i> (Banks) by using poultry manure. In: <i>Recent Advances in Emerging Technologies</i> (eds. Singh, K. and C. Rajesh), Shaheed-a-azam Printing Press, Patiala: 361-369.
5.	Kumar, N., Raghavendre, M., Tokas, J. and Singal, H.R. 2017. Flavor addition in Dairy products: Health benefits and risks. In: <i>Nutrients in dairy and their implications for health and disease</i> . Editors: Watson, R.R., Collier, R.J. and Preddy, V.R. Academic Press Elsevier: 125-135. ISBN:978-0-12-809762-5
6.	Kumar, N., Raghavendre, M., Tokas, J. and Singal, H.R. 2017. Milk proteins: Precursors of antioxidative peptides and their health benefits. In: <i>Dairy in human health and disease across the lifespan</i> . Editors: Watson, R.R., Collier, R.J. and Preddy, V.R. Academic Press Elsevier: 313-323. ISBN:978-0-12-809762-4
7.	Raghavendre, M., Kumar, N., Tokas, J. and Singal, H.R. 2017. Sirtuins: Its role in metabolic homeostasis. In: <i>Advances in Biochemistry and Medicines</i> (open access e-book). Editor: Shrestha, R. Wilmington, D.E. Chapter-12: 1-18. ISBN:978-81-935757-1-0
8.	Kumar, N., Raghavendre, M., Tokas, J. and Singal, H.R. 2017. Multidrug resistance proteins: a family of ATP dependent transporters and their role in cancer. In: <i>Advances in Biochemistry and Medicines</i> (open access e-book). Editor: Shrestha, R. Wilmington, D.E. Chapter-11: 1-14. ISBN:978-81-935757-1-0
9.	Yashveer, S. Rani, R., Singh, V. and Tokas, J. 2017. Molecular markers and their applications. In: <i>Plant Tissue culture, genomics and computational tools for crop improvement</i> . Department of Molecular Biology, Biotechnology and Bioinformatics, CCS HAU, Hisar. July 17-Aug, 28, 2017. Pp 12-24.
10.	Yashveer, S. Rani, R., Singh, V. and Tokas, J. 2017. Linkage mapping and QTL analysis. In: <i>Plant Tissue culture, genomics and computational tools for crop improvement</i> . Department of Molecular Biology, Biotechnology and Bioinformatics, CCS HAU, Hisar. July 17-Aug, 28, 2017. Pp 33-40.
11.	Raghavendre, M., Kumar, N., Tokas, J. and Singal, H.R. 2017. Sirtuins: Its role in metabolic homeostasis. In: <i>Advances in Biochemistry and Medicines</i> (open access e-book). Editor: Shrestha, R. Wilmington, D.E. Chapter-12: 1-18. ISBN:978-81-935757-1-0
12.	Kumar, N., Raghavendre, M., Tokas, J. and Singal, H.R. 2017. Multidrug resistance proteins: a family of ATP dependent transporters and their role in cancer. In: <i>Advances in Biochemistry and Medicines</i> (open access e-book). Editor: Shrestha, R. Wilmington, D.E. Chapter-11: 1-14. ISBN:978-81-935757-1-0
13.	Angrish, R and Devi, S. (2014). Potential of salt hyper accumulation plants in salinity phyto remediation. <i>Advances in Plant Physiology</i> Vol. 15. pp. 307-323.

14.	Khichar, M L , Niwas, R., Behl R. K. and Sharma K D (2012). Influence of planting methods and nitrogen on gaseous exchange and yield of wheat under varying sowing environments. In: Crop Science and Technology for Food Security, Bioenergy and Sustainability R. K. Behl, L. Bona, J. Pauk, W. Merbach and A. Veba (eds). Agrobios International, Jodhpur, pp 321-331.
15.	Mahla R., Madan S., Munjal R. and Dua Y. 2013. Antitranspirants: Uses and effects on plant life. In: Emerging Science and technology for Food, Agriculture and Environment. Agrobios (International), ISBN: 978-93-81191-01-9. Pp 243-250.
16.	Sarita Devi. (2014). Characteristics of prokaryotic and eukaryotic organisms. In foundation course manual on ICAR-JRF (PGS) in Agriculture, Plant Sciences. Editors – Kumar, M. Bangarwa, K.S. Dhankar, S.S. & Pannu R.K. pp. 1-7.
17.	Sarita Devi. (2014). Differences between fungi, bacteria, mycoplasma and viruses. In foundation course manual on ICAR-JRF (PGS) in Agriculture, Plant Sciences. Editors – Kumar, M. Bangarwa, K.S. Dhankar, S.S. and Pannu R.K. pp. 8-15.
18.	Sarita Devi. (2014). Elements of economic botany. In foundation course manual on ICAR-JRF (PGS) in Agriculture, Plant Sciences. Editors – Kumar, M. Bangarwa, K.S. Dhankar, S.S. and Pannu R.K. pp. 145-150.
19.	Kaur ,V., R. Yadav, T.P. Singh, J. Kumari and Kumari, A.(2015). Perspectives of Drought Tolerance in Wheat: Morpho-Physiological, Biochemical and Molecular Approaches. In: Production and Processing of Food Crops for Value Addition: Technology and Genetic Options (Eds R.K. Behl, A. P. Singh, A.B. Lal and G. Haesaert), Agrobios (International) Agro House, Jodhpur, Rajasthan, India, pp 47-65. ISBN no: 978-93-81191-02-6.
20.	Sheokand, S and Kumari, A. (2015). Nitric oxide and abiotic stress induced oxidative stress. In: Nitric Oxide Action in Abiotic Stress Responses in Plants (Eds. M.Nasir Khan et al) Springer International Publishing Switzerland, pp 43-63.
21.	Summy Yadav and Kamal Dutt Sharma (2016) Molecular and Morpho-physiological Analysis of Drought Stress in Plants. In: Plant Growth. Everlon Cid Rigobelo (ed). ISBN 978-953-512772-7. InTech - open science, Croatia pp. 149-173. http://dx.doi.org/10.5772/65246
22.	Devi S, Angrish R, Madan S, Toky OP and Arya SS. (2016) Sink root system in tree. In: Plant microbe interaction: an approach to sustainable agriculture (Choudhary, DK. Varma A. and Tuteja N. Eds) Daniel Joseph, Springer, Pp. 463-474.
23.	Kaur, V., Kumari, A. and Singh, S. (2016). Plant Hormones and Stress. In Recent Advances in Plant Stress Physiology (eds: Praduman Yadav, Sunil Kumar and Veena Jain) PP 89–115. Daya Publishing House, New Delhi.
24.	Upendra Kumar, Priyanka, Sundip Kumar (2016) Genetic Improvement of Sugarcane Through Conventional and Molecular Approaches. Molecular Breeding for Sustainable Crop Improvement, 325-342
25.	Chauhan, R., Duhan, A. and Kumari, B. (2013) Pesticide Residues in Vegetables. Pest Management and Residual Analysis in Horticultural Crops: An Integrated Approach. New India Publishing Agency, New Delhi. pp: 261-287.
26.	Chawla, R & Singh Rajvir (2013). Book chapter entitled “Ageratum conyzoides: Biological control for sustainable agriculture”. in Book “Food and Nutritional security by Sustainable agriculture” Edited by Mishra B K, Kumar S & Tiwari J K. New India Publishing Agency New Delhi 195.
27.	Duhan, A., Kumari, B. and Ombir (2013). Kitnashak Rasayno Ka Surakshit Paryog. Pp:1-16.
28.	Mehta, R. K., Yadav, A. and Madan, V. K. (2013). Applications of Computer Based HPLC in Horticulture Crops. In: Pest Management and Residual Analysis in Horticultural Crops: An

	Integrated Approach (eds. Gulati, R. and Kumari, B.), New India Publishing Agency, Pitam Pura, New Delhi-110 088, pp. 333-350.
29.	Duhan, A. (2014). Volumetric and Gravimetric Analysis Including Complexometric Methods. Course Manual for ICAR-JRF (PGS) in Agriculture (Physical Sciences). Pp: 277-281.
30.	Kumari, A., Kumar, R., Rani, P., Beniwal, V., Kapoor, K.K. & Sharma, P.K. (2012) Role of Microbes in Sustainable Agriculture. In Microbes in the service of mankind: tiny bugs with huge impact (Ravinder Nagpal, Ashwani Kumar and Randhir Singh Eds), JBC Publishers New Delhi, Pp 178-200.
31.	Beniwal, V., Kumar, R., Kumari, A. & Chhokar, V. (2012) Microbial Production of Tannase. In Microbes in the service of mankind: tiny bugs with huge impact (Ravinder Nagpal, Ashwani Kumar and Randhir Singh Eds), JBC Publishers New Delhi, pp- 463-488.
32.	Malik, K. & Virmani, M. (2013). Dietary fibers and human health. Vegetables and Their Allied as Protective Food (Ed. Rana, M.K.). Scientific Publisher (India), Jodhpur, Rajasthan, pp. 37-49.
33.	Wati, L., Malik, K. & Raj, K. (2013). Fermented foods and human health Vegetables and Their Allied as Protective Food (Ed. Rana, M.K.). Scientific Publisher (India), Jodhpur, Rajasthan, pp. 425-538.
34.	Rana, M.K. & Malik, K. (2014). Pre- and probiotics. In: Herbaceous Plants as Natural Protective Food (Ed. Rana, M.K.). Scientific Publisher, Jodhpur, Rajasthan, pp. 128-147.
35.	Sharma, C., Ojha, S. & Malik, K. (2014). Medicinal benefits of probiotics. In: Herbaceous Plants as Natural Protective Food (Ed. Rana, M.K.). Scientific Publisher, Jodhpur, Rajasthan, pp. 148-165.
36.	Sangwan, S., Kumar, S. & Goyal, S. (2014). Maize utilisation in food bioprocessing: An overview. In Maize: Nutrition Dynamics and Novel Uses. Chaudhary, D.P. Kumar, S and Langyan, S. (eds.) Springer, India, Private Ltd.: 119-134.
37.	Kumar, S., Sangwan, S., Yadav, R., Langyan, S. & Singh, M. (2014). Maize Carotenoid Composition and Biofortification for Provitamin A Activity. In Maize: Nutrition Dynamics and Novel Uses. Chaudhary, D.P. Kumar, S and Langyan, S. (eds.) Springer, India, Private Ltd.: 83-91.
38.	Chaudhary, D.P., Kumar, D., Verma, R. P. S., Langyan, S. & Sangwan, S. (2014). Maize Malting: Retrospect and Prospect. In Maize: Nutrition Dynamics and Novel Uses. Chaudhary, D.P. Kumar, S and Langyan, S. (eds.) Springer, India, Private Ltd.: 135-140.
39.	Sindhu, S.S., Parmar, P. and Phour, M. (2014). Nutrient Cycling: Potassium solubilization by microorganisms and improvement of crop growth. In: Geomicrobiology and Biogeochemistry, Soil Biology. N. Parmar and A. Singh (eds.) Springer-Verlag Berlin Heidelberg: 175-198.
40.	Malik, K. & Kumar, V. (2015). Enzyme linked Immunosorbent assay (ELISA). Immunology and molecular diagnostics. University Science Press, pp-105-115.
41.	Choudhary, D., Kumari, P., Kumar, R., Kumari, A., Sihag, K. & Rashmi. (2015). Soil organic matter composition and microbial decomposition. Agriculture microbiology and microbial applications. Book edited by P.C. Trivedi. Pioneer publications. 54-75.
42.	Choudhary, D., Kumar, R., Kumari, A. & Kumari, P. (2015). Biochar: Impact on environment and microbial world. Agriculture microbiology and microbial applications. Book edited by P.C. Trivedi. Pioneer publications. 98-122.
43.	Malik, K., Mehta, S. & Anand, R.C. (2016). Biogas- an important and sustainable alternative energy. In training manual on "Integrating molecular and recombinant DNA technologies in crop breeding programme for food and nutritional security" from June, 22- July, 12, 2016

	organised by Department of Molecular Biology Biotechnology and Bioinformatics, COBS&H, CCS HAU, Hisar. pp. 126-129.
44.	Malik, K., Yashveer, S. & Nayantara (2016). New generation biofuels: Current status and future possibilities. In training manual on “Integrating molecular and recombinant DNA technologies in crop breeding programme for food and nutritional security” from June, 22- July, 12, 2016 organised by Department of Molecular Biology Biotechnology and Bioinformatics, COBS&H, CCS HAU, Hisar. pp. 130-135.
45.	Talukdar, D. Verma, D.K., Malik, K., Mohapatra, B. & Yulianto, R. (2017). Sugarcane as a potential biofuel crop. In: Sugarcane biotechnology; Challenges and prospects. Chakravarthi Mohan (ed.). Springer International Publishing AG, Switzerland, P123-137.
46.	Chaudhary D., Kumar R., Kumari A., Rashmi & Jangra R. (2017) Biosynthesis of Nanoparticles by Microorganisms and Their Significance in Sustainable Agriculture. In: Kumar V., Kumar M., Sharma S., Prasad R. (eds) Probiotics in Agroecosystem. Springer, Singapore
47.	Gulati, R. 2013. Eco-friendly management of phytophagous mites. In: Integrated Pest Management: Current Concepts and Ecological Perspectives (ed. Abrol, D.P.), Elsevier Inc., 557-588.
48.	Kumar, S., Verma, R.K., Mishra, B K, Chopra, D S and Shivhare, U.S. 2013. Role of Enzymes in Food Processing. In: Food and Nutritional Security by Sustainable Agriculture. (eds. Mishra, B.K., Kumar, S. and Tiwari, J.K.), New India Publishing Agency, New Delhi.
49.	Verma, R.K., Kumari, M. and Singh, G. 2013. Vermicompost: Role of Earthworms in Sustainable Agriculture. In: Emerging Science and Technology for Food, Agriculture and Environment (eds Kumar, Yadav and Kumar), Agrobios (International), Jodhpur, 215-229.
50.	Gulati, R. 2014. Allergy associated with household mites. In: Vegetables and Human Health (ed. Rana, M.K.). Scientific Publisher, Jodhpur, Rajasthan, Chapter 9, pp. 111-128.
51.	Ravikant, Gahlawat, S.K. and Sihag, R.C. 2014. Ameliorating effect of Turmeric (<i>Curcuma longa</i> L.) on pathology of <i>Aeromonas hydrophila</i> infection in Common carp (<i>Cyprinus carpio</i> L.). In: Proceeding of National seminar on “Next generation sciences: Vision 2020 and beyond” organized by Department of Zoology, MDU Rohtak, held on February 21, 2015, pp117-125
52.	Ravikant, Dahiya, T., Gahlawat S.K. and Sihag, R. C 2015. Restorative effect of garlic (<i>Allium sativum</i> Linn.) treatment on haematological parameter changes in <i>Cyprinus carpio</i> (L.) experimentally infected with <i>Aeromonas hydrophila</i> . In: Proceeding of National seminar on “Innovative Researches in Life Science” organized by Department of Zoology, MDU Rohtak, held on February 21, 2015 pp. 95-100
53.	Ravikant, Sabhlok, V.P. and Jindal, M. 2015. Ecologically based management of rodents pest in storage and field crops. In: Ecologically based Pest Management for Quality Food Production, CAFT, Department of Entomology, CCS Haryana Agricultural University, Hisar, 228-236.

Manuals

1.	Pal, A., Jain, V., Madan, S., Chugh, L.K., Singal. H.R., Tokkas, J., Kumari, N., Mandhanian, S., Wadhwa, N., Joshi, U.N. (2013). Basic and Applied Biochemistry: A Practical Manual. Department of Biochemistry, CCS Haryana Agricultural University, Hisar. Pp 101+V.
2.	Grewal, R. 2006 Practical Manual on Cereal Technology
3.	Siddiqui, S. and Dhawan, S.S. 2006 Manual on Postharvest Management of Fresh Fruits and Vegetables
4.	Mishra. Bhavana, Dhawan, S.S. and Singh, R. 2007 Manual on Beverage Technology

5.	Siddiqui, S., Dhawan Kamal and Dhawan, S.S. 2007 Manual of Analytical Techniques in Food Science
6.	Grewal, R. 2010 Manual On Sensory Evaluation and Quality Assurance
7.	Singh, R. and Grewal, R. 2012. Oilseeds: Processing and Technology
8.	Kumari, A. and Rekha 2016 Manual on Basic Food Microbiology
9.	Duhan, A., Singh, S. and Kumari, B. (2012). Laboratory Manual in Organic Analysis for graduating students. P- 136.
10.	Singh, S. and Duhan, A. (2012). Experiments and Calculations in Engineering Chemistry. P- 126.
11.	Singh, S., Madan, V. K. and Sushil (2012). Chemistry Lab Manual for B.Sc (Hons.) 6 Years Programme Vol-I, Department of Chemistry & Physics, CCS HAU, Hisar, pp: 1-182.
12.	Singh, S., Madan, V. K. and Sushil (2012). Chemistry Lab Manual for B.Sc (Hons.) 6 Years Programme Vol-II, Department of Chemistry & Physics, CCS HAU, Hisar, pp: 1-216.
13.	Duhan, A. (2015). Principles of Chemistry –I : A Teaching Manual for UG Students. Pp: 185.
14.	Singh, D., Gulati, R., Sabhlok, V.P. and Gupta, R.K. 2012. Manual on Human Reproduction and Population, Department of Zoology, CCSHAU, Hisar: 103 pp.
15.	Singh, D., Sabhlok, V.P., Gupta, R.K. and Gulati, R. 2012. Manual on Theories of Evolution and Applications of Biology. Department of Zoology, CCS HAU, Hisar:1-177.
16.	Singh, D., Gupta, R.K. and Ravikant. 2013. Manual on Theories of Evolution and applications of biology. Department of Zoology, CCS Haryana Agricultural University, Hisar pp.1-119.
17.	Ravikant, Gupta, R.K. and Singh, D. 2013. Manual on Practical Biology. Department of Zoology, CCS Haryana Agricultural University, Hisar: 1-79.
18.	Singh, D., Gupta, R.K. and Yadav, J. 2015. Manual on Fundamentals of Zoology. Department of Zoology, CCS Haryana Agricultural University, Hisar pp.1-179
19.	Ravikant 2016. Human Physiology: Anatomy and functions. Department of Zoology, CCS Haryana Agricultural University, Hisar: 168 pp.



Annexure COBSH VIII

Seminar/Conference/Workshops/ Trainings attended by faculty:

2012

1. Dr Veena Jain attended International Symposium on Silver Jubilee Symposium on Cotton Production Technology *vis a vis* climate change climate GPB, CCS HAU Oct 10-12, 2012
2. Dr Veena Jain attended International conference on Plant Biotechnology and food security PUSA, New Delhi, Feb 21-24, 2012 Society of Plant Biochemistry and Biotechnology
3. Dr. L.K. Chugh attended National Workshop 47th Annual Pearl Millet Group Meeting Jaipur, Mar 17-19, 2012. Rajasthan Agricultural University, Jaipur
4. Dr. Jayanti Tokas attended State Seminar Traveling Seminar on Conservation Agriculture based Resource Conservation Technologies Haryana 22 March, 2012 CCS Haryana Agricultural University
5. Dr. Sunita Sheokand and Dr. J.K. Sandooja attended the international conference on Physiological and Molecular approaches for development of climate resilient crops at ANGRAU, Hyderabad, on 8-10th December, 2012, Organized by ISPP and ANGRU.
6. Dr. V.K. Madan attended National Seminar New Perspectives in Aromatic & Medicinal Plants CCS HAU, Hisar from 8-9 February, 2012
7. Dr. Anil Duhan attended IUPAC sponsored Second International Conference on Agrochemical Protecting Crops, Health and Natural Environment (APCHNE): Role of Chemistry for Sustainable Agriculture New Delhi 15-18 Feb., 2012 IARI New Delhi
8. Dr. Anil Duhan attended XX Biennial Workshop of AICRP on Weed Control Kerala Agril Univ, Kerala 17-18 April, 2012
9. Dr. Anil Duhan attended I SWS Conference on Weed Threat in Agriculture, Biodiversity and Environment Kerala Agril Univ, Kerala 17-18 April, 2012
10. Dr. R.B.Grewal, Dr. S.Siddiqui and Dr. Rakesh Gehlot attended Seminar on 'New perspectives in Aromatic & Medicinal Plants' at CCS HAU, Hisar on Feb. 8-9, 2012. Dr. R.B.Grewal presented one paper (oral) and acted as Chairperson of session III 'Quality control, PHT, Value Addition and Marketing'
11. Dr. R.B.Grewal attended 6th International Seminar: Wheat & Wheat Products- moving towards Foods & Nutrition Security organized at New Delhi. Participated in panel discussion and bakery competition.
12. Dr. R.B.Grewal, Dr. S.Siddiqui and Dr. Rakesh Gehlot attended National Seminar on 'Sustainable Agriculture and Food Security: Challenges in changing climate' organized at CCS HAU, Hisar from March 27-28, 2012.
13. Dr. Rajendra Singh, Dr. R.B. Grewal, Dr. S. Siddiqui, Dr.Rakesh Gehlot and Dr. Rekha attended on day industrial/entrepreneurial motivational Campaign organized by DHRM in collaboration with MSME on Nov. 29, 2012 at CCS HAU, Hisar.
14. Dr. R.B.Grewal and Dr. Rakesh Gehlot attended 'Agri business camp' about SFAC scheme for entrepreneur organized by Business Planning & Development Unit, DHRM, CCS HAU, Hisar.
15. Dr. R.B.Grewal attended Silver Jubilee International Symposium 'Global cotton.....Climate Change'. Chairperson –Session XI on Post Harvest Technology and Socio economic Development on Oct. 10, 2012.
16. Dr. Vinod Kumari attended Refresher Course on Research Methodology in Social Sciences in Kurukshetra (December 4-24, 2012)
17. Dr. Vinod Kumari attended Seminar on Development & Social Transformation in India in Rohtak (February 24-25, 2012)

18. R.N. Sheokand, O.P. Sheoran and Surender Singh (2012) attended National Seminar on Sustainable Agriculture and Food Security: Challenges in Changing Climate, March 27-28, 2012. CCS HAU, Hisar.

2013

1. Dr. L.K. Chugh attended National Workshop 48th Annual Pearl Millet Group Meeting, Mar 22-24, 2013, Junagarh Agricultural University, Junagarh
2. Dr. Jayanti Tokas attended International Symposium on Frontier Discoveries and Innovations in Microbiology and its Inter-disciplinary Relevance (FDMIR-2013).
3. Dr. Jayanti Tokas attended International Conference Haryana 17-20 November, 2013 Maharishi Dayanand University, Rohtak, Haryana
4. Dr. Jayanti Tokas attended Workshop on Awareness and use of e-resources for faculty of CCS HAU Haryana on 30 August, 2013, CCS Haryana Agricultural University
5. Dr. Neeraj Kumar attended national Seminar on Research project under National Agriculture Innovation: Component 4: Basic and Strategic Research on 6-7th Sept, 2013 at NDRI, Karnal organized by ICAR.
6. Dr. Neeraj Kumar attended. National Workshop on Awareness and use of e-Resource for Faculty of CCS HAU on 8.11.2013 at Nehru Library, organized by CCS HAU Hisar.
7. Dr. Sushila Singh National Seminar on “Non-Timber Forest Produce, Medicinal, Aromatic Plants & Spices: Innovation for Livelihood Security” Raipur during Dec 23-24, 2013. IGKV, Raipur
8. Dr. Anil Duhan attended 6th Black Sea Basin Conference on Analytical Chemistry, 10-14th Sept, 2013 Karadeniz Technical University Trabzon Turkey
9. Dr. S.Siddiqui attended International Conference on “Innovation in Food Processing, Value Chain Management and Food Safety” at NIFTEM, Kundli, January 10-12, 2013.
10. Dr. Saleem Siddiqui delivered invited Lecture on ‘Minimal Processing of Fruits and Vegetables; Scope and Management’ at NIFTEM, Kundli on 24th August, 2013.
11. Dr. Rekha and Dr Anju Kumari attended Workshop on “Awareness and Use of e-Resources for faculty of CCS HAU” conducted by Nehru Library on 20th Nov, 2013
12. Dr Anju Kumari attended Induction Training Course organized by the Academy of Agricultural Research and Education Management (AAREM) from 25th Sept- 25th Oct, 2013 at CCSHAU, Hisar
13. Dr. Kamla Malik, Dr. Seema Sangwan attended 54th Annual Conference of AMI-and International Symposium on Frontier Discoveries and Innovations in Microbiology and its Interdisciplinary Relevance AMI ICAR4 days, 2013
14. Dr. Jatesh and Dr. Rashmi attended Communication Skills and Technical Writing” Refresher Course in CCSHAU, Hisar (8th May – 28th May, 2013)
15. Dr. Jatesh attended Today’s Quality, Tomorrow’s Success” Seminar in Sirsa (29th – 30th April, 2013)
16. Dr. Jatesh and Dr. Rashmi attended XVII Conference of North-West Indian Sociological Association (NWISA) on “Changing Institutions of Family and Marriage in North-West India” Conference in Jammu (November 22-23, 2013)
17. Dr. Dharambir Singh attended Refresher course on “ Communication skills and Technical writing” conducted by Academy of Agricultural Research and Education Management, Directorate of Human Resource Management at Hisar from May8-28, 2013 (Twenty one days duration)
18. Dr. Dharambir Singh attended National Symposium on Biotechnology Present status and future prospects (March 15-16,2013), DCRUST, Murthal Sonipat

19. Dr. Manoj Kumar attended Recent Advances in Statistical Modeling Techniques” under the aegis of Education Division, ICAR during May 31-June 20,2013 at IASRI New Delhi.
20. Hooda B.K. presented paper in the XII National Conference of Agricultural Research Statisticians(NCARS) held at NDRI Karnal from Nov. 27-28, 2013.
21. Hooda B.K. attended XII NCARS held at NDRI Karnal from Nov. 27-28, 2013.
22. Hemant Poonia attended an Induction Training conducted by the AAREM, Directorate of Human Resource Management, CCS HAU, Hisar from 25th Sept. 2013 to 25th Oct. 2013.
23. Hemant Poonia Attended one day workshop on “Awareness and Use of e-Resources” organized by Nehru library, CCSHAU, Hisar on 20th Nov., 2013.

2014

1. Dr. L.K. Chugh attended National Workshop 49th Annual Pearl Millet Group Meeting Jaipur. January 6-7, 2014 RARI (SKNAU), Jaipur
2. Dr. L.K. Chugh attended National Symposium on Advances in Biotechnology for crop Improvement Baru Sahib (H.P.),12th July, 2014 Eternal University, Baru Sahib (H.P.).
3. Dr. L.K. Chugh attended National Symposium on Crop Improvement for Inclusive Sustainable Development Punjab Agricultural University, Ludhiana Nov 7- 9, 2014.
4. Dr. Jayanti Tokas attended National Seminar Reorientation of Agricultural Research to Ensure National Food Security. Haryana, 6-7 January, 2014 CCS Haryana Agricultural University
5. Dr. U.K. Varshney attended the National Seminar on Reorientation of Agriculture Research to ensure National Food Security, Jan. 6-7, 2014, organized by CCS HAU Hisar.
6. Dr. V.K. Madan attended National Seminar Reorientation of Agricultural Research to Ensure National Food Security CCS HAU, Hisar from Jan. 6-7, 2014 at Directorate of Research, CCS HAU, Hisar
7. Dr. Sushila Singh attended National conference on “Recent Developments in Chemical Sciences” from Feb. 25-26, 2014.Guru Jambheshwar University of Science and Technology, Hisar,
8. Dr. Sushila Singh attended National Seminar Reorientation of Agricultural Research to Ensure National Food Security. Hisar Haryana 6-7 January, 2014 CCS Haryana Agricultural University
9. Dr. Anil Duhan attended National Seminar on Reorientation of Agricultural Research to Ensure National Food Security 6-7 Jan, 2014 Directorate of Research, CCS Haryana Agril. University Hisar
10. Dr. Anil Duhan attended Training- cum-Workshop on ‘Herbicides Residues: Review of Research 11-17 Nov 2014 DWSR, Jabalpur, MP
11. Dr. Sushil Ahlawat attended National Seminar Reorientation of agricultural research to ensure national food security January 6-7,2014 CCS HAU, Hisar
12. Dr. R.B.Grewal attended National seminar on ‘Reorientation of Agricultural Research to ensure the National Food Security’ from Jan. 6-7, 2014 and presented one Research Paper. Chairperson - Publication Committee & Session- III
13. Dr. Rekha and Dr Anju Kumari attended Workshop on “Preventive measures to eliminate the crimes of ‘Honour Killing’ on 25-26 Feb., 2014 organized by the Department of HDFS-COHS, CCS HAU, Hisar.
14. Faculty members of FST attended the National Workshop on Packaging of fresh and processed foods on 3rd February 2015 and Dr. S. Siddiqui delivered a lecture on “Packaging of Fresh Horticultural Produce” organized by IIP (Indian Institute of Packaging) at Hotel Mid Town Grand, Hisar.

15. Dr. R.B.Grewal attended XII Agriculture Science Congress ‘Sustainable Livelihood Security for Smallholder Farmers’ from Feb. 3-6, 2015 at NDRI, Karnal. Acted as Judge to evaluate posters on Feb. 5, 2015 for ‘Dairy and Food Science’
16. Dr. Rekha attended National Seminar on “Augmenting Processing and shelf-life of perishable food products”, organized by National Productivity Council on 26th September, 2014 at PAU, Ludhiana, Punjab.
17. Dr. Leela Wati, Dr. Kamla Malik Dr. Seema Sangwan attended National Seminar on Reorientation of Agricultural Research to ensure National food Security CCS HAU, Hisar 2 days 2014
18. Dr. Rakesh Kumar attended 55th annual conference of Association of Microbiologists of India on “Empowering mankind with microbial technologies” TNAU, Coimbatore 3 days 2014
19. Dr. Jatesh, Dr. Rashmi and Dr. Subhash attended Methods in Social Science Research – Recent Advances” Refresher Course in CCSHAU, Hisar (May 20 to June 9, 2014).
20. Dr. Sushila Dahiya, Dr. Jatesh, Dr. Rashmi and Dr. Subhash attended Awareness and use of e-Resources for Faculty of CCS HAU Hisar Workshop in CCSHAU, Hisar (January 8, 2014)
21. Dr. S. Vermani, Dr. Sushila Dahiya, Dr. Jatesh, Dr. Rashmi, Dr. Subhash attended National Seminar on “Re-orientation of Agricultural Research to Ensure National Food Security” Seminar organized by Hisar (6-7th March, 2014)
22. Dr. Rachna Gulati, Dr. Ravikant attended National Seminar on Reorientation of Agricultural Research to Ensure National Food Security (January 6-7, 2014), CCSHAU, Hisar
23. Hooda B.K. and H. Poonia attended and presented in XVI Annual Conference of the Society of Statistics, Computer and Applications held at Bhagat Phool Singh Mahila Vishwavidyalaya Khanpur Kalan, Sonapat Haryana from 24-26 February, 2014.
24. Hooda B.K. attended 17th Annual Conference of Society of Statistics, Computer and Applications held during 23-25 February, 2015 at Birla Institute of Management Technology, Bhubneswar, Odisha.
25. Urmil Verma attended *IAOS 2014- International Association of Official Statistics- Meeting the demands of a changing world during 8-10 October, 2014 at Da Nang, Viet Nam.*
26. Hemant Poonia attended National Seminar on "Recent Advancements in Applied Mathematics" and 18th Prof. P. D. Verma Memorial Lecture (NSRAAM & PDVML-14) held at Department of Mathematics, University of Rajasthan, Jaipur during Sept. 13-14, 2014.
27. Manoj Kumar attended and presented the research paper in the 16th Annual Conference of Society of Statistics, Computer and Application at BPSMV, Sonapat from 24-26 February, 2014.
28. Hemant Poonia attended a short training on “Advances in Statistical Methods and Data Analysis Techniques” conducted by the AAREM, Directorate of Human Resource Management, CCS HAU, Hisar in collaboration with Department of Mathematics & Statistics, CCS HAU, Hisar from June 19 – 28, 2014.

2015

1. Dr. Jayanti Tokas attended National Workshop Annual Group Meeting of All India Coordinated Sorghum Integrated Project Raichur 27-29 April, 2015 UAS, Raichur
2. Dr. Jayanti Tokas attended Second International Conference on Bio-Resource and Stress Management Hyderabad 7- 10 Jan. 2015
3. Dr. Shiwani Mandhania attended National Symposium On “Future Technologies: Indian Cotton in Next Decade” Acharya Nagarjuna University, Guntur from 17-19th December,

2015. Cotton Research Development Association Hisar in collaboration with Acharya Nagarjuna University, Guntur
4. Dr. V.K. Madan attended National Seminar Recent Advances in Research and Development in Medicinal and Aromatic Plants – A Country Scenario State Forest Research Institute, Jabalpur (M.P.) from 27-28 November, 2015 State Forest Research Institute, Jabalpur (M.P.)
 5. Dr. Anil Duhan attended 25th Asian-Pacific Weed Science Society Conference on Weed Science for Sustainable Agriculture, Environment and Biodiversity Hyderabad, 13-16 Oct, 2015 Professor Jayashankar Telangana State Agril. University Hyderabad (Telangana)
 6. Dr. Anil Duhan attended XXII Annual Review Meeting of All India Coordinated Research Project on Weed Management Hyderabad 17-18 Oct, 2015 Telangana State Agril Univ. Hyderabad (Telangana).
 7. Dr. Sushil Ahlawat attended National 4th Congress on Insect Science, Entomology for Sustainable Agriculture April 16-17, 2015 PAU, Ludhiana, Indian Society for the Advancement of Insect Science, Department of Entomology, PAU, Ludhiana and Indian Agricultural Research Institute
 8. Dr. Rekha attended Refresher course on “Computer Applications for the scientists of CCS HAU, Hisar held from May 27 to June 16, 2015 at AAREM, CCSHAU, Hisar.
 9. Dr Anju Kumari attended Refresher Course on Educational Technology by the Academy of Agricultural Research and Education Management (AAREM) from Nov,19 –Dec,09 2015 at CCS HAU, Hisar
 10. Dr. Kamla Malik attended International Conference on Pathology and Microbiology London, WASET,UK, 2 days 2015
 11. Dr. R C Yadav, Principal Scientist, MBB attended and presented a paper at 14th International Rapeseed Congress at Saskatoon Canada from July 5-9, 2015.
 12. Dr. Pushpa Kharb, Professor attended XIIth Agricultural Science Congress held at NDRI Karnal from Feb.2-6, 2015.
 13. Dr. Neelam R Yadav, Principal Scientist, MBB attended International workshop on Molecular plant breeding and Biotechnology at Michigan State University, East Lansing, USA. From 16 to 21, Aug 2015.
 14. Dr. Vinod Kumari attended National Seminar on redefining gandhian philosophy “100 years of Gandhi’s Return from South Africa” Seminar in GCW on Feb 23-24, 2015 (Hisar)
 15. Dr. Jatesh attended International Conference on “Micro-finance and Micro-entrepreneurship – A Paradigm Shift for Skill Development” International Conference in BPS, Sonapat (27-28 February, 2015.)
 16. Dr. Ravikant attended National conference on Biodiversity & sustainable development (May 23, 2015), CRM Jat College Hisar
 17. Dr. Dharambir Singh attended 4th Jammu and Kashmir Agriculture Science Congress (October 28-30, 2015), Chatha (Jammu).
 18. Dr. Ravikant attended National Mathematic Day (December 22, 2015), CCS HAU, Hisar
 19. Hooda B.K. attended and presented paper in 17th Annual Conference of Society of Statistics, Computer and Applications held during 23-25 February, 2015 at Birla Institute of Management Technology, Bhubneswar, Odisha.
 20. Vijay Kumar, and O.P. Sheoran attended and presented in 28th Conference of *Haryana Economic Association* on Oct 31 & Nov 1, 2015.
 21. O.P. Sheoran attended National Seminar on Strategic Interventions to Enhance Oilseeds Production in India organized by *Indian Society of Oilseeds Research, Hyderabad* from Feb, 19-21, 2015.

22. Hemant Poonia attended the Refresher course on “Computer Applications” conducted by Academy of Agricultural Research and Education Management, Directorate of Human Resource Management at Hisar from May 27 to June 16, 2015 (21 days duration).
23. Manoj Kumar attended Application of Computer Algorithms and Statistical Software packages in Agriculture” under the centre of Advanced Faculty Training (CAFT) in Agriculture/Statistics and computer application from December 18,2015 to January07,2016 at IASRI, New Delhi.
24. Manoj Kumar attended National Conference on “Recent trends and development in Statistics (NCRTDS) at MDU, Rohtak from 21-23 February, 2015.

2016

1. Dr Veena Jain attended National Conference on Trends in Nano-Biotechnology , MBB&B, COBSH, CCSHAU, Hisar, 29-30, Nov, 2016
2. Dr. L.K. Chugh attended 51st Annual Pearl Millet Group Meeting CCS Haryana Agricultural University, Hisar Mar 18-20, 2016
3. Dr. L.K. Chugh attended 5th National Seminar on Course Cereals Development – Challenges and Opportunities in the Country CCS Haryana Agricultural University, Hisar March 20-21, 2016
4. Dr. Jayanti Tokas attended National Workshop All India Co-ordinated Sorghum Integrated Project (AICSIP) Udaipur ,25-27 April, 2016 MPUAT, Udaipur
5. Dr. Jayanti Tokas attended International Conference on “Natural Resource Management: Ecological Perspectives” Jammu 18-20 Feb,2016 Sher-e-Kashmir University of Agril. Scs. & Tech. of Jammu
6. Dr. Jayanti Tokas attended National Seminar on Recent Approaches to Sustainable Research and Development of Aromatic and Medicinal Plants Haryana Medicinal, Aromatic & Potential Crops-Section, Department of GPB, CCS HAU, Hisar Feb. 29-Mar 1, 2016.
7. Dr. Jayanti Tokas attended 5th National Seminar on Coarse Cereals Development & Opportunities in the Country organized by Deptt of GPB, CCS HAU, Hisar. Mar 20-21, 2016
8. Dr. Shiwani Mandhania attended International conference on “Food, Water, Energy Nexus in arena of climate change Anand Agricultural University, Anand, Gujrat from 14-16th October, 2016 Anand Agricultural University, Anand, Gujrat in collaboration with National council for climate change, sustainable development and public leadership (NCCSD), Ahmedabad.
9. Dr. Ajay Pal attended National Conference Trends in Nano-Biotechnology, MBBB, COBS&H, CCS, HAU, Hisar, 29-30, Nov, 2016
10. Dr. J.K. Sandooja, Dr Renu Munjal and Dr. Sunita Sheokand attended the international conference on climate change adaptation and biodiversity: Ecological sustainability and resource management for livelihood security at Andaman and Nicobar Islands, India, on 8-10th December, 2016, organized by Andaman Science Association, Portblair.
11. Dr. Sarita Devi and Dr Anita Kumari attended the Induction Training Programme at CCS HAU Hisar on 18 April -18 May, 2016, organized by DHRM, CCS HAU- Hisar.
12. Dr. Sunita Sheokand and Dr JK Sandooja attended the National Conference on Trends in Nano biotechnology at College of Basic Sciences and Humanities, CCS Haryana Agricultural, Hisar, on 29-30th November, 2016 organized by MBB&B, CoBS & H, CCS HAU, Hisar,
13. Dr. K.D. Sharma attended the National Workshop on Role of Mycorrhiza in sustainable Agriculture and Forestry at TERI, New Delhi 22.3.2017, organized by TERI, New Delhi .
14. Dr. Renu Munjal attended the National workshop on Capacity Building on IPR Instruments at Directorate of Research, CCS HAU and DST , Panchkula, 6th May, 2016 organized by CCS HAU and DST, Panchkula.

15. Dr. K.D. Sharma attended the International Seminar on Sustainable Resource Management towards Food, Energy, Environment and Livelihood at Gottingen, Germany on 27-29 Nov. 2016, organized by IFSDAA, Germany.
16. Dr. V.K. Madan attended National Seminar Recent Approaches to Sustainable Research & Development of Aromatic and Medicinal Plants CCS HAU, Hisar from February 29 - March 1, 2016 MAP Section, CCS HAU, Hisar
17. Dr. Sushila Singh attended Workshop-course on “Greener Strategies for Organics and Nanomaterials: Sustainable Applications of Nano-Catalysts in Synthesis and Environmental Remediation” National Workshop Hisar, Haryana on Nov. 25-29, 2016. Guru Janbeshwar University of Science & Technology, Hisar
18. Dr. Sushila Singh attended National Workshop Workshop on “Method Development Tehniques in HPTLC and HPLC” Rohtak, Haryana, on Nov. 16, 2016. Maharshi Dayanand University, Rohtak, Haryana
19. Dr. Sushila Singh attended International conference on “Recent Trends in Basic & Applied Sciences” Himachal Pradesh on May 12, 2016. Maharaja Agrasen University, Baddi, Himachal Pradesh
20. Dr. Sushila Singh attended National Seminar on “Recent Approaches to Sustainable Research & Development of Aromatic and Medicinal Plants” Hisar from February 29- March 1, 2016. CCS HAU, Hisar
21. Dr. Sushila Singh attended National conference on “Organic synthesis and catalysis (NCOSC)” Hisar, Hry during Feb 17-18, 2016. Guru Jambheshwar University of Science and Technology, Hisar,
22. Dr. Anil Duhan attended National Conference on Trends in Nano-biotechnology Deptt, MBBB, CCS HAU Hisar. CCS HAU Hisar. from Nov 29-30, 2016
23. Dr. Sushil Ahlawat attended National Conference Organic Synthesis and Catalysis (NCOSC-2016) February 17-18, 2016 Guru Jambheshwar University, Hisar
24. Dr. Sushil Ahlawat attended National Workshop Greener Strategies for Organics and Nano-Catalyst in Synthesis and Environmental Remediation, 25 November-29 November 2016 GIAN and Guru Jambheshwar University, Hisar
25. Dr. R.B. Grewal, Dr. S. Siddiqui and Dr. Rakesh Gehlot participated in State Level Seminar on “Recent Approaches to Sustainable Research & Development of Aromatic and medicinal Plants” (Feb. 24-25, 2016). Acted as Chairperson, Technical Session II: Quality, PHT, Value Addition & Marketing.
26. Dr. R.B. Grewal attended 25th convention of Food Scientists & Technologists ‘Food Processing for Sustainable Agriculture & Industry’ at Guru Nanak Dev University, Amritsar, Punjab. Nov. 10-12, 2016. Presented invited lecture.
27. Dr. Anju participated in National Conference on Trends in Nanobiotechnology (NCTN-2016) organized by College of Basic Sciences and Humanities, CCS HAU, Hisar from November 29-30, 2016.
28. Dr. Kamla Malik Dr. Seema Sangwan attended 57TH AMI Conference on Microbes and Biosphere Gauhati University, Gauhati 3 days 2016
29. Dr. Leela Wati, Dr. Kamla Malik, Dr. Seema Sangwan Dr. Rakesh Kumar attended National conference on Trends in Nanobiotechnology (NCTN-2016) MBBB, COBS&H, CCS HAU, Hisar 2 days 2016
30. Dr. Rajesh Gera attended National conference on Management of Microbial Resources for Food Security under Climate Smart Agriculture Dr. Rajendra Prasad Central Agricultural University, Pusa (Samastipur), Bihar 3 days 2016

31. Mr. Anil Panwar attended short course on “Personality Development and Self-motivation for Enhanced Performance of Agricultural Scientists and Teachers” Scheduled from July 12-21, 2016 at NAARM, Hyderabad
32. Dr. Sushila Dahiya, Dr. Jatish, Dr. Rashmi and Dr. Subhash attended “Problems of Indian Agriculture Causes and Remedial Measures” National Seminar in Delhi (13-14 Feb., 2016).
33. Dr. Subhash attended “Refresher Course on Communication Skills and Technical Writing” Refresher Course in CCSHAU, Hisar (November 25 to December 15, 2016).
34. Dr. Rachna Gulati, Dr. Ravikant attended Science Conclave (February 16-17, 2016), COBSH, CCSHAU, Hisar
35. Dr. Ravikant attended National symposium on transgenic crops in India: progress and challenges (March 16-17, 2016)
36. Dr. Dharambir Singh attended Refresher Course on Teaching and research methodology (ID) (22.08.2016 to 10.09.2016), HRDC HP, University Shimla
37. Dr. Rachna Gulati, Dr. Dharambir Singh, Dr. Ravikant attended National Conference on Trends in Nanobiotechnology(NCTN-2016), CCS HAU, Hisar (November 29-30, 2016)
38. Dr. Ravikant attended Refresher course on computer applications from July 07-27, 2016 organized by Academy of Agricultural Research and Education Management at Chaudhary Charan Singh Haryana Agricultural University, Hisar, Haryana.
39. **Urmil Verma** attended 2nd International conference on innovative trends in Engineering, Science and Management (ICITESM-16) at YMCA, Jai Singh Road, Delhi, India on 19th November 2016.
40. **Urmil Verma** attended 3rd International Conference on Recent Development in Engineering, Science, Management and Humanities(ICRESMH-16) at Indian Federation of United Nation Association, IFUNA, Qutub Institutional Area, Delhi, India on 11th December, 2016.
41. Hemant Poonia attended International conference on “Recent Advances in Mathematics and Their Applications” held at Department of Mathematics, University of Rajasthan, Jaipur during July 10-12, 2016.

2017

1. Dr. L.K. Chugh attended National Workshop 52nd Annual Pearl Millet Group Ludhiana. April 28-30, 2017
2. Dr. L.K. Chugh attended National Workshop Penal Discussion on Thrust Areas of Research in Pearl Millet “ Enhancing the Demand of Pearl Millet” for increasing the utilization of pearl millet Ludhiana, April 28-30, 2017
3. Dr. L.K. Chugh attended National Seminar Brain Storming Session on Developing Strategies to Enhance Demand of Pearl millet as Health Food-Current Status and Way Forward. New Delhi. July 26, 2017, ICAR-AICRP on Pearl millet, Jodhpur and ICAR-IARI, New Delhi.
4. Dr. Jayanti Tokas attended Workshop Capacity Building on IPR Instruments Haryana May 6, 2017 D.R.,CCSHAU, Hisar and Department of Science and Technology,
5. Dr. Jayanti Tokas attended Workshop on Technical and Scientific writing skills 18-19 April, 2017 Nehru Library, CCSHAU, Hisar Workshop on Personality Development (WPD 2017 Harayana March, 1-2, 2017, Deptt of HDFFS, IC.COHS, CCSHAU, Hisar
6. Dr. Jayanti Tokas National Symposium on Innovations in Horticulture: Production to Consumption Uttarakhand ,14-15, September, 2017, G.B. Pant University of Agriculture & Technology, Pantnagar Uttarakhand
7. Dr. Jayanti Tokas attended Workshop on Personality Development (WPD 2017 Harayana March, 1-2,2017) Department of HDFFS, IC.COHS,

8. Dr. Shiwani Mandhania attended National symposium on “Diagnosis and Management of Plant Diseases: Integrated Approaches and Recent Trends ICAR Research Complex for NEH Region, Umiam, Meghalaya from 9-11th January, 2017. Indian Phytopathological Society in collaboration with ICAR-RC-NEH region.
9. Dr. Renu Munjal attended International Workshop on IPPN Affordable Plant Phenotyping at Julich, Germany from May 15-17, 2017.
10. Dr. J.K. Sandooja attended the national conference on Swarna Jyanti National conference on Biodiversity and Sustainable Utilization of Plant Resources Department of Botany, KUK, on 17-18th February, 2017, organized by KUK.
11. Dr. J.K. Sandooja attended the international conference on Emerging Areas of Environmental Science and Engineering at Department of Environmental Science and Engineering, GJU Hisar, 16-18 February, 2017, organized by GJU- Hisar
12. Dr. K.D. Sharma attended the International conference on Triticale Biology, Breeding and Production at Radzików, Poland on July 2-5, 2017 organized by EUCARPIA.
13. Dr. K.D. Sharma attended the International Seminar on Sustainable Intensification of Agriculture Through Resource Management and Conservation at Gottingen, Germany on July 7-9, 2017, organized by IFSDAA, Germany.
14. Dr. Renu Munjal attended the Winter School on Harnessing NGS Data for Genetic Enhancement in Crops at IIW&BR, Karnal on October 3-12, 2017, organized by IIW&BR, Karnal.
15. Dr. Sushila Singh attended ICAR Symposium National Symposium on Innovations in Horticulture: Production to Consumption Uttarakhand, 14-15, September, 2017 G.B. Pant University of Agriculture & Technology, Pantnagar Uttarakhand
16. Dr. Sushila Singh attended ICAR Workshop Workshop on Personality Development (WPD 2017) Harayana, March, 1-2, 2017 Department of HDFS, IC.COHS, CCS HAU, Hisar
17. Dr. Sushila Singh attended National Symposium Professor Chand Paul National Symposium on Current Advances in Chemical Sciences Chandigarh on Feb. 24-25, 2017. Department of Chemistry & Centre of Advanced Studies in Chemistry, Punjab University, Chandigarh
18. Dr. Sushila Singh attended International conference on “Emerging Areas of Environmental Science and Engineering” International Conference Hisar, Haryana on Feb. 16-18, 2017. Guru Janbeshwar University of Science & Technology, Hisar.
19. Dr. Sushila Singh attended NAIP Workshop Awareness and use of e-resources for faculty of CCS HAU Haryana Jan. 18, 2017 CCS Haryana Agricultural University
20. Dr. Anil Duhan attended National Workshop XXIII Annual Review Workshop of AICRP-WC MPUA&T, Udaipur Feb. 27- 28, 2017,
21. Dr. Anil Duhan attended Biennial Conference of the Indian Society of Weed Science on “Doubling Farmers’ Income by 2022: The Role of Weed Science” MPUA&T, Udaipur, 1-3 Mar 2017,
22. Dr. Anil Duhan attended National Conference on Analytical Techniques and Their Applications (NCATA 2017) GJUS&T Hisar March 16-17, 2017,
23. Dr. Rakesh Gehlot, Dr. Rekha and Dr. Anju participated International Conference on Emerging Areas of Environmental Science and Engineering (EAESE-2017) organized by Departmental of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar from February 16-18, 2017
24. Dr. R.B.Grewal participated in Brain Storming Workshop on Potential Collaboration in the area of Food science & Technology of relevance to Defence Forces/ DRDO on January 27, 2017 at Defence Research laboratory, Siddarthnagar, Mysore. Made presentation “Collaboration in the Area of Food Science & Technology”

25. Dr. R.B.Grewal attended National Conference on “Food Processing India- 2017” organized by Department of Food Technology, GJU, Hisar. March 3-4, 2017. Presented one paper (oral) and Chairperson of session & Judge for evaluation of oral presentation by young faculty
26. Dr. R.B.Grewal attended workshop “Formulation of policy for Agri.-Business and Food Processing for Haryana” organized by Haryana Kisan Ayog on June 1, 2017 at Panchkula.
27. Dr. R.B.Grewal participated in Brain Storming Workshop on Potential Collaboration in the area of Food science & Technology of relevance to Defence Forces/ DRDO on January 27, 2017 at Defence Research laboratory, Siddarthnagar, Mysore. Made presentation “Collaboration in the Area of Food Science & Technology”
28. Dr. R.B. Grewal attended National Conference on “Food Processing India- 2017” organized by Department of Food Technology, GJU, Hisar. March 3-4, 2017. Presented one paper (oral) Chairperson of session & Judge for evaluation of oral presentation by young faculty
29. Dr. R.B.Grewal attended workshop “Formulation of policy for Agri.-Business and Food Processing for Haryana” organized by Haryana Kisan Ayog on June 1, 2017 at Panchkula.
30. Dr. Rekha and Dr Anju Kumari attended Workshop on “ Scientific and Technical writing” on April 18-19, 2017.
31. Dr. Rekha and Dr Anju Kumari attended Workshop on “Capacity building on IPR Instruments” on May 6, 2017.
32. Dr. S. Siddiqui attended 4 days Higher Education Leadership Programme at Central University of Haryana, Mahendergarh from December 5-8, 2017.
33. Dr. Kamla Malik attended 51st ISAE convention and National Symposium on Agricultural Engineering for Sustainable and Climate Smart Agriculture COA&E, CCS HAU, Hisar 3 days 2017
34. Dr. Kamla Malik, Dr. Seema Sangwan Dr. Rakesh Kumar attended Workshop on Personality Development IC College of Home Science, CCS HAU, Hisar 2 days 2017
35. Dr. Rakesh Kumar , Dr. Kamla Malik attended Workshop Scientific/Technical writing CCS HAU, Hisar 2 days 2017
36. Dr. Shikha Yashveer attended “Workshop on Personality Development” (WPD 2017) held on March, 1-2, 2017. Organized by Department of HDFS, IC.COHS, CCSHAU, Hisar
37. Dr. Shikha Yashveer and Mr. Anil Panwar attended “Workshop on Scientific & Technical writing” held on April, 18-19, 2017. Organized by , Nehru Library, CCSHAU, Hisar
38. Dr. Shikha Yashveer attended “First one day Horticulture Workshop” organized by the Maharana Pratap University of Horticultural Sciences on May 18, 2017 at Central Soil Salinity Research Institute , Karnal
39. Ms. Neeru Redhu attended training on “Computational Approaches for Next Generation Sequencing (NGS) Data Analysis in Agriculture” organized by CART ICAR- Indian Agricultural Statistics Research Institute, New Delhi from 8th Feb to 28th Feb, 2017.
40. Dr. Jatesh and Dr. Rashmi attended “Awareness of e-Resources available in Nehru Library” Workshop in CCSHAU, Hisar (January 18, 2017)
41. Dr. Vinod and Dr. Satnam attended Personality Development Workshop in CCSHAU, Hisar (1-2 March, 2017)
42. Dr. Subhash attended 2nd International Women’s Rights Assembly Conference held at New Delhi on March 8, 2017.
43. Dr. Subhash attended 29th National Conference of Haryana Economic Association on “National Conference on Doubling the Farmers’ Income by 2022 Conference in CCSHAU, Hisar (March 9 -10, 2017)
44. Dr. Jatesh and Dr. Rashmi attended “Scientific/technical writing” Workshop in CCSHAU, Hisar (18-19 April, 2017)

45. Dr. Rashmi attended 19th International Conference on Sociology and Criminology Conference in France (June 25-26, 2017)
46. Dr. Jatesh and Dr. Rashmi attended International Conference & Expo on Agriculture & Veterinary Sciences : Research and Technology in Hyderabad (October 23-25, 2017)
47. Dr. Dharambir Singh attended training on Fresh water pearl farming for entrepreneurship development (13-17 November,2017), CIFA Kausalyaganga,Bhubaneshwar(Odisha).
48. Dr. Ravikant attended CAFT Course “Microbial Genomics and Proteomics in Diagnosis and Control of Diseases of Veterinary Importance” from 07-27, Nov 2017 at LUVAS, Hisar.
49. Dr. Rachna Gulati and Dr. Ravikant as Member, Organising Committee attended COBSH Annual Function and National Science Day (February 27-28, 2017), COBSH, CCSHAU, Hisar
50. Dr. Dharambir Singh attended “ Awareness of e-resources available in Nehru Library” on January 18,2017
51. Dr. Ravikant attended Bharat Ratan Dr Bhimrao Ambedkar Remembrance Day (January 20-21, 2017).
52. Dr. Rachna Gulati as Member, Organising Committee attended National Seminar on awareness, motivation and technology transfer in beekeeping (July 7-8, 2017), CCSHAU, Hisar.
53. Urmil Verma presented talk on Uncertainty in the World of Mathematics on Wednesday, 19 July, 2017 at Universitat Heidelberg, Germany.
54. Urmil Verma presented talk on Women in Probability- 2017 on July 21-22, 2017 at Technical University, Munich, Germany.
55. Manju S. Tonk , Hemant Poonia, Jitender Kumar Bhatia and Rekha attended 29th national conference of Haryana Economic Association organized by Dept. of Agricultural Economics, CCS HAU, Hisar during March 9-10, 2017.
56. Manju S. Tonk and Hemant Poonia attended National Conference of Haryana Economic Association organized by Department of Agricultural Economics CCS HAU, Hisar.
57. Dr. Pushpa Kharb Dr. Shikha Yashveer and Manju S. Tonk, Dr. Vinod Dr. Rachna Gulati, Hemant Poonia Ms. Neeru Redhu, Dr. Ravikant and Dr. Rashmi attended One day workshop on “capacity building on IPR Instruments” on 6-5-17 organized by the Directorate of Research, CCS HAU, Hisar at DHRM, CCS HAU, Hisar.

2018

1. Dr. Sarita Devi and Dr Anita Kumari attended the International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry on 21-23 February, 2018 organised by GJU- Hisar.
2. Dr. Renu Munjal attended Global Wheat Programme at CIMMYT, Obregon, Mexico from 18-23 March, 2018.
3. Dr. Vinod Kumari and Dr. Jatesh attended HSB 10th Annual National Conference on Business and Management Conference in GJUS&T, Hisar (February 8-9, 2018)
4. Dr. Ravikant attended and presented poster 30th All India Congress of Zoology and National Seminar on ‘Advances in Zoology for Sustainable Development’ (February 15 to 17, 2018), Kurukshetra University, Kurukshetra

Annexure BIOCHEM-I**LIST OF STUDENTS (M.Sc. AND Ph.D.) ON ROLL PRESENTLY**

Sr. No.	Name	AdmissionNo.
1	Vikram Singh	2015BS9M
2	Seema	2015BS10M
3	Sheenu	2016BS4M
4	Taranjeet Kaur	2016BS5M
5	Nagesh C.R.	2016BS3M
6	Revanasiddappa	2017BS7M
7	Naveen	2017BS9M
8	Sunil	2017BS11M
9	Sonia Jhandai	2014BS7D
10	Parveen Kumar	2014BS8D
11	Surina Bhadu	2015BS6D
12	Himani	2015BS4D
13	Narender Mohan	2017BS1D
14	Pernika Gupta	2017BS2D

Annexure BIOCHEM- II**LIST OF STUDENTS (M.SC. AND PH.D.) ADMITTED DURING THE LAST FIVE YEARS**

Sr. No.	Name of student	Admission No.
2017-18		
1	Revanasiddappa	2017BS7M
2	Shreya Vats	2017BS8M
3	Naveen	2017BS9M
4	Ankita	2017BS10M
5	Sunil	2017BS11M
6	Narender Mohan	2017BS1D
7	Pernika Gupta	2017BS2D
2016-17		
8	Nagesh C.R.	2016BS3M
9	Sheenu	2016BS4M
10	Taranjeet Kaur	2016BS5M
2015-16		
11	Neha Yadav	2015BS7M
12	Narender Mohan	2015BS8M
13	Vikram Singh	2015BS9M
14	Seema	2015BS10M
15	Himani	2015BS04D
16	Anamika	2015BS05D
17	Surina Bhadu	2015BS06D
2014-15		

18	Kumari Arti	2014BS4M
19	Ankita Goyat	2014BS5M
20	Priyanka	2014BS6M
21	Sonam	2014BS7M
22	Rakesh Kumar	2014BS8M
23	Sonia Jhandai	2014BS7D
24	Praveen Kumar	2014BS8D
2013-14		
25	Pooja Yadav	2013BS4M
26	Deepak Yadav	2013BS5M
27	Sweety	2013BS6D
28	Naresh Kumar	2013BS7D
29	Poonam	2013BS8D
30	Midathala Raghavendra	2013BS9D
2012-13		
31	Anamika	2012BS3M
32	Himani	2012BS4M
33	Anju Rani	2012BS5M
34	Monika Rani	2012BS6M
35	Anjali Dahiya	2012BS4D
36	Shilpa Chawla	2012BS5D
37	Ritu Saini	2012BS6D
38	Babita Rani	2012BS7D
39	Sonali	2012BS8D



Annexure BIOCHEM- III A

LIST OF STUDENTS PUBLICATIONS

Sr. No.	Title of the paper/book	NAAS rating
M.Sc.		
1	Kumari, N., Jain, V. and Talwar, G. (2012). Effect of salt stress on antioxidative enzymes in the leaves of salt tolerant and salt sensitive genotypes of cotton. <i>Journal of Cotton Research and Development</i> 26(2): 181-185.	3.41
2	Rani, B., Jain, V., Chhabra, M.L., Dhawan, K., Kumari, N. and Yadav, P. (2012). Oxidative stress and antioxidative system in <i>Brassica juncea</i> (L.) under high temperature stress. <i>Annals of Biology</i> 28(2):110-115.	2.98
3	Chawla, S., Jain, S. and Jain, V. (2013). Salinity induced oxidative stress and antioxidant system in salt-tolerant and salt-sensitive cultivars of rice (<i>Oryza sativa</i> L.). <i>Journal of Plant Biochemistry and Biotechnology</i> 22: 27-34	7.35
4	Goyal, P. and Chugh, L.K. (2013). Partial purification and characterization of 331icolour331331 from pearl millet [<i>Pennisetum glaucum</i> (L.) R. Br.] grains. <i>Journal of Food Biochemistry</i> Pp 1-9. Doi:10.1111/ jfbc. 12033.	7.15
5	Kumari, N., Jain, V. and Talwar, G. (2013). Salinity induced changes in ascorbic acid, hydrogen peroxide and lipid peroxidation in leaves of salt tolerant and salt-susceptible cultivars of cotton (<i>Gossypium hirsutum</i> L.) <i>Research in Plant Biology</i> 3: 06-11	NA
6	Anamika, Tokas, J., Anju, Singal, H.R. and Sangwan, R.S. (2014). Biochemical analysis of cotton (<i>G. hirsutum</i> L.) genotypes resistant and susceptible to sucking pest attack. <i>International Journal of Science Engineering and Computer Technology</i> 4(1-2):64-67.	NA
7	Anamika, Tokas, J., Rani, A., Yashveer, S and Singal, H.R. (2014). Effect of sucking pests infestation on phosphorous content in cotton (<i>G. hirsutum</i> L.) plant. <i>Journal of Global Research and Analysis</i> . 3(2): 232-235.	NA
8	Chawla, S., Madan, S., Jain, V. and Munjal, R. (2014). Variation of zinc content, yield and yield components in bread and durum Wheat under zinc deficiency. <i>Annals of Biology</i> 30: 321-324	4.08
9	Devi, R., Jain, V., Chawla, S. and Saxena, A. K. (2014). Acid 331icolour331331i and α -galactosidase activities in Pigeon Pea [<i>Cajanus cajan</i> (L.) Millsp.] along with total Protein profile. <i>Annals of Biology</i> 30: 604-607	4.08
10	Gupta, P., Singh, R., Malhotra, S., Boora, K.S. and Singal, H.R. (2014). Cowpea [<i>Vigna unguiculata</i> (L.) Walp.] seed proteins: Heterogeneity in total proteins and protein fractions. <i>Legume Research</i> 37(1):62-67.	6.15
11	Anamika, Tokas, J., Anju, Kumari, N. and Singal, H.R. (2015). Changes in potassium content of cotton (<i>Gossypium hirusutum</i> L.) leaves infested with sucking pests. <i>Annals of Biology</i> 31(2):187-189.	4.08
12	Kumari, N., Jain, V., Devi, R. and Rani, B. (2015). Effect of increasing salinity levels on different growth parameters in American cotton genotypes. <i>Journal of Cotton Research and Development</i> 29(1): 81-83.	3.41

13	Rani, B., Kumari, N., Jain, V., Dhawan, K. and Avtar, R. (2015). Heat stress induced changes in protein profile of Indian mustard (<i>Brassica juncea</i> L.). Journal of Oilseed Brassica 6 (2): 302-305.	3.43
14	Anamika, Tokas, J., Rani, A, Malik, K. And Singal, H.R. (2016). Variation of structural carbohydrates in cotton genotypes resistant and susceptible to sucking pests. Annals of Biology 32(2): 228-232.	4.08
15	Rani, B., Kumari, N, Pooja., Jain, V., Dhawan, K., Monika., Avtar, R., Kumar, A. and Sheoran, P.(2016). Antioxidative System as Influenced by High Temperature stress in <i>Brassica juncea</i> (L.) Czern & Coss. Current Trends in Biotechnology and Pharmacy 10(2): 118-125.	4.42
16	Devi R., Chaudhary C., Jain V. and Saxena A.K. (2018). Effect of soaking on anti-nutritional factors in the sun-dried seeds of hybrid pigeon pea to enhance their nutrients bioavailability. Journal of Pharmacognosy and Phytochemistry 2018; 7(2): 675-680	5.21
Ph. D.		
17	Bhushan, B., Pal, A. and Jain, V. (2012). Isolation, screening and optimized production of extracellular xylanase under submerged condition from <i>Aspergillus flavus</i> MTCC 9390. Enzyme Engineering 1: 103-108	NA
18	Yadav, P., Kumar, S., Jain, V. and Malhotra, S. P. (2012). Cell wall metabolism in relation to shelf life of ber (<i>Ziziphus mauritiana</i> Lamk.) fruits during ripening. Food Technology and Biotechnology 50: 467-472	7.18
19	Kumari, N., Jain, V. and Malhotra, S. P. (2013). Purification and characterization of extracellular acidophilic alpha- Amylase from <i>Bacillus Cereus</i> MTCC 10205 isolated from the Soil. African Journal of Microbial Research 7(48): 5440-5448	7.0
20	Kumar, S., Yadav, P., Jain, V. and Malhotra, S. P. (2014). Isozymes of antioxidative enzymes during ripening and storage of ber (<i>Ziziphus mauritiana</i> Lamk.). Journal of Food Science and Technology 51:329-334	
21	Kumari, N., Pal, A. and Jain, V. (2014). Immobilization of alpha-amylase purified from <i>Bacillus cereus</i> MTCC 10205 by entrapment and adsorption on various support systems. Applied Biological Research 16: 21-30	
22	Yadav, P., Yadav, T., Kumar, S., Rani, B., Kumar, S., Jain V. and Malhotra S. P, (2014). Partial purification and characterization of ascorbate 332icolour332332 from ripening Ber (<i>Ziziphus mauritiana</i> L) Fruits. African Journal of Biotechnology 13(32): 3323-3331	NA
23	Bhushan, B., Pa,l A., Kumar, S. and Jain V.(2015). Biochemical characterization and kinetic comparison of encapsulated haze removing acidophilic xylanase with partially purified free xylanase isolated from <i>Aspergillus flavus</i> MTCC 9390. Journal of Food Science and Technology 52(1):191–200	7.24
24	Bhushan, B., Pal, A. and Jain, V. (2015). Improved enzyme catalytic characteristics upon glutaraldehyde cross-linking of alginate entrapped xylanase isolated from <i>Aspergillus flavus</i> MTCC 9390. Enzyme research 1-9.	NA
25	Goyal P., Chugh L.K. and Bajaj, S. (2015). Improving shelf life of pearl millet flour through conventional plant breeding approach. In Proc. Indian international Science Festival-Young Scientist' Meet, Department of Science	NA

	and Technology, Government of India, 4-8 December, 2015. Pp Innov61-1 to Innov61-5.	
26	Berwal, M.K., Chugh, L.K., Goyal, P., Kumar, R. and Dev Vart. (2017). Protein, micronutrient, antioxidant potential and phytate content of pearl millet hybrids and composites adopted for cultivation by farmers of Haryana, India. International Journal of Current Microbiology and Applied Sciences 6(3): 376-386.	5.38
27	Kumari, N., Jain V., Malik, K. and Sushil (2017). Production and optimization of amylase from bacillus cereus using submerged fermentation. International Journal of Current Microbiology and Applied Science 6(6): 263-271.	5.38
28	Berwal, M.K., Verma, K., Goyal, P., Chugh, L.K. (2017). Impact of 333icolour333333ions on phytate content in pearl millet grains. Journal of Nutrition and Food Science 2(1): 1-3.	NA
29	Goyal, P. and Chugh, L.K. (2017). Shelf life determinants and enzyme activities of pearl millet – A comparison of changes in stored flour of hybrids, CMS lines, inbreds and composites. Journal of Food Science and Technology (Published Online) DOI 10.1007/s13197-017-2752-z.	7.50
30	Goyal, P., Berwal, M.K., Praduman and Chugh, L.K. (2017). Peroxidase 333icolour, its isozymes and deterioration of pearl millet [<i>Pennisetum glaucum</i> (L.) R. BR.] flour during storage. Journal of Agriculture and Ecology 3: 41-51	NA
31	Goyal, P., Chugh, L.K. and Berwal, M.K. (2017). Storage effects on flour quality of commonly consumed cereals. Journal of Applied and Natural Science 9 (1): 551 – 555.	4.84
32	Sharma, B. and Chugh, L.K. (2017). Two isoforms of lipoxygenase from mature grains of pearl millet [<i>Pennisetum glaucum</i> (L.) R. Br.]: Purification and physicochemico-kinetic characterization. Journal of Food Science and Technology (published online) DOI 10.1007/s13197-017-2589-5.	7.50
33	Sheoran, R.S., Satpal, Tokas, J., Duhan, B.S. and Jindal, Y.S. (2017). Potential fodder productivity, quality and relative economics of multi-cut oat genotypes under different levels of nitrogen. Forage Research 43 (3) : 227-230	4.48
34	Bhadu, S., Agrawal, V., Himani and Tokas, J. (2018). <i>In silico</i> Analysis for Functional prediction of <i>Salmonella typhi</i> Gene in Human Infection through Threading Model. International Journal of Current Microbiology and Applied Sciences. 7(2): 3426-3431	5.38
35	Kumar M., Kumar R., Jain S. and Jain V. (2018). Differential 333icolour333 of antioxidant system in response to salinity induced oxidative stress in salt-tolerant and salt-sensitive cultivars of <i>Brassica juncea</i> L. Bio catalysis and Agricultural Biotechnology 13: 12-19	
36	Verma, E., Tokas, J. and Singal, H.R. (2018). Effect of drought on physiological parameters in chickpea cultivars and their crosses. International Journal of Chemical Studies. 6(2): 830-833	5.31
Book Chapters		
37	Kumar, N., Raghavendre, M., Tokas, J. and Singal, H.R. 2017. Flavor addition in Dairy products: Health benefits and risks. In: Nutrients in dairy and their implications for health and disease. Editors: Watson, R.R., Collier, R.J. and Preddy, V.R. Academic Press Elsevier: 125-135. ISBN:978-0-12-809762-5	

38	Kumar, N., Raghavendre, M., Tokas, J. and Singal, H.R. 2017. Milk proteins: Precursors of antioxidative peptides and their health benefits. In: Dairy in human health and disease across the lifespan. Editors: Watson, R.R., Collier, R.J. and Preddy, V.R. Academic Press Elsevier: 313-323. ISBN:978-0-12-809762-4	
39	Raghavendre, M., Kumar, N., Tokas, J. and Singal, H.R. 2017. Sirtuins: Its role in metabolic homeostasis. In: Advances in Biochemistry and Medicines (open access e-book). Editor: Shrestha, R. Wilmington, D.E. Chapter-12: 1-18. ISBN:978-81-935757-1-0	
40	Kumar, N., Raghavendre, M., Tokas, J. and Singal, H.R. 2017. Multidrug resistance proteins: a family of ATP dependent transporters and their role in cancer. In: Advances in Biochemistry and Medicines (open access e-book). Editor: Shrestha, R. Wilmington, D.E. Chapter-11: 1-14. ISBN:978-81-935757-1-0	

Students' Participation in seminars/ symposia/ conferences etc.

M.Sc. Students

Kumari Nisha, Jain Veena and Talwar Gurmeet (2012). Effect Of NaCl Stress On Osmotic Adjustment, Growth Attributes And Proline Content In Cotton Cultivars Differing In Salt-Tolerance. Paper presented in Silver Jubilee International Symposium on Cotton production technology vis a vis climate change held at CCS HAU, from Oct 10-12, 2012-07-12. Awarded best poster presentation.

Kumari Nisha, Jain Veena and Talwar Gurmeet (2012) Effect of sodium chloride on osmotic adjustment, growth attributes and praline contents in cotton cultivars differing in salt tolerance. Paper presented in silver jubilee international symposium 'Global production technologies vis-à-vis climate change. Held at CCS HAU, Hisar from Oct 10-12, 2012, pp36-37.

Rani Babita, Jain Veena, Dhawan Kamal and Madan Shashi (2014). Effect of high temperature stress on antioxidative system in *brassica juncea*. Genotypes differing in their temperature tolerance. Paper presented In: 'Reorientation of Agricultural Research to ensure National Food Security' held at CCS HAU, from Jan 6-7, 2014. Abstract No CI 180 P 40

Chawla Shilpa, Madan Shashi, Jain Veena and Munjal Renu (2014). Quality attributes in bread and durum wheat under zinc deficiency. Paper presented In: 'Reorientation of Agricultural Research to ensure National Food Security' held at CCS HAU, from Jan 6-7, 2014. Abstract No CI 128, P 15-16.

Anamika, Rani, A., Tokas, J. and Singal, H.R. Role of biochemical components in resistance of cotton sucking pests. National seminar on Reorientation of Agricultural Research to Ensure National Food Security. January 6-7, 2014. Organized by Directorate of Research, CCS Haryana Agricultural University, Hisar, Haryana. P 208.

Dalal Sudha, Grewal Savita, Jain Sunita and Jain Veena (2014). Effect of drought stress on plant water relations and changes in morphobiochemical parameters of rice genotypes grown in pots. Paper presented In: 'Reorientation of Agricultural Research to ensure National Food Security' held at CCS HAU, from Jan 6-7, 2014. Abstract No CI 250 P 74-75.

Karamvir, Chugh, L.K. and Kumar, R. (2014). Biochemical characterization of grey and light coloured pearl millet [*Pennisetum glaucum* (L.) R. Br.] genotypes. In Proc. National Symposium on

Crop Improvement for Inclusive Sustainable Development, 7- 9 November, 2014, *Punjab Agricultural University*, Ludhiana. Pp 763-764

Himani, Madan, S. and Sethi, S.K. 2014. Variability in β -carotene content of durum wheat (*Triticum durum* L.) genotypes. Participated and presented paper in the National Seminar on "Reorientation of Agricultural Research to ensure National Food Security" held at CCS HAU, Hisar from Jan. 6-7, 2014, abstract pp. 64.

Himani, Raghavendra M, Madan Shashi, Munjal Renu, Sethi S.K. and Rao Sudhakara. 2015. Assessment of biomolecules with regard to quality traits in durum wheat (*Triticum durum* L.) genotypes. Participated and presented paper in the "National Conference On Plant and Animal Molecular Biology" held at MODY University, Lakshmanagarh, Rajasthan from Sept. 25-26, 2015, abstract pp.12.

Jangra, Priyanka Choudhary Poonam, Chawla Shilpa, Rana, Reena, Pal Ajay and Jain Veena (2016) Chemical treatments improve the keeping quality of fruits: An alternative approach to genetic engineering In: National Symposium on '*Transgenic Crops in India: Progress and Challenges*' held at CCS HAU, Hisar from March 16-17, 2016, PP39

Yadav, P., Tokas, J., Malik, K. and Singal, H.R. (NCB- 2016). Effect of aloe vera (*Aegle marmelos* L.) coatings on physiology and quality of tomato (*Lycopersicon esculatum* L.) during cold storage. National Conference on Biotechnology: Emerging Trends Feb. 11-12, 2016. Organized by Department of Biotechnology, Chaudhary Devi Lal University, Sirsa (Haryana), India.

Sheenu, Chugh, L.K., Bajaj, S. and Goyal, P. 2018. Partial purification and characterization of fatty acid esterase from pearl millet hybrid HHB 197 and its parental lines. In Proc. International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry, 21-23 February, 2018, *Guru Jambheshwar University of Science and Technology*, Hisar, India. P 80.

Kaur Taranjeet and Mandhania Shiwani (2018). Biochemical basis for cotton leaf curl disease (CLCuD) tolerance mechanism in cotton genotype International Congress on Cotton and Other Fibre Crops" was . This was held on 20-23 Feb, 2018 in Umiam, Meghalaya.

Ph. D.

Kumari Nisha and Jain Veena (2014). Immobilization of microbial amylase for its use in food industry. Paper presented in: Reorientation of Agricultural Research to ensure National Food Security' held at CCS HAU, from Jan 6-7, 2014. Abstract No PHM613, P 245.

Devi Reena and Jain Veena (2014). Ripening related changes in antioxidative enzymatic system of guava (*Psidium guajava* L.) fruit. Reorientation of Agricultural Research to ensure National Food Security' held at CCS HAU, from Jan 6-7, 2014. Abstract No PHM648, P 260

Kumar M, Chugh L K, Dev Vart and Kumar R. (2014). Identification of parental lines for developing low-phytate pearl millet hybrids. In Proc. National Symposium on Advances in Biotechnology for Crop Improvement, 12 July, 2014, *Eternal University*, Baru Sahib (H.P.). p 56.

Kumar, M., Chugh, L.K., Kumar, R. and Dev Vart. (2014). Variability in total antioxidant activity of pearl millet hybrids, B-lines and inbreds. In Proc. National Symposium on Advances in Biotechnology for Crop Improvement, 12 July, 2014, *Eternal University*, Baru Sahib (H.P.). Pp 90-91.

Kumar, R., Dev Vart, Yadav, H.P., Dalal, M.S. and Chugh, L.K. (2014). Variability for iron and zinc content in diverse seed parents of pearl millet. In Proc. National Seminar on Reorientation of Agricultural Research to Ensure National Food Security, 6-7 January, 2014, CCS Haryana Agricultural University, Hisar. P 21.

Kumar, R., Yadav, H. P., Dev Vart, Kumar, Y. and Chugh, L.K. (2014). Development and evaluation of white grain composites for value addition in pearl millet. In Proc. National Seminar on Reorientation of Agricultural Research to Ensure National Food Security, 6-7 January, 2014, CCS Haryana Agricultural University, Hisar. P 19-20.

Rani Babita, Jain Veena, Dhawan Kamal and Madan Shashi (2014). Effect of high temperature stress on antioxidative system in *brassica juncea*. Genotypes differing in their temperature tolerance. Paper presented In: 'Reorientation of Agricultural Research to ensure National Food Security' held at CCS HAU, from Jan 6-7, 2014. Abstract No CI 180 P 40

Goyal, P. and Chugh, L.K. (2014). Profiling changes in rancidity determinants in stored pearl millet [*Pennisetum glaucum* (L.) R. Br.] flour. In Proc. 4th International Science Congress, 8-9 December, 2014, Pacific University, Udaipur. P 63.

Goyal, P., Chugh, L.K, Dev Vart and Kumar, R. (2014). Elite inbreds G73-107, HBL 11 and 78/711 for value addition to pearl millet. In Proc. National Symposium on Advances in Biotechnology for Crop Improvement, 12 July, 2014, Eternal University, Baru Sahib (H.P.). p 57.

Jain Veena, Chawla Shilpa, Choudhary Poonam and Jain Sunita (2015). Effect of calcium chloride on carbohydrate and cell wall components and cell wall degrading enzymes in ber fruit during storage. Paper presented in National Symposium on 'Germplasm to Genes: Harnessing Biotechnology for Food Security and Health Pusa Campus, New Delhi, on Aug. 9-11, 2015 p 58.

Dahiya Anjali, Jain Sunita and Jain Veena (2015). Proline biosynthesis, degradation and accumulation in rice genotypes under aerobic environment. Paper presented in National Symposium on 'Germplasm to Genes: Harnessing Biotechnology for Food Security and Health Pusa Campus, New Delhi, on Aug. 9-11, 2015 p 114

Devi Reena and Jain Veena (2015). Compositional and hydrolytic enzymatic changes in guava (*Psidium guajava* L.) fruit. Paper presented in National Symposium on 'Germplasm to Genes: Harnessing Biotechnology for Food Security and Health Pusa Campus, New Delhi, on Aug. 9-11, 2015 p 116.

Chawla Shilpa, Jain Veena and Jain Veena (2015). Effect of chitosan treatments on nutritional quality and shelf life of guava (*Psidium guajava*) fruits during storage. Paper presented in National Symposium on 'Germplasm to Genes: Harnessing Biotechnology for Food Security and Health Pusa Campus, New Delhi, on Aug. 9-11, 2015 p 57.

Devi Reena and Jain Veena (2015). Ripening related changes in cell wall components of guava (*Psidium guajava* L.) fruit Paper presented in National symposium on 'Recent Advances in Chemical, Biological and Environmental Sciences' organized by Department of Biotechnology and Chemistry, Multani Mal Modi College, Patiala, held on Jan30-31, 2015. P 8

Kumar, N., Kumar, P., Tokas, J. and Singal, H. R. Effect of salicylic acid on cell wall degrading enzymes and cell wall components of tomato (*Solanum lycopersicum* L.) fruits during postharvest storage. CSIR- NPL, New Delhi, India. December 7-11, 2016.

Kumar, N., Tokas, J. and Singal, H.R. Comparative proteomic analysis of postharvest stored tomato (*Solanum lycopersicum* L.) fruits treated with salicylic acid a conjugate and carrier for

nanoparticle. National Conference on Trends in Nanobiotechnology, CCS HAU, Hisar, Haryana, India. November 29-30, 2016.

Midathala Raghavendra, Madan, Shashi Jain, Veena, Rani Babita, Rao Sudhakar, Ankita and Munjal Renu (2016). Spermine modulates the antioxidant defense system in wheat (*Triticum aestivum* L.) under salt stress. In: National Symposium on 'Transgenic Crops in India: Progress and Challenges' held at CCS HAU, Hisar from March 16-17, 2016, PP 26

Bajaj, S. and Chugh, L.K. (2016). A novel approach to predict shelf life of flour of pearl millet varieties. In Proc. Indian International Science Festival (IISF), 7-11 December, 2016, CSRI-National Physical Laboratory, New Delhi. P 257.

Bajaj. S., Chugh, L. K., Goyal, P., Kumar, R. and Dev Vart. (2016). *In vitro* and *in situ* activities of lipolytic enzymes and hydrolysis of lipids in flour of pearl millet designated B-lines. In Proc. International Conference on Innovative Research in Agriculture, Food Science, Forestry, Horticulture, Aquaculture, Animal Sciences, Biodiversity, Ecological Sciences and Climate Change (AFHABEC-2016), 22 October, 2016, Jawaharlal Nehru University, New Delhi. P 73.

Bajaj. S., Chugh, L.K. and Goyal, P. (2016). Optimization of conditions for estimating *in situ* activity of esterase and partial purification of the enzyme from pearl millet flour. In Proc. National Seminar on Coarse Cereal Development-Challenges & Opportunities in the Country, 19-20 March, 2016, CCS Haryana Agricultural University, Hisar. P 217.

Devi Reena and Jain Veena (2016). Manipulation of ethylene biosynthesis to extend the shelf-life of guava fruit In: National Symposium on 'Transgenic Crops in India: Progress and Challenges' held at CCS HAU, Hisar from March 16-17, 2016, PP 45

Choudhary Poonam and Jain Veena (2016). Effect of chitosan and selenium on physico-chemical and biochemical changes in guava (*Psidium guajava* L.) fruit during storage. In: National Symposium on 'Innovative Food Processing Technologies for food and national security' held at ICAR-Central Institute of Post-Harvest Engineering and Technology, from Sept 29-30, 2016 pp96.

Choudhary Poonam, Pal Ajay and Jain Veena (2016). Effect of chitosan and selenium on oxidative stress and antioxidant system for delayed ripening in guava (*Psidium guajava* L.) fruit. In: National Symposium on 'Transgenic Crops in India: Progress and Challenges' held at CCS HAU, Hisar from March 16-17, 2016, PP 33

Rana Reena and Jain Veena (2016) Novel chitosan nano particle based coating for fruit preservation. In National Conference on Trends in Nanobiotechnology, being held on November 29-30, 2016;. At Chaudhary Charan Singh, Haryana Agricultural University, Hisar Abst No. SP 056 P 57

Raghavendra M, Madan Shashi, Munjal Renu and Jain Veena (2016) Effect of spermine nanocarriers and its biochemical implications to mitigate the deleterious effects of salinity in wheat In National Conference on Trends in Nanobiotechnology, being held on November 29-30, 2016;. At Chaudhary Charan Singh, Haryana Agricultural University, Hisar Abst No. SP 051 P 52

Kumar Naresh, Kumar Praveen and Singal H.R. Exogenous salicylic acid on postharvest storage life of tomato (*Solanum lycopersicum* L.). National Conference on Innovative Food Processing Technologies for Food and Nutritional Security, ICARCIPHET Ludhiana, Punjab, India. September 29-30, 2016.

Kumar Naresh, Tokas Jayanti and Singal H.R., Comparative proteomic analysis of postharvest stored tomato (*Solanum lycopersicum* L.) fruits treated with salicylic acid a conjugate and

carrier for nanoparticle. National Conference on Trends in Nanobiotechnology, CCS HAU, Hisar, Haryana, India. November 29-30, 2016.

Kumar Naresh, Kumar Praveen, Tokas Jayanti and Singal H. R. Effect of salicylic acid on cell wall degrading enzymes and cell wall components of tomato (*Solanum lycopersicum* L.) fruits during postharvest storage. CSIR- NPL, New Delhi, India. December 7-11, 2016.

Kumar Naresh, Kumar Praveen, Tokas Jayanti and Singal H. R. Semi-quantitative RTPCR expression analysis of ripening-related genes during post-harvest storage of tomato (*Solanum lycopersicum* L.) fruits under salicylic acid treatment. International conference on emerging areas of environmental science and engineering, GJUS&T, Hisar, Haryana, India. February 16-18, 2017.

Kumar Naresh, Lata Charu, Kumar Ashwani, 2017 conference on Plant physiology, IGKV, Raipur, Chattisgarh, India, November 23-25, 2017

Himani and Anshula. 2017. Effective degradation of keratinous waste by keratin degrading *Bacillus* sp.: A novel approach to mitigate poultry waste. Participated and presented paper in the “International Conference on Microbes for Health and Wealth” held at Maharshi Dayanand University, Rohtak on Nov. 14, 2017, abstract pp.29-30.

Himani and Tokas Jayanti. 2017. Nutritional characteristics of pasta supplemented with mango peel. Participated and presented paper in the “International Conference on Microbes for Health and Wealth” held at Maharshi Dayanand University, Rohtak on Nov. 14, 2017, abstract pp.74.

Himani, Bhadu Surina and Tokas Jayanti. 2017. Effect of salinity on seed germination and seedling growth of sorghum (*Sorghum 338icolour* (L) Moench). Participated and presented paper in the “Third International Conference on Bioresource and Stress Management”, Jaipur from Nov. 8-11, 2017, abstract pp.309.

Zeenat Wadhwa, Tanvi, Harshita, Himani and Jangra Sumit. 2017. Biochemical and Morphological Studies of Rhizobium Isolated from *Cicer arietinum*. Participated and presented paper in the “International Conference on Microbes for Health and Wealth” held at Maharshi Dayanand University, Rohtak on Nov. 14, 2017, abstract pp.26.

Bhadu Surina, Sushila Devi and Himani. 2017. Agro-Industrial Wastes used to prepare the compost of good quality. Participated and presented paper in the “International Conference on Microbes for Health and Wealth” held at Maharshi Dayanand University, Rohtak on Nov. 14, 2017, abstract pp.5-6.

Bhadu Surina, Himani, Sushila and Anshula. 2017. Effect on Seedling Growth by Salt Tolerant Azotobacter Strains on Wheat (*Triticum aestivum* L.). Participated and presented paper in the “International Conference on Microbes for Health and Wealth” held at Maharshi Dayanand University, Rohtak on Nov. 14, 2017, abstract pp.9.

Tokas Jayanti, Kumar Naresh, Himani and Singal H.R.. 2017. Salicylic acid pre treatment preserves bioactive compounds and enhances shelf life of tomato (*Solanum lycopersicum* l.) fruit. Participated and presented paper in the “International Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences” held at Maharana Pratap University of Agriculture & Technology, Udaipur, Rajasthan, from Dec. 02-04, 2017, abstract pp.18.

Bhadu Surina, Himani, Tokas Jayanti and Satpal: Effect of different phosphorus levels on sorghum (*Sorghum 338icolour* (L.) Moench) quality. Participated and presented paper in the “Third International Conference on Bioresource and Stress Management”, Jaipur from Nov. 8-11, 2017, abstract pp.308

Kumar Praveen. Certificate of appreciation: National conference on Trends in Nano biotechnology (NCTN 2016). Dept. MBB&B, CCSHAU, Hisar, Haryana, India. 29th – 30th November 2016.

Kumar Praveen, Kumar Naresh, Tokas Jayanti and H. R. Singal: The effect of glycine betaine and AMF on alleviation of chromium stress in Sorghum plants. International conference on Emerging areas of Environmental science and Engineering, Department of Environmental Science, GJU, Hisar, Haryana, India. 16th – 18th February 2017.

Kumar Praveen. Certificate of participation. Training programme in Statistical data analysis for research scholar. Directorate of Student Welfare CCSHAU Hisar, India. 20th – 29th March 2017.

Kumar Praveen: Certificate of participation. Workshop on Scientific / Technical writing. CCGHAU, Hisar, India. 18th – 19th April 2017.

Kumar Praveen: Certificate of participation. Workshop on Capacity building on IPR instruments. HRM CCSHAU Hisar, India. 6th May 2017.

Kumar Praveen: Certificate of participation. 21 days training on Tools and techniques in molecular biology bioinformatics and peptide synthesis. Dept. of Animal Biotechnology, LUVAS, Hisar, India. 4th – 25th September 2017.

Kumar Praveen, Tokas Jayanti, H. R. Singal and Parveen Gill. Glycine betaine and Arbuscular Mycorrhizal Fungi Relieves Chromium Toxicity in Sorghum Plants by Interfering with Antioxidative Enzymes and Metabolites. 3rd International conference on bio resource and stress management. SIAM, Jaipur, Rajasthan, India. 8th – 11th November 2017.

Kumar Praveen, Tokas Jayanti, Singal H.R., Parveen Gill and Manohar Lal. Effect of *Arbuscular mycorrhizal fungi* (AMF) on chromium toxicity in *Sorghum bicolor* L. International conference on Microbes for health and wealth. Department of microbiology, MDU, Rohtak, Haryana, India. 14th November 2017.

Kumar Praveen. Certificate of participation. Workshop on 50 years journey of Haryana: Media perspective. College of home science, CCSHAU, Hisar, India. 16th November 2017.

Kumar Praveen, Tokas Jayanti, and Singal H.R.. Chromium (VI) heavy metal toxicity induced morphophysiological and biochemical changes in *Sorghum bicolor* L. International conference on Global research initiatives for sustainable agriculture and allied sciences. (GRISAAS-2017) Rajasthan College of agriculture, Maharana Pratap University of agriculture and technology, Udaipur, Rajasthan, India. 2nd – 4th December 2017.

Kumar Praveen. Certificate of participation. Workshop on Awareness and use of Indian citation index (ICI) database. Nehru library, CCSHAU, Hisar, India. 7th December 2017.

Kumar Praveen. Climate Impacts on Crop Yield and Food Security. National Seminar on Climate Change and Food Security. Centre for biotechnology, MDU Rohtak, Haryana, India. 25th January 2018.

Bajaj, S., Chugh, L.K., Berwal, M and Anil Kumar. 2018. Profiling changes in activities of nitrogen metabolism enzymes in flag leaf of pearl millet raised under irrigated and water deficit conditions. In Proc. International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry, 21-23 February, 2018, *Guru Jambheshwar University of Science and Technology*, Hisar, India. P 156

Annexure BIOCHEM- III-B**Students Placements****M.Sc.**

- Ms.Suman Yadav has joined as school lecturer (2013-14) at Navodya Vidhyalya, Faridabad.
- Mr. Karamvir joined as Biochemist (2016-17), in Meghraj International Guar Gum, Panihar Chowk, Hisar

Ph.D.

- Dr Ajay Pal has joined as Assistant professor (2012-13), Department of Biochemistry, CCSHAU, Hisar.
- Dr. Nisha Ahlawat has joined as Junior Chemist (2012-13),, Department of GPB, CCSHAU, Hisar
- Dr. Shiwani Mandhania has joined as Asstt. Scientist (2012-13), Department of GPB, CCSHAU, Hisar.
- Ms. Poonam got selected as Assistant Professor (2014-15) in Anand Agriculture University, Gujarat
- Two Ph.D. students (Ms Neha Wadhwa and Bunty) joined as SRF (2015-16) in the Department of G & PB, CCSHAU, Hisar
- Dr. Preeti Goyal, joined as Assistant Professor (Ad-hoc), at Department of Biotechnology, Chaudhary Bansi Lal University, Biwani (Haryana)
- Ms. Poonam joined CIPHET as Scientist (2016-17) through ARS (ICAR)
- Ms. Babita joined Research Associate (2016-17) in Pulses section at CCS HAU, Hisar
- Ms. Bunty, joined as Asstt. Professor (2016-17) Chitkara University, Punjab
- Dr. Naresh Kumar joined SRF (2017-18) at CSSRI, Karnal

Annexure BIOCHEM- IV

Students who got fellowships JRF/SRF

Sr. No	Name	Topic of Research	Name of Supervisor(s)/ Investigator	Details of Fellowship/ Bursary/ Travel and any other research grants in and source
1	Revanasiddappa	Biochemical changes on post-harvest application of neem (<i>Azadirachta indica</i> L.) extract nano formulations in guava (<i>Psidium guajava</i> L.)	Dr. H.R. Singal	ICAR-NTS
2	Nagesh CR	Extraction and evaluation of antioxidant capacity of total phenolics from lychee (<i>litchi chinesis</i> L.) seeds	Dr. Ajay Pal	ICAR- NTS
3	Anamika	Proteomic and transcriptomic studies in Sorghum (<i>Sorghum L. Moench</i>) under drought stress.	Dr. Jayanti Tokas	CSIR-JRF
4	Sheenu	Physico-chemical and kinetic properties of fatty acid esterase from pearl millet [<i>Pennisetum glaucum</i> (L.) R. Br.] hybrid HHB 197 and its parents	Dr. L.K. Chugh	POSE fellowship, DST Haryana
5	Reena Devi	Role of gibberellic acid and calcium chloride in ripening related biochemical changes in guava (<i>Psidium guajava</i> L.) fruit	Dr. Veena Jain	UGC-JRF & SRF
6	Ekta	Biochemical evaluation of drought resistance in Chickpea (<i>Cicer arietinum</i> L.)	Dr. H.R. Singal	DST-INSPIRE
7	Preeti Goyal	Biochemical basis of off-odour generation in pearl millet [<i>Pennisetum glaucum</i> (L.) R. Br.]	Dr. L.K. Chugh	DST-INSPIRE
8	Neha Wadhwa	Analysis of simple sequence repeats and key enzymes for galactomannan content in guar (<i>Cyamopsis tetragonoloba</i> L.) genotypes	Dr. U.N.Joshi	DST-INSPIRE
8	Poonam	Studies on post harvest treatments of chitosan and selenium on membrane lipids and antioxidant status in guava (<i>Psidium guajava</i> L.) fruit	Dr. Veena Jain	DST-INSPIRE

Annexure BIOCHEM -V**Students who cleared NET**

Sr. No.	Name of students	Detail of NET exam
1.	Babita Rani	ARS-NET
2.	Poonam Chaudhary	ARS-NET, CSIR-NET
3.	Naresh Kumar	ARS-NET
4.	Preeti Goyal	ARS-NET
5.	Ekta	ARS-NET
6.	Reena Devi	CSIR-NET, ARS-NET
7.	Bunty Sharma	ARS-NET
8.	Anamika	CSIR-NET, ARS-NET



Annexure BPP- I

No. of students who cleared NET

2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Names (Adm. No.)	Names (Adm. No.)	Names (Adm.No.)	Names (Adm. No.)	Names (Adm.No.)	Names (Adm. No.)
P. Bhasker (2009BS63D)	Sunita (2014BS10D)	-	Savita Duhan (2012BS11D) Suman Malik (2013BS11D)	Poonam (2011BS23D), Manohar Lal (2014BS09D), Pooja ahlawat (2015BS34M), Biswabiplab Singh (2015BS33M), Ajeev Kumar (2016BS19D)	Biswabiplab Singh (2015BS33M)
Students' Placements					
2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Dr. Sunder Singh (Asth. Professor, MDU), Dr. Vikender Kaur & Dr. Anita Kumari (Scientist, ASRB)	Dr. Champa (Treasure Officer, Govt. of Haryana), Manohar (Gramin Bank)	Dr. Sarita Devi & Dr. Anita Kumari (Asth. Scientist HAU), Sukham Madaan, Vinita Arora, Asha Rani (PGT Biology in Haryana Govt.)	Unnikuton, P. Bhasker	-	Sunita , Deepika Rani, Asha Rani (Asth Professor HPSC, Haryana), Manohar (VLDA, Haryana Govt.)
Student's Awards (Academics)					
2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
-	P. Bhasker, Poonam (INSPIRE DST Fellowship)	Sunita (JRF, CSIR)	Prabha (SRF, ICAR)	Biswabiplab Singh (SRF, ICAR), Deepika (JRF, ICAR)	3 ..

Annexure BPP-II

List of Research Scholars passed out during last five years

S. No.	Name and Admn. No.	Detail of Fellowship	Guide	Date of Admission	Date of Completion	Present Status
Ph.D Students						
1	Asha 2006BS31D	RGNF	Dr. H.R. Dhingra	1/2007	2013	Assistant Professor, Govt. P.G. College, Adampur (Hisar)
2	Deepika (2008BS51D)	MERIT	Dr. H.R. Dhingra	1/2009	2013	Guest Faculty of Botany, Govt. P.G. College Hisar
3	Gunjan 2009BS62D	MERIT	Dr. Sunita Sheokand	1/2010	2013	Settled in USA
4	Duong Huang Son 2010BS100D	Indian International Fellowship	Dr. Neeraj Kumar	1/2011	2014	Assistant Professor at Vietnam
5	P. Bhasker (2009BS63D)	INSPIRE	Dr. A.S. Nandwal	1/2010	2014	Agriculture Officer at Andhra Pradesh.
6	Manogya (2009BS46D)	MERIT	Dr. S.C. Goyal	1/2010	2014	PGT-Biology in Haryana Govt.
7	Shital (2010BS57D)	MERIT	Dr. K.D. Sharma	1/2011	2014	PGT- Biology in Haryana Govt.
8	Suraj Kala (2010BS58D)	MERIT	Dr. U.K. Varsheny	1/2011	2014	Guest Faculty of Botany, Govt. P.G. College Hisar
9	Gurdev Chand (2010BS25D)	In Service	Dr. A.S. Nandwal	1/2011	2015	Assistant Professor at Jammu.
10	Kavita (2011BS24D)	MERIT	Dr. Renu Munjhal	1/2012	2015	
11	Pooja (2012BS12D)	In Service	Dr. A.S. Nandwal	1/2013	2016	Scientist at SBRI, Regional Station Karnal
12	Savita (2012BS11D)	MERIT	Dr. Sunita Sheokand	1/2013	2016	Guest Faculty of Botany, Govt. Post Graduate College, Jind
13	Ishu Singal (20009BS61D)	MERIT	Dr. K.D. Sharma	1/2010	2016	
14	Poonam	INSPIRE	Dr. J.K.	1/2012	2016	Assistant

	(2011BS24D)		Sandooja			Professor at GDC Memorial College, Bhel
15	Suman Bala (2013BS11D)	MERIT	Dr. J.K. Sandooja	1/2014	2017	SRF at Centre for Plant Biotechnology, Hisar
16.	Dharamvir Singh (2012BS10D)	MERIT	Dr. Neeraj Kumar	1/2013	2017	Lecturer at PRAN Nath Pranami College, Hisar
17.	Rajkumar (2013BS12D)	MERIT	Dr. K.D. Sharma	1/2014	2017	Lecturer at PRAN Nath Pranami College, Hisar
18.	Sunita (2014 BS10D)	CSIR, JRF	Dr. Renu Munjal	1/2015	2017	Assistant Professor, Govt. P.G. College, Bhiwani
19.	Kripa Ram (2013BS10D)	MERIT	Dr. Renu Munjal	1/2014	2018	
20.	Neelam (2014BS12D)	MERIT	Dr. Neeraj Kumar	1/2015	Thesis Submitted Dec,2017	

M.Sc. students

1	Sapna Kumari (2009BS127M)	MERIT	Dr. U.K Varshney	7/2009	11/2012	
2	Dharmvir (2010BS12M)	MERIT	Dr. Rajiv Angrish	7/2010	12/2012	Joined Ph.D
3	Pooja (2008BS114M)	MERIT	Dr. A.S. Nandwal	7/2008	5/2013	
4	Neha Rani (2010BS11M)	MERIT	Dr. Rupa Dhawan	7/2010	6/2013	Joined B.Ed
5	Seema (2010BS113M)	MERIT	Dr. Renu Munjal	7/2010	7/2013	School Teacher
6	Kripa Ram (2010BS115M)	MERIT	Dr. Renu Munjal	7/2010	9/2013	Joined Ph.D
7	Manohar Lal (2010BS116M)	MERIT	Dr. Sunita Sheokand	7/2010	3/2014	Joined Ph.D
8	Kusum Rani (2011BS90M)	MERIT	Dr. U. K Varshney	7/2011	2/2014	
9	Manohar Lal (2012BS8M)	MERIT	Dr. Neeraj Kumar	7/2012	11/2014	Joined A.O. in Gramin Bank, Chaudhariwas Hisar
10	Prabha Singh (2013BS37M)	JRF, ICAR	Dr. Sunita Sheokand	7/2013	7/2015	Joined Ph.D at IARI New Delhi
11	Nisha (2010BS118M)	MERIT	Dr. U.K. Varsheny	7/2010	3/2015	
12	Unnikuttan O.R (2014BS31M)	JRF, ICAR	Dr. J. K. Sandooja	7/2014	10/2016	Joined A.O. in Kerela

13	Ajeev Kumar (2014BS32M)	MERIT	Dr. J. K. Sandooja	7/2014	11/2016	Joined Ph.D
14	Mahesh Kumar (2014BS34M)	MERIT	Dr. Neeraj Kumar	7/2014	2/2017	
15.	Parveen Kumar (2014BS35M)	MERIT	Dr. Neeraj Kumar	7/2014	2/2017	Joined B.Ed.
16.	Pooja Ahlawat (2015BS34M)	MERIT	Dr. J.K. Sandooja	7/2015	6/2017	Joined Ph.D at MDU, Rohtak
17	Biswabiplab (2015BS33M)	JRF, ICAR	Dr. J.K. Sandooja	7/2015	6/2017	Joined Ph.D at IARI, New Delhi
18.	Sonu Kumari Sharma (2014BS33M)	MERIT	Dr. J.K. Sandooja	7/2014	7/2017	
19.	Sarita (2015BS37M)	MERIT	Dr. J.K. Sandooja	7/2015	7/2017	Joined B.Ed
20.	Sapna (2015BS35M)	MERIT	Dr. K.D. Sharma	7/2015	7/2017	Joined Ph.D at CCS HAU Hisar
21.	Pooja (2015BS36M)	MERIT	Dr. Renu Munjal	7/2015	7/2017	Joined Ph.D at CCS HAU Hisar

Annexure BPP-III**List of Students Publications****M. Sc. Students Publications**

Bansal, K ., Munjal, R., Madan,S,. and Arora, V. (2012). Influence of high temperature stress on starch metabolism in two durum wheat varieties differing in heat tolerance. *Journal Wheat Research* 4 (1) : 43-48

Pooja, Sharma K.D. and Kumar A. (2012). Improvement in plant water relation and photosynthetic activities of mungbean in response to salicylic acid under salinity stress. *Indian Journal Plant Physiology* 17 (3&4): 268.

Lal, M., Duhan, S., Bala, S., Dinesh. and Sheokand, S. (2016). Influence of waterlogging, salinity and their combination on membrane injury, lipid peroxidation, plant biomass and yield in pigeonpea (*Cajanus cajan* L. Millsp.) genotypes. *The Bioscan* 11: 795-800

Kumari, P., Kumar, J. and Bala, S. (2016) Ripening of Dashehari Mango with ethephon and calcium carbide. *The Bioscan* 11(3): 1671-1674.

Kumari, P., Duhan, S., Bala, S. and Kumar, J. (2016) Effect of Ethylene and calcium carbide on ripening of mango (*Mangifera indica* L.) during storage at ambient temperature. *The Bioscan* 11(3): 1441-1443.

Ph. D. Students Publications

Son, D.H., Kumar, N., Nandwal, A.S., Kumar, S. and Sharma, S.K. (2013). Comparative physiology of two summer mungbean genotypes to salt stress. *International Journal of Biotechnology and Bioengineering Research* 4 (6): 603-608.

Duhan, S., Sharma, N., Bala, S., Lal, M., and Sheokand, S. (2016). Effects of waterlogging, salinity

and their combination on percent survival, chlorophyll content and chlorophyll fluorescence in pigeon pea (*Cajanus cajan* L. Millsp.) genotypes. *The Bioscan* 11: 815-819.

Kavita , Munjal, R., Kumar, N., Dhanda, S.S. (2016). Stress response behavior in different wheat species in relation to heat tolerance. *Journal Wheat Research* 8(2):49-53.

Sharma, N., Duhan, S., Sharma, S. and Sharma K.D. (2017). Physiological studies of different citrus species and their cultivars under semi arid conditions of Hisar. *The Bioscan* 11:297-303.

Bala, S. and Kumar, J. (2017). Studies on antioxidant activity in pulp and peel of sapota (Manilkara

Bala, S. and Kumar, J. (2017). Effect of ethylene absorbent (KMnO₄) on shelf-life of sapota (*Manilkara zapota* L.) *Green Farming* 8:1227-1232.

Bala, S., Kumar, J. Duhan (2017). Biochemical changes in pulp and peel of sapota (*Manilkara zapota* L.) at different stages of ripening. *Research on Crops*: 18: 260-263.

Bala, S. and Kumar, J. and Savita D. (2017). Effect of drying methods on acidity and sugar content of sapota (*Manilkara zapota* L.)". *Journal of Plant Development Sciences* 9(4):329-333.

Bala, S. and Kumar, J. (2017). Export potential and packaging of some important fruits of India. *Journal of Plant Development Sciences* 9(3): 157-164.

Duhan, S., Kumari, A., and Sheokand, S. (2017). Effect of water logging and salinity on anti-oxidative system in pigeonpea plant leaves at different stages of development. *Research on crops* 18:559-568.

Duhan, S., Kumari, A., Bala, Sharma, S.N. and Sheokand, S. (2017). Evaluation of pigeonpea (*Cajanus cajan* L. Millsp.) genotypes for waterlogging, salinity and combined stress tolerance. *Green Farming* 8: 282-286.

Duhan, S., Sheokand, S., Kumari, A., Bala, S., Sharma, N. and Kumari, P. (2017). Influence of waterlogging, salinity and their interaction on biomass and yield and its attributes of pigeonpea (*Cajanus cajans* L. Millsp.) genotypes. *Journal of Plant Developmental Sciences* 9(2); 125-130.

Duhan, S., Sheokand, S., Kumari, A., and Sharma, Nidhi. (2017). Independent and interactive effects of waterlogging and salinity on carbohydrate metabolism and root anatomy in pigeonpea genotypes at different growth stages. *Indian Journal of Agriculture Research* 51 (3):197-205.

Kumari, P., Brar, A. and Kumar, J. (2017) Evaluation of antioxidant activity in different cultivars of aonla (*Emblica officinalis* G.) under ambient conditions. *Chemical Science Review and Letters* 6(21): 38-42.

Kumari, P., Brar, A. and Kumar, J. (2017). Evaluation of chlorophyll and cellulose content in different varieties of aonla during room temperature storage. *Chemical Science Review and Letters* 6(21): 59-63.

Kumari, P., Brar, A. and Kumar, J. (2017). Evaluation of shelf life of aonla (*Emblicaofficinalis* G.) cultivars during storage at room temperature. *Journal of Applied and Natural Science* 9(11): 573-576.

Kumari, P. S., Brar, A. and Kumar, J. (2017). Effect of storage temperature on shelf life of aonla fruit (*Emblicaofficinalis* G.). *Journal of Plant Development Sciences*, 9(5): 493-496.

Lamba,S., Phogat, V.K. and Kumar, N. (2017). Sustainable agriculture for sustaining mankind- – A Review of International Literature. *Vegetos- An International Journal of Plant Research* 30:477-481.

Ram, K. Renu Munjal , Sunita and Naveen Kumar (2017). Combine effects of drought and high temperature on water relation traits in wheat genotypes under late and very late sown condition. *International Journal of Current Microbiology & Applied Sciences* 6(8): 567-576

Ram, K., Munjal, R., Sunita, Pooja and Kumar N. (2017). Evaluation of chlorophyll content index and normalized difference vegetation index as indicators for combine effects of drought and high temperature in bread wheat genotypes. *Global Journal of Bio Sciences and Biotechnology (G.J.B.B)* 6 (3): 528-534

Singal, I, Sharma, K.D., Devi, S., Arya S.S. (2017). Morphological variations of different ecotype of Echinochloa (E. glabrescens, E. colona and E. crusgalli) Vegetos- *An International Journal of Plant Research* 302-306: DOI: 10.5958/2229-4473.2017.00086.6

Singal, I., Sharma, K.D., Devi, S, Arya S.S. (2017). Relative efficacy of different herbicides on Echinochloa accessions. *Research on Crops* 18 (2): 244-248.

Sunita and Munjal R. (2017). Variability in gas exchange attributes of wheat RILs subjected to high temperature stress. *Agriculture Science Digest* 37(3): 221-225.

Sunita, Munjal R., Ram, K., Kumar N., and Dhanda S.S. (2017). Heat stress implications on yield and yield component in recombinant inbred lines of bread wheat at reproductive stage. *International Journal Pure and Applied Biosciences* 5 (3): 1001-1007.

Annexure BPP-IV

ICT Application in Curricula Delivery:

Courses	Total courses	Type of ICT Application
M.Sc.		
	PP 502 Plant developmental biology physiological and molecular basis	<ul style="list-style-type: none"> Plant cell, Definition and Structure, Cell Organelles, Cell Wall Structure and Function. Cell membrane, Structure and function, Nucleus, Endomembrane system, Ribosomes, Vacuole, Mitochondria, Chloroplast, Cytoskeleton and Plasmodesmata Seed Germination and seedling growth, Mobilization of food reserves during seed germination. Hormonal control of seed germination and seedling growth. Seed Development and maturation, Seed Dormancy. Floral Induction and Development, Photoperiodism, Vernalization, Molecular mechanism of floral development, Floral organ differentiation, ABC Model of Flowering Light control of Plant Development, Phytochrome, structure, biochemical properties and function, molecular mechanism of action. Blue Light Receptors, structure, function and molecular mechanism of action.
	PP 503 Physiological and molecular responses	<ul style="list-style-type: none"> Antioxidant defence system in plants Mechanism of salinity, drought, high temperature, low temperature and heavy metal stress tolerance in plants

	of plants to abiotic stresses	
	PP 504 Hormonal regulation of plant growth and development (2+1)	<ul style="list-style-type: none"> • Definition and classification of plant growth regulators-Hormones, endogenous growth substances and synthetic chemicals. • Auxins, Gibberellins, Cytokinins, Abscicic acid, Ethylene, Brassinosteroids, site of synthesis, biosynthetic pathway and metabolism of auxins. Polar transport. Effect of auxins on plant growth and development. Signal Perception and transduction-auxins • Synthetic growth regulators. Effect on plant growth and development • Secondary metabolites and their significance in plant defense mechanism
	PP 505 Physiology of growth and yield and modelling (1+1)	<ul style="list-style-type: none"> • Growth analysis, source –sink relationship, ideotype concepts, crop modelling
	PP 506 Genome organization in higher Plants (2+1)	<ul style="list-style-type: none"> • Basic discoveries in molecular genetics; basic concepts on genome organization a • DNA replication, transcription, translation and regulation of gene expression in prokaryotic and eukaryotes • Mitochondrial and chloroplastic genome organization and regulation of gene expression
	PP 509 Physiological and molecular aspects of photosynthesis, respiration and nitrogen assimilation (3+1)	<ul style="list-style-type: none"> • Basic concepts of photosynthesis – Light and Dark reactions • Molecular aspect of photosynthesis • Mitochondrial respiration, growth and maintenance respiration, cyanide resistant respiration and its significance. • Nitrogen assimilation in photosynthesizing cells – NO₃⁻, NO₂⁻ reduction, GS-GOGAT pathway. Photorespiration loss of Ammonia and its re-assimilation and NUE. • Lipid metabolism-storage, protective and structural lipids. Biosynthesis of fatty acids,diacyl and triacyl glycerol.
	PP 510 Mineral nutrition (2+1)	<ul style="list-style-type: none"> • Overview of mineral nutrition • Basic mechanism of absorption of mineral nutrients • Membrane transport processes • Molecular mechanism of absorption of mineral nutrients • Assimilation of mineral nutrients • Physiological and molecular mechanisms underlying differential nutrient efficiency in crop genotypes
Ph.D.		
	PP 601 Signal perceptions and transduction and regulation	<ul style="list-style-type: none"> • Introduction to signalling, Long range (Diffusible) signaling and short range (contact) signaling. Components of signalling, types of ligands and its relevance, G protein coupled receptors, receptor kinases. Down stream

	of physiological processes	<p>components: G proteins, second messengers, Cyclic AMP, adenylate cyclase cascade, cyclic GMP, Calcium calmodulin, Kinases, Effector molecules (transcription factors).</p> <ul style="list-style-type: none"> • Hormone signaling: Hormone binding receptors • Specific signalling pathways of Auxins, Cytokinins, Gibberellins, Ethylene, ABA, and Brassinosteroids. • Light signaling: Perception of light: Phytochrome structure function and mechanism of action • Blue light receptors: cryptochromes, phototropins structure function and mechanism of action • Abiotic stress signaling: Sensing of environmental factors (Temperature, Osmoticum, Ionic stress) Activation of specific molecules and secondary messengers. Activation of down stream components leading to stress gene expression. Case studies with different abiotic stresses. • Signal perception and transduction in plant defense responses: Role of salicylic acid and active oxygen species. • Molecular mechanism of plant flowering time control • Signaling cascade during leaf senescence and abscission • Transcription factor as signaling regulatory tools for improving growth processes. Case studies: Tbi-lateral branch development, Shi 4-grain shattering, GA1-Dwarfing.MADS, KNOX -flowering development, HAT 4-Shade development, AP2 -EREBP-biotic/abiotic stresses
	PP 603 Molecular approaches for improving physiological traits (2+1)	<ul style="list-style-type: none"> • Molecular breeding • Physical and molecular maps • Allele mining • Sequence Structure • Identification of candidate genes • Transformation of crop plants - Agrobacterium and use of other organisms • Southern and Northern analysis • Immunoassays • Resolution of polymorphism on agarose gels and PAGE • Genomic/plasmid DNA isolation, RNA Isolation • Semiquantitative & quantitative RT-PCR

Annexure CHEM-I

List of students admitted in last five years

Sr. No.	Name of student	Admission No.
2017-18		
1	Pooja	2017BS1M
2	Rajni godara	2017BS2M
3	Naincy rani	2017BS3M
4	Pragya	2017BS4M
5	Tanya	2017BS5M
6	Pooja	2017BS6M
7	Rajita	2017BS3D
8	Ritu Devi	2017BS4D
9	Tamanna	2017BS5D
10	Priyanka	2017BS6D
11	Preeti Dhankar	2017BS7D
2016-17		
12	Monika	2016BS1M
13	Anu Kumari	2016BS2M
14	Parveen Kumari	2016BS1D
15	Parvesh Devi	2016BS2D
2015-16		
16	Suman	2015BS2M
17	Rajita	2015BS3M
18	Ritu Devi	2015BS4M
19	Preeti Dhanker	2015BS5M
20	Sweety	2015BS6M
21	Susheel Gulati	2015BS1D
22	Promila	2015BS2D
2014-15		
23	Parveen Kumari	2014BS1M
24	Pravesh	2014BS2M
25	Parvesh Devi	2014BS3M
26	Satya Shree	2014BS2D
27	Sukriti Nehra	2014BS3D
28	Gagan	2014BS4D
29	Sheetal	2014BS5D
30	Suman	2014BS6D
2013-14		
31	Susheel Gulati	2013BS1M
32	Jitender Kumar	2013BS2M
33	Dimple Rani	2013BS3M
34	Neha Gupta	2013BS1D
35	Anita	2013BS2D

36	Suprita	2013BS3D
37	Suman	2013BS4D
38	Anjani	2013BS5D
2012-13		
39	Satya Shree Jangra	2012BS1M
40	Gagan Rani	2012BS2M
41	Jyoti Punia	2012BS1D
42	Kavita Rani	2012BS2D
43	Mukhan Wati	2012BS3D

Annexure CHEM-II**List of students on roll presently**

Sr. No.	Name	AdmissionNo.
1	Sweety	2015BS6M
2	Anu Kumari	2016BS2M
3	Monika	2016BS1M
4	Pooja	2017BS1M
5	Rajni Godara	2017BS2M
6	Naincy Rani	2017BS3M
7	Pragya	2017BS4M
8	Tanya	2017BS5M
9	Pooja	2017BS6M
10	Neha Gupta	2013BS1D
11	Suprita	2013BS3D
12	Anjani	2013BS5D
13	Suman	2013BS4D
14	Satya Shree Jangra	2014BS2D
15	Sukriti Nehra	2014BS3D
16	Gagan Rani	2014BS4D
17	Sheetal	2014BS5D
18	Suman	2014BS6D
19	Susheel Gulati	2015BS1D
20	Promila	2015BS2D
21	Parveen Kumari	2016BS1D
22	Parvesh Devi	2016BS2D
23	Rajita	2017BS3D
24	Ritu Devi	2017BS4D
25	Tamanna	2017BS5D
26	Priyanka	2017BS6D
27	Preeti Dhankar	2017BS7D

Annexure CHEM- III A**Student's placements**

- Dr Sushil joined as assistant scientist chemistry in CCS HAU HISAR (201-2013)
- Dr Reena Chauhan joined as Research associate in Entomology department in College of Agriculture (2013-14)
- Isha Singh joined as junior lecturer in Govt school of Haryana (2014-15)
- Mr. Dusyant, joined as Assistant professor in Govt. College Hisar (2016-17)
- Ms. Sushma Bisht, Joined as Senior Technical Assistant at Harsac (2016-17)
- Dr. Savita Bishnoi joined as Research Associate in Entomology department in College of Agriculture (2017-2018)
- Dr. Jyoti Punia joined as SRF Entomology department in College of Agriculture

Annexure CHEM- III B**M.Sc. Students Participation in Seminar Conferences etc.**

Susheel Gulati: International conference emerging trends in basic & applied sciences (May 1-2, 2015) organized by Maharaja Agrasen University, Baddi, H.P, India.

Rajita: National Conference on Organic Synthesis and Catalysis (NCOSC-2016) on Feb. 17-18, 2016 organized by Department of Chemistry, Guru Jambheshwar University of Science and Technology, Hisar.

Parvesh: National Conference on Organic Synthesis and Catalysis (NCOSC-2016) on Feb. 17-18, 2016 organized by Department of Chemistry, Guru Jambheshwar University of Science and Technology, Hisar.

Suman: International Conference on Emerging areas of Environmental Science and Engineering (EAESE-2017) on Feb. 16-18, 2017 organized by Department of Environmental Science & Engineering, Guru Jambheshwar University of Science & Technology, Hisar

Ritu: International Conference on Emerging areas of Environmental Science and Engineering (EAESE-2017) on Feb. 16-18, 2017 organized by Department of Environmental Science & Engineering, Guru Jambheshwar University of Science & Technology, Hisar

Rajita: International Conference on Emerging areas of Environmental Science and Engineering (EAESE-2017) on Feb. 16-18, 2017 organized by Department of Environmental Science & Engineering, Guru Jambheshwar University of Science & Technology, Hisar

Anu: National conference on advanced physical methods in chemical sciences on Feb.22-23, 2017 organized by Department of Chemistry, Guru Jambheshwar University of Science & Technology, Hisar

Ph.D Students Participation in Seminar/Conferences etc.

Susheel Gulati: National Conference on Emerging Trends and Future Challenges in Chemical Sciences (ETFC-2016) sponsored by SERB, UGC, DBT organized by Kirorimal College, Department of Chemistry, University of Delhi on Feb. 3-4, 2016

Susheel Gulati: National Conference on Organic Synthesis and Catalysis (NCOSC-2016) on Feb. 17-18, 2016 organized by Department of Chemistry, Guru Jambheshwar University of Science and Technology, Hisar.

Susheel Gulati: International Conference on recent trends in Basic & Applied Sciences on May 12, 2016 organized by Maharaja Agrasen University, Baddi, Himachal Pradesh.

Susheel Gulati: GIAN one week Workshop course on Greener strategies for organics and nanomaterials: Sustainable application of Nano catalysts in synthesis and Environmental remediation on 25/11/2016 to 29/11/2016 organized by Guru Jambheshwar University of Science and Technology, Hisar.

Susheel Gulati: One day author workshop conducted by Vivekananda Library in association with Elsevier at Radha Krishnan Auditorium, Maharishi Dayanand University, Rohtak on Nov. 18, 2016.

Susheel Gulati: Workshop on Method Development Techniques in HPTLC and HPLC held on Nov.16, 2016 organized by Department of Pharmaceutical Sciences and Dean, Students' Welfare, Maharishi Dayanand University, Rohtak.

Susheel Gulati: International Conference on Emerging areas of Environmental Science and Engineering (EAESE-2017) on Feb. 16-18, 2017 organized by Department of Environmental Science & Engineering, Guru Jambheshwar University of Science & Technology, Hisar

Susheel Gulati: National conference on advanced physical methods in chemical sciences on Feb.22-23, 2017 organized by Department of Chemistry, Guru Jambheshwar University of Science & Technology, Hisar

Susheel Gulati: Workshop on scientific/technical writing organized by CCSHAU, Hisar on 18-19 April, 2017

Susheel Gulati: Knowledge workshop on scientific writing, e-books and publication process organized by University of Science Form, Directorate of Human Resource Management, CCSHAU, Hisar on 12th April, 2017.

Susheel Gulati: Professor Ram Chand Paul National Symposium on current advances in chemical sciences organized by Punjab University, Chandigarh on 24-25 Feb. 2017.

Susheel Gulati: Workshop on awareness and use of Indian Citation Index database organized on 07/12/2017 at Nehru Library, CCSHAU, Hisar

Susheel Gulati: GIAN course on vibrational spectroscopy and molecular vibrations organized by Department of Chemistry, National Institute of Technology, Kurukshetra on 15-19 Jan, 2018

Suman: National Conference on Organic Synthesis and Catalysis (NCOSC-2016) on Feb. 17-18, 2016 organized by Department of Chemistry, Guru Jambheshwar University of Science and Technology, Hisar.

Suman: GIAN one week Workshop course on Greener strategies for organics and nanomaterials: Sustainable application of Nano catalysts in synthesis and Environmental remediation on 25/11/2016 to 29/11/2016 organized by Guru Jambheshwar University of Science and Technology, Hisar.

Suman: Workshop on Method Development Techniques in HPTLC and HPLC held on Nov.16, 2016 organized by Department of Pharmaceutical Sciences and Dean, Students' Welfare, Maharishi Dayanand Univeristy, Rohtak.

Suman: International Conference on Emerging areas of Environmental Science and Engineering (EAESE-2017) on Feb. 16-18, 2017 organized by Department of Environmental Science & Engineering, Guru Jambheshwar University of Science & Technology, Hisar

Suman: National conference on advanced physical methods in chemical sciences on Feb.22-23, 2017 organized by Department of Chemistry, Guru Jambheshwar University of Science & Technology, Hisar

Suman: Professor Ram Chand Paul National Symposium on current advances in chemical sciences organized by Punjab University, Chandigarh on 24-25 Feb. 2017.

Suman: National conference on analytical techniques and their applications on March.16-17, 2017 organized by Department of Chemistry, Guru Jambheshwar University of Science & Technology, Hisar

Suman: Knowledge workshop on scientific writing, e-books and publication process organized by University of Science Form, Directorate of Human Resource Management, CCSHAU, Hisar on 12th April, 2017.

Suman: Workshop on scientific/technical writing organized by CCSHAU, Hisar on 18-19 April, 2017.

Suman: 21st International conference of international academy of physical sciences on October, 2017 organized by Department of Chemistry, Guru Jambheshwar University of Science & Technology, Hisar

Suman: 12th national conference on Organics, metallorganics and thermodynamics, on Nov. 2017 organized by Department of Chemistry, Guru Jambheshwar University of Science & Technology, Hisar

Suman: Workshop on awareness and use of Indian Citation Index database organized on 07/12/2017 at Nehru Library, CCSHAU, Hisar

Suman: International conference on global trends in pure and applied chemical sciences organized by SRM university, Gaziabad, UP on 8-9 Dec. 2017.

Suman: International conference on Emerging trends in drugs development and natural products organized by Chemistry department of Delhi University Delhi on 12-14 Jan. 2018.

Suman: DGHE sponsored national seminar on Nanochemistry, CMK college Sirsa on Feb 2018.

Suman: International conference on Sustainable Agriculture, Energy, Environment and Technology, MDU, Rohtak on 24-25 Feb. 2017.

Suprita: International conference emerging trends in basic & applied sciences (May 1-2, 2015) organized by Maharaja Agrasen University, Baddi, H.P, India.

Suprita: International Conference on Emerging Areas of Environmental Sciences and Engineering, Hisar, Haryana, February 2017.

Suprita: 21st International Conference of International Academy of Physical Sciences (CONIAPS XXI) Hisar, Haryana, October 2017

Suprita: 3rd International Conference on Global Trends in Pure and Applied Chemical Sciences, Ghaziabad (U.P.), December 2017.

Suprita: International Conference on Sustainable Agriculture, Energy, Environment and Technology (ICSAEET-2018), Rohtak, Haryana, February 2018.

Suprita: National Conference on Advanced Physical Methods in Chemical Sciences (NCAPMCS-2017), Hisar, Haryana, February 2017.

Suprita: 6th National Conference on Chemical and Environmental Sciences: Emerging Dimensions & Challenges Ahead (NCCES 2017), Panipat, Haryana, April 2017.

Suprita: 12th National Conference on Organics, Metallorganics and Thermodynamics (NCOMT-2017), Hisar, Haryana, November 2017.

Suprita: DGHE Sponsored National Seminar on Nano Chemistry, Sirsa, January 2018.

Suprita: Workshop on awareness and use of Indian Citation Index database organized on 07/12/2017 at Nehru Library, CCSHAU, Hisar.

Annexure CHEM-IV

Name of M.Sc students who got fellowships/NET/JRF/SRF

Sr. No	Name	Topic of Research	Name of Supervisor (s)/ Investigator	Details of Fellowship/ Bursary/ Travel and any other research grants in and source
1	Satyashree (2012BS1M)	-	Dr. V.K Madan	POSE
2	Dimple (2013BS3M)	Persistence and leaching behaviour of premix formulation of imazethapyr and imazamox in soil	Dr Anil Duhan	POSE
3	Susheel Gulati (2013BS1M)	Phytochemical studies and antioxidant activity of ashwagandha	Dr. V.K Madan	POSE

4	Ritu (2015BS4M)	Persistence and leaching behaviour of halosulfuron methyl in soil	Dr Anil Duhan	POSE
5	Ritu (2015BS4M)	Persistence and leaching behaviour of halosulfuron methyl in soil	Dr Anil Duhan	ARS NET

Name of Ph.D students who got fellowships/NET/JRF/SRF

Sr. No	Name	Topic of Research	Name of Supervisor (s)/ Investigator	Details of Fellowship/ Bursary/ Travel and any other research grants in and source
1	Tamanna (2017BS5D)	Fresher	Dr V.K Madan	CSIR-JRF
2	Priyanka (2017BS6D)	Fresher	Dr. Anil Duhan	CSIR-JRF
3	Susheel Gulati (2015BS1D)	Efficient and green multicomponent synthesis of some novel heterocyclic compounds and their bioefficacy	Dr. Rajvir Singh	Inspire (DST) fellowship
4	Promila (2015BS2D)	Effect of extraction conditions on phytochemicals and antioxidant potential of Giloy (<i>Tinospora Cordifolia</i>) stem and Kair (<i>Capparis deciduas</i>) fruit	Dr. V.K. Madan	CSIR-JRF
5	Neha Gupta (2013BS1D)	Virtual High-throughput Screening of Acetylcholinesterase and Chitin synthase Inhibitors	Dr. Sudhir Kumar	Inspire (DST) fellowship
6	Anjani (2013BS5D)	Effect of refining and antioxidants on the storage stability of edible vegetable oils	Dr. M. K. Deen	CSIR-JRF
7	Parvesh (2016BS2D)	Studies on phytochemicals, nutritional parameters and antioxidant potential of Mulhatti (<i>Glycyrrhiza glabra L.</i>) and Satawar (<i>Asparagus racemosus</i>)	Dr. V.K. Madan	CSIR-NET

List of Students Publications

M.Sc.

Kumari, S., Singh, R., Kumar A. and Walia, R. K. (2014). Synthesis and nematocidal bio-evaluation of substituted 2H-1-benzopyran-2-ones and their carbamates derivatives against root-knot nematode (*Meloidogyne javanica*) Asian Journal of Chemistry. 26 (11): 3139-3143. NAAS rating 5.0

Jangra, S. S., Madan, V. K. and Singh, S. (2015). Effect of solvents on extraction of various phytochemicals and antioxidant activity in carrot (*Daucus carota* L.). Journal of Indian Chemical Society 92(7): 1149-1154.

Pinki, Singh, S., Madan, V. K. and Jangra, S. S. (2016). Chemical composition and antioxidant activity of onion (*Allium cepa* L.). International Journal of Basic and Applied Scientific Aspects 2(1): 1-10.

Gulati S., Madan V. K., Jangra, S. S and Yadav, I. S. (2017). Determination of total phenolics, total flavonoids and evaluation of DPPH free radical scavenging activity of Ashwagandha (*Withania somnifera* L.) roots. Asian Journal of Chemistry 29(8): 1660-1664.

Gulati S., Madan V. K., Singh S., Singh I. and Dusyant (2017). Chemical and phytochemical composition of Ashwagandha (*Withania somnifera* L.) roots. Asian Journal of Chemistry 29(8): 1683-1686.

Pravesh, Madan, V. K. and Jangra, S. S. (2017). Effect of extraction techniques on total phenolics, flavonoids contents and antioxidant activity of various solvent fractions of bark of arjun (*Terminalia arjuna*). Asian Journal of Chemistry 29(3): 635-640.

Pravesh, Madan, V. K. and Singh, S. (2017). Variation in total phenolics, flavonoids and antioxidant activity among various solvent fractions of bark of babul (*Acacia nilotica*) using different extraction techniques. Asian Journal of Chemistry 29(3): 641-646.

Gulati, S., Madan, V. K., Singh, S., Singh, I. and Dusyant (2017). Chemical and phytochemical composition of Ashwagandha (*Withania somnifera* L.) roots. Asian Journal of Chemistry 29(8): 1683-1686.

Pravesh, Madan, V. K., and Singh, S. (2017). Variation in total phenolics, flavonoids and antioxidant activity among various solvent fractions of bark of babul (*Accia nilotica*) using different extraction techniques. Asian Journal of Chemistry 29(3): 641-646.

Pinki, Singh, S., Madan, V. K. and Jangra, S. S. (2016). Chemical composition and antioxidant activity of onion (*Allium cepa* L.). International Journal of Basic and Applied Scientific Aspects, 2(1):1-10.

Jangra, S. S., Madan, V. K. and Singh, S. (2015). Effect of solvents on extraction of various phytochemicals and antioxidant activity in carrot (*Daucus carota* L.) Journal of Indian Chemical Society 92(7): 1149-1154.

Pinki, Singh, S., Madan, V. K. and Jangra, S. S. (2014). Phytochemical analysis and antioxidant potential of garlic (*Allium sativum* L.) extracts in different solvents, International Journal of Science Technology & Management, 2(1):167-176.

Pravesh, V. K. Maadan and **Sushila Singh** (2017). Variation in Total Phenolics, Flavonoids and Antioxidant Activity Among Various Solvent Fractions of Bark of Babul (*Accia nilotica*) Using Different Extraction Techniques. *Asian Journal of Chemistry* 29(3): 641-646.

Susheel Gulati, V.K. Maadan, **Sushila Singh**, Isha Singh and Dusyant (2017). Chemical and Phytochemical Composition of Ashwagandha (*Withania somnifera* L.) Roots. *Asian Journal of Chemistry* **29**(8): 1683-1686.

Ph.D.

Jain, Deepika, Jain, Jigyasa, Sushil and Kumari, Beena (2014). Studies on chemical composition of Aloe saponaria and its antioxidant activity. *Pesticide Research journal* 26(1): 25-29.

Kumar, A. and Singh, R. (2014). Synthesis and bioevaluation of 2-(2/4-chloro-/4/2-bromo-/4-methylphenyl)-6-bromo-4H-chromen-4-ones). *Annals Of Agri-Bio Research* 19 (4): 683-687.

Kumar R., Singh R. and Walia R.K. (2014) Synthesis and Bio-evaluation of 3-(substituted phenyl)-1-(4-Hydroxy Phenyl)-2-propen-1-one and their carbamate derivatives against root knot nematode. *Oriental Journal of Chemistry*, 30(3) 1293-1302

Bisht, S. Kumari, B. and Singh, R. (2015) Persistence of thiodicarb in clay loam Soil under laboratory conditions. *Pesticide Research Journal* 27 (2): 212-216.

Bisht, S., Chauhan, R. Kumari, B. and Singh, R. (2015). Fate of thiodicarb and its metabolite methionyl in sandy loam soil under laboratory conditions. *Environment Monitoring Assessment* 187: 429.

Loura, P., Singh, R. and Meera (2015). Chemical constituents and allelopathic activity of *Albizia Lebbeck* (L) stem. *International Journal of Basic and Applied Scientific & Aspect* 1: 19-25.

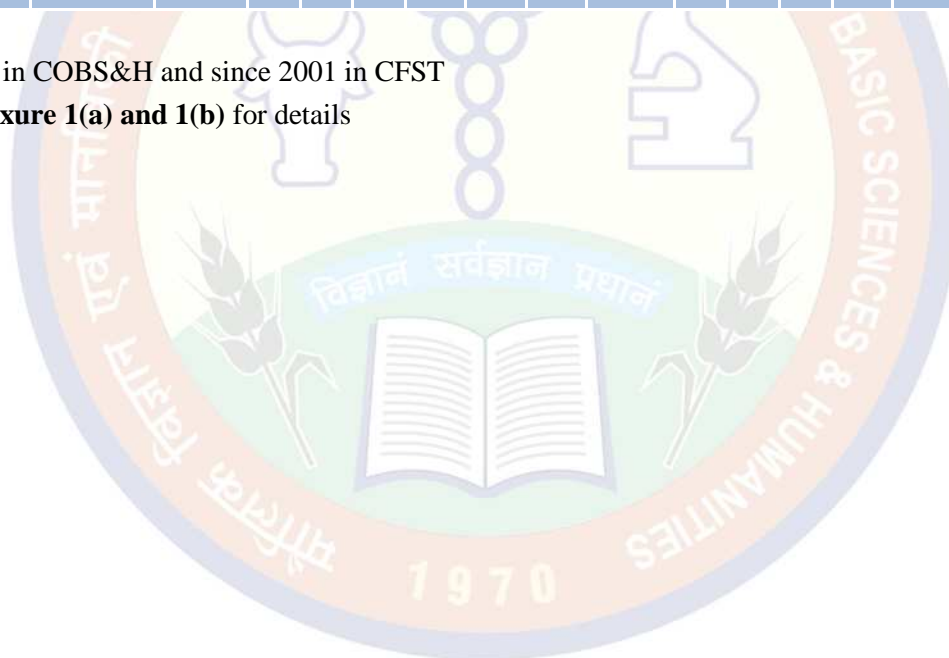
Singh, I., Madan, V. K., Jangra, S. S. and Singh, S. (2016). Effect of extraction techniques and solvents on various phytochemicals and antioxidant activity of clove (*Syzygium aromaticum* L.) buds. *Asian Journal of Chemistry* 28(4): 801-806.



Student Data for the Last Five Years

Degree Program offered by the Department	Special i-zation	Year of start *	No. of seats							No. of students passed out						
			Y 1	Y 2	Y 3	Y 4	Y 5	Y 6	Tota l	Y 1	Y 2	Y 3	Y 4	Y 5	Y 6	Tota l
M.Sc./ M.Tech.	FST	1996 -97	4	5	9	4	4	4	30	8	7	3	4	9	2	33
Ph.D.	FST	2010 -11	3	3	3	2	1	2	14	-	-	3	1	4	-	8
Any other (diploma etc.)																

*1996-97 in COBS&H and since 2001 in CFST
See Annexure 1(a) and 1(b) for details



Annexure FST- I (a)

List of Research Scholars passed out during last five years

S.No.	Name and Admn. No.	Detail of Fellowship	Guide	Date of Admission	Date of Completion	Present Status
Ph.D Students						
2014-15						
1.	Sonu Panwar 2010FST103D	M. Stipend	Rakesh Gehlot	Dec, 2010	26.9.14	Out of India
2015-16						
2.	Aneeta Khatak 2010FST61D	RGNF, UGC	R.B. Grewal	Dec, 2010	7.5.15	-
3.	Anuradha Srivastava 2010FST62D	SRF	Saleem Siddiqui	Dec, 2010	2.5.15	ARS, Scientist
4.	Jyoti Prabha Bishnoi 2011FST28D	M. Stipend	Rakesh Gehlot	Dec , 2011	26.9.15	Asstt. Prof., (contractual) at Amity University Jaipur
2016-17						
5.	Akanksha Jain 2012FST32D	DST, Inspire	Rakesh Gehlot	Dec, 2012	30.9.16	Food Technology Transfer Professional, National Research Development Corporation, New Delhi
6.	Charul Chaudhary 2011FST27D	DST, Inspire	R.B. Grewal	Dec , 2011	29.5.17	Asstt. Prof., (contractual) at Dayalbagh Educational Institute, Dayalbagh, Agra
7.	Isha Kaushik 2012FST33D	M. Stipend	R.B. Grewal	Dec, 2012	21.6.17	Food Safety Officer, FSSAI, New Delhi
8.	Neeraj 2012FST34D	-	Saleem Siddiqui	Dec, 2012	8.5.17	Asstt. Prof., (contractual) Mewad University, Chitodhgarh, Rajasthan
2017-18						
9.	Sangeeta 2011FST30D	M. Stipend	R.B. Grewal	Dec , 2011	7.10.17	-
10.	Simran Arora 2013FST32D	INSPIRE, DST	Saleem Siddiqui	Dec, 2013	22.12.17	SRF, CIPHET, Ldh
11.	Sucheta 2013FST33D	M. Stipend	Rakesh Gehlot	Dec, 2013	27.5.17	Asstt. Prof., (contractual) at, MCM DAV College, Chandigarh
12.	Naseer Ahmed 2014FST31D	-	Saleem Siddiqui	Dec, 2014	18.1.18	Asstt. Prof., (contractual) RIMT University, Govindgarh Mandi, Punjab
M.Sc. Students						
2012-13						
13.	Snehlata 2010FST143M	-	Rakesh Gehlot	July, 2010	6.9.12	School Teacher

14.	Monika Rani 2010FST144M	-	R.B. Grewal	July, 2010	21.1.13	Joined Ph.D. at CCS HAU
15.	Vikas Goyal 2010FST145M	-	R.S. Dabur	July, 2010	30.7.12	Nestle Foods, Moga
16.	Pardeep Kumar 2010FST146M	-	Saleem Siddiqui	July, 2010	15.9.12	Food Auditor, USR Certification Ltd. Noida
17.	Toshma Kumari 2010FST147M	-	Rakesh Gehlot	July, 2010	6.9.12	School Teacher
18.	Akanksha Jain 2010FST148M	M. Stipend	R.B. Grewal	July, 2010	7.9.12	Joined Ph.D. at CCS HAU
19.	Yatin M. Sonkusale 2010FST149M	-	M.K. Garg	July, 2010	1.3.13	Senior Executive, Dry Tech. Processes (I), Pvt. Ltd. Padhurna (MP)
20.	Sonal R. Zanwar 2010FST243M	ASPEE Fellowship	Saleem Siddiqui	July, 2010	16.8.12	Guest Lecturer MIP College of Food Technology, Marathwada Agri. University, Maharashtra
2013-14						
21.	Yudhbir Singh 2011FST117M	-	R.B. Grewal	July, 2011	2.8.13	Del Monte, Delhi
22.	Sushil Kumar 2011FST118M	-	R.B. Grewal	July, 2011	16.8.13	Coaching Centre, Enlive Coaching Institute, Sec.- 13, Hisar
23.	Sucheta 2011FST119M	-	Rakesh Gehlot	July, 2011	3.9.13	Joined Ph.D. at CCS HAU
24.	Simran Arora 2011FST120M	M. Stipend	Saleem Siddiqui	July, 2011	17.8.13	Joined Ph.D. at CCS HAU
25.	Jitender 2011FST121M	-	Saleem Siddiqui	July, 2011	9.10.13	Senior Production Manager, Haldiram
26.	Rashmi Bhardwaj 2011FST122M	-	Rakesh Gehlot	July, 2011	30.7.13	Joined Ph.D. at NDRI, Karnal
27.	Sunil Kumar H.C. 2011FST123M	JRF	M.K. Garg	July, 2011	15.7.13	Jr. Production Executive, Modern Bread, HUL, Bengaluru
2014-15						
28.	Jyoti Kumari 2012FST32M	-	Saleem Siddiqui	July, 2012	1.10.14	School Teacher
29.	Sango Lule Victor 2012FST34M	ICCR Scholarsh ip	M.K. Garg	Dec, 2012	1.4.15	Out of India
30.	Wafula Nelson 2012FST35M	ICCR Scholarship	Saleem Siddiqui	Dec, 2012	30.1.15	Out of India
2015-16						
31.	Dang Linh Man 2013FST42M	ICCR Scholarsh ip	Rakesh Gehlot	July, 2013	8.7.15	Out of India

32.	Madhushikha Keshani Ranasinghe 2013FST43M	ICCR Scholarsh ip	Saleem Siddiqui	July, 2013	25.7.15	Out of India
33.	Harshitha T. 2013FST44M	ICAR-JRF	Rakesh Gehlot	July, 2013	8.7.15	Asstt. Prof., Food Processing Technology, University of Agricultural Sciences, Dharwad, Karnataka
34.	Priyanka Sharma 2013FST45M	-	Saleem Siddiqui	July, 2013	25.7.15	Research Associate, FICCI, New Delhi
2016-17						
35.	Rahul 2013FST46M	BR Ambedkar Post Matric SC/ST Scholarsh ip	Rakesh Gehlot	July, 2013	1.5.17	Pharmacist in Haryana Government, Kali Ramna, Hisar
36.	Nidhi Dalal 2014FST36M	-	Saleem Siddiqui	July, 2014	29.7.16	Asstt. Prof., Rai University, Ahmedabad
37.	Harsha Rohila 2014FST37M	M. Stipend	Rakesh Gehlot	July, 2014	13.7.16	Quality Analyst, NDDDB, Delhi
38.	Sachin 2014FST39M	BR Ambedkar Post Matric SC/ST Scholarsh ip	Rakesh Gehlot	July, 2014	1.5.2017	R.J. Corporation, Varun Beverages Ltd., Pepsi, Panipat
39.	Jyoti Rani 2014FST40M	-	Rekha	July, 2014	29.7.16	Preparing for competitive exam
40.	Shafaly Sharma 2014FST41M	-	Rakesh Gehlot	July, 2014	29.7.16	Preparing for competitive exam
41.	Mansi Duggal 2014FST42M	-	Rekha	July, 2014	26.7.16	Intern at Mother Dairy , Delhi
42.	Monika Kakkar 2014FST43M	-	Rekha	July, 2014	26.7.16	Rooms coordinator, Andaz Delhi , a concept by Hyatt
43.	Dimas Bayu Pinandoyo 2014FST44M	ICCR-Gen. Scholarsh ip	Saleem Siddiqui	July, 2014	13.7.16	Out of India
2017-18						
44.	Sumit Kumar 2015FST40M	-	Rakesh Gehlot	July, 2015	17-8-17	Head constable in Haryana Police, Panchkula
45.	Monika 2015FST41M	-	Rekha	July, 2015	27-7-17	Assistant Incharge, Production, U.B. Foods Pvt. Ltd., Manesar
46.	Mohit Kumar 2015FST42M	-	Rekha	July, 2015	1-1-18	Family Business

Annexure FST- I (b)**List of presently enrolled students**

Year	Name	Admission No.	Gender	Category
M.Sc Students				
2015-16				
	Mohammad Sadiq	2015FST43M	Male	ICAR-Afghanistan
2016-17				
	Priyanka	2016FST29M	Female	BCA/Gen
	Meenu Roperia	2016FST30M	Female	Gen
	Amit Bansal	2016FST31M	Male	SC
	Kritika Rawat	2016FST32M	Female	Gen
2017-18				
	Comfort Wion Carthy	2017FST54M	Female	ICAR-Liberia
	Sandeep Kumar	2017FST55M	Male	Gen.
	Manisha	2017FST56M		BCB
	Shweta	2017FST57M	Female	SC
	Tshiamo Seiphithlile	2017FST59M	Female	ICAR-Botswana
	Modiri Dirisca Setlhoka	2017FST60M	Male	ICAR-Botswana
Ph.D Students				
2014-15				
	Monika Mathur	2014FST29D	Female	BC(A)
	Rattan Singh	2014FST30D	Male	SC
2016-17				
	Sunita	2016FST20D	Female	Gen./SC
2017-18				
	Partibha	2017FST34D	Female	Gen.
	K.M. Manju	2017FST35D	Female	BCB

Annexure FST- I (c)**Name of the student who cleared NET/ARS/GATE or any other examination****M.Sc. Students**

Year	Name of student	Admission No	NET/ARS/GATE or any other
2012-13	Jyoti Soni	2008FST166M	-do-
	Neelam Upadhyay	2008FS167M	-do-
2013-14	Munish Siwatch	2007FST281M	ARS-NET-2013 (Mains)
	Neelam Upadhyay	2008FS167M	-do-
	Ankit Goyal	2008FS157M	-do-
	Ritu Sindhu	2013FST117M	-do-
	Neelam Upadhyay	2008FS167M	-do-
2014-15	Neelam Upadhyay	2008FS167M	ARS-NET-2014 (Selected)
	Darshana	2008FST162M	ARS-NET-2014
	Anand	2009FST151M	-do-
	Poonam	2009FST157M	-do-

	Kuldeep	2009FST156M	-do-
	Sonal Zanwar	2010FST243M	-do-
	Rashmi	2011FST122M	-do-
2015-16	Harshitha T.	2013FST44M	ARS-NET-2015
	Priyanka Sharma	2013FST45M	-do-
2016-17	Rahul	2013FST46M	UGC- NET-2016
	Harsha	2014FST37M	ARS-NET-2016
2017-18	Nidhi Dalal	2014FST36M	ARS-NET-2017

Ph.D. Students

Year	Name of student	Admission No	NET/ARS/GATE or any other
2012-13	Charul Chaudhary	2011FST27D	GATE - 2012
	Anuradha Srivastava	2010FST61D	ARS-NET-2013 (Prel)
	Sonu Panwar	2010FST103D	-do-
	Charul Chaudhary	2011FST27D	-do-
	Isha Kaushik	2012FST33D	-do-
2013-14	Anuradha Srivastava	2010FST61D	ARS-NET (Selected)
2014-15	Aneeta Khatak	2010FST61D	ARS-NET-2014
	Sonu Panwar	2010FST103D	-do-
	Sangeeta	2011FST30D	-do-
	Jyoti Parbha Bishnoi	2011FST28D	-do-
	Akanksha Jain	2012FST32D	-do-
	Neeraj	2012FST34D	-do-
	Sucheta	2013FST33D	-do-
	Simran	2013FST32D	-do-
	Monika Dahiya	2013FST34D	-do-
2015-16	Sucheta	2013FST33D	ARS-NET-2015
	Monika Mathur	2014FST29D	-do-
	Neeraj	2012FST34D	-do-

Annexure FST- I (d)

Name of student who got fellowships other than university merit fellowship

M.Sc. students

Year	Name of student	Admission No	Fellowships
2012-13			
1.	Sango Lule Victor	2012FST34M	ICCR Scholarship
2.	Wafula Nelson	2012FST35M	ICCR Scholarship
2013-14			
3.	Harshitha T	2013FST44M	ICAR-JRF
4.	Madushikha K. Ransingha	2013FST43M	ICCR Scholarship
5.	Dang Linh Man	2013FST42M	ICCR Scholarship
6.	Rahul	2013FST46M	BR Ambedkar Post Matric SC/ST Scholarship
2014-15			
7.	Sachin	2014FST39M	BR Ambedkar Post Matric SC/ST Scholarship

8.	Dimas Bayu Pinandoyo	2014FST44M	ICCR Scholarship
2015-16			
9.	Mohammad Sadiq	2015FST43M	ICCR Scholarship
2016-17			
10.	Kritika Rawat	2016FST32M	ICAR-JRF
11.	Meenu Roperia	2016FST30M	Scholarship of AFST(I) Education & Publication Trust
2017-18			
12.	Comfort Wion Carthy	2017FST54M	ICAR-Africa Fellowship
13.	Tshiamo Seiphithile	2017FST59M	ICAR-India Africa Fellowship Prog.-III
14.	Modiri Dirisca Setlhoka	2017FST60M	ICAR-India Africa Fellowship Prog.-III

Ph.D. students

Year	Name of student	Admission No	Fellowships
2012-13			
1.	Akanksha Jain	2012FST32D	INSPIRE, DST
2013-14			
2.	Simran	2013FST32D	INSPIRE, DST
2014-15			
3.	Monika Mathur	2014FST29D	Rajiv Gandhi National Fellowship (RGNF)
4.	Rattan Singh	2014FST30D	Rajiv Gandhi National Fellowship (RGNF)
2015-16			
5.	Ezike Glad Flora	2015FST27D	ICAR Netaji Subhash International Fellowship

Annexure FST- I (e)**Foreign students of the Centre**

Year	Name	Admission No.	Country
2012-13	Sango Lule Victor	2012FST34M	Uganda
	Wafula Nelson	2012FST35M	Uganda
2013-14	Dang Linh Man	2013FST42M	Vietnam
	Madhushikha Keshani Ranasinghe	2013FST43M	Sri Lanka
2014-15	Dimas Bayu Pinandoyo	2014FST44M	Indonesia
2015-16	Mohammad Sadiq	2015FST43M	Afghanistan
	Flora Glad Chizoba Ekezie	2015FST27D	Nigeria
2017-18	Comfort Wion Carthy	2017FST54M	Liberia, Africa
	Tshiamo Seiphithile	2017FST59M	Botswana
	Modiri Dirisca Setlhoka	2017FST60M	Botswana

Student Participation in Academic Activities

Year	International/ National				Remarks
	Conference	Seminar	Workshop	Trainings	
2012-13	1	2	1	In plant training	See FST III
2013-14	6	2	2	In plant training	
2014-15	5	-	-	In plant training	
2015-16	5	2	-	In plant training	
2016-17	5	-	2	In plant training	
2017-18	1			In plant training	

Student Participation in Extra Co-Curricular Activities

Year	Cultural/ Sports Activities				Remarks
	College	Inter college	State	National	
2012-13					see details in FST IV
2013-14	1 in Dance (Fresher Day); 8 in in Poster making, slogan writing and declamation contest on World Food Day	1 in Dance (Youth Festival)			
2014-15	11 in Poster making, slogan writing and declamation contest on World Food Day	3 in college procession, declamation and group dance			
2015-16	14 in Poster making, slogan writing and declamation contest on World Food Day	7 in college procession, group discussion, Dance, mime, skit, declamation, singing (Youth Festival)			
2016-17	8 in Poster making, slogan writing contest and nutrifood exhibition on World Food Day	1 in Trekking camp			

Annexure FST-II**CFST Publications from M.Sc. students' research**

LIST OF PUBLICATIONS (Since 2012)		
S. No.	Title	NAAS rating
2012		
1.	Punam, Gehlot, R., Singh, R. and Siddiqui, S. (2012). Development and evaluation of Bael-Mango ready-to-serve drink and squash. <i>Beverage & Food World</i> 39(4): 43-45.	Non-NAAS

2.	Sharma, M., Gehlot, R., Singh, R. and Siddiqui, S. (2012). Changes in chemical constituents and overall acceptability of guava-jamun blends read-to-serve drink and squash during storage. <i>Beverage & Food World</i> 39(4): 39-42.	Non-NAAS
3.	Kundu, H., Grewal, R.B., Goyal, A., Upadhyay, N. and Prakash, S. (2012). Effect of incorporation of pumpkin (<i>Cucurbita moshchata</i>) powder and guar gum on the rheological properties of wheat flour. <i>J Food Sci. Technol.</i> 51 (10) 2600-2607.	8.02
2013		
4.	Sucheta, Gehlot, R., Siddiqui, S. and Grewal, R.B. (2013). Development and evaluation of guava-mango cheese and toffee. <i>Haryana J. hortic. Sci.</i> 42(1&2): 47-51.	Non-NAAS
5.	Sucheta, Gehlot, R., Siddiqui, S. and Grewal, R.B. (2013). Changes in chemical constituents and overall acceptability of guava-mango cheese and toffee during storage. <i>Haryana J. hortic. Sci.</i> 42(3&4): 147-151.	Non-NAAS
6.	Agarwal, Nisha; Yadav, B.S. and Siddiqui, S. (2013). Microbiological quality evaluation of sweets from Hisar city. <i>Beverage & Food World</i> 40(2): 59-60.	Non-NAAS
7.	Sharma, M.; Gehlot, R.; Singh, R. and Siddiqui, S. (2013). Development and evaluation of guava-jamun ready to serve drink and squash. <i>Beverage & Food World</i> 40(2): 42-44.	Non-NAAS
2014		
8.	Goyal, A.; Siddiqui, S.; Upadhyay, N. and Soni, J. (2014). Effects of ultraviolet irradiation, pulsed electric field, hot water and ethanol vapours treatment on functional properties of mung bean sprouts. <i>J. Food Sci. Technol.</i> 51(4): 708-714.	8.02
9.	Goyal, A. and Siddiqui, S. (2014). Effects of ultraviolet irradiation, pulsed electric field, hot water dip and ethanol vapours treatment on keeping and sensory quality of mung bean (<i>Vigna radiata</i> L. Wilczek) sprouts. <i>J. Food Sci. Technol.</i> 51(10): 2664-70.	8.02
10.	Kajla, P. and Siddiqui, S. (2014). Effect of Pulsed Electric Field on Drying Rate and Physical Characteristics of Potato Slices. <i>International Journal for Research in Applied Science and Engineering Technology</i> 2(1): 49-57.	Non-NAAS
11.	Yadav, S., Gehlot, R., Siddiqui, S. and Grewal, R.B. (2014). Changes in chemical constituents and overall acceptability of guava-mango ready-to-serve (RTS) drink and squash. <i>Beverage & Food World</i> 41(4): 30-33 & 35.	Non-NAAS
12.	Kumari, T., Gehlot, R., Siddiqui, S. and Grewal, R.B. (2014). Changes in chemical constituents and overall acceptability of guava-mango nectar and crush. <i>Beverage & Food World</i> 41(8): 31-35.	Non-NAAS
13.	Kumar, K., Gehlot, R., Siddiqui, S. and Grewal, R.B. (2014). Changes in chemical constituents and overall acceptability of bael-mango nectar and crush during storage. <i>Beverage & Food World</i> 41(12): 29-32.	Non-NAAS
14.	Bhardwaj, R., Gehlot, R., Siddiqui, S. and Grewal, R.B. (2014). Studies on development and evaluation of guava-jamun jam and chutney. <i>Beverage & Food World</i> 41(12): 44-46.	Non-NAAS

2015		
15.	Jain, A. and Grewal, R.B. (2015). Evaluation of pasting properties of wheat, amaranth and guar gum based composite blends. <i>Progressive Res.-an International J.</i> 10 (IV): 1876-1883.	3.16
16.	Jain, A. and Grewal, R.B. (2015). Development and quality evaluation of value added extruded snacks by supplementing amaranth and guar gum in mixed cereal flour formulation constituting maize, rice and wheat. <i>International J. Res. Scientific Res.</i> 6 (9) 6221-6227.	Non-NAAS
17.	Seema Rana; Siddiqui, S. and Goyal, A. (2015). Extension of the shelf life of guava by individual packaging with cling and shrink films. <i>Journal of Food Science and Technology</i> 52(12):8148-55.	8.02
18.	Kumari, T., Gehlot, R., Siddiqui, S. and Grewal, R.B. (2015). Development and evaluation of guava-mango nectar and crush. <i>Beverage & Food World</i> 42(2): 45-47.	Non-NAAS
19.	Yadav, S., Gehlot, R., Siddiqui, S. and Grewal, R.B. (2015). Development and evaluation of ready-to-serve (RTS) drink and squash from guava-mango blends. <i>Beverage & Food World</i> 42(5): 47-50.	Non-NAAS
2016		
20.	Jain, A. and Grewal, R.B. (2016). Optimization of extrusion process for production of ready to eat extruded snacks based on maize, wheat and rice blends- A response surface methodology approach. <i>Food Sci. Res. J.</i> 6(2): 316-325.	2.86
21.	Isha Kaushik, Singh, R. and S. Siddiqui (2016). Physicochemical properties of barley, barley malt, bengal gram, peanut and organoleptic acceptability of malt based nutritious beverage. <i>Progressive Research</i> 11 (7) 4851-4854.	3.16
22.	Man, D.L., Gehlot, R., Siddiqui, S., Rekha and Kumari, A. (2016). Studies on Development and Evaluation of Guava-Mango Jam and Chutney. <i>Beverage & Food World</i> 43(5): 31-33 & 35.	Non-NAAS
23.	Man, D.L., Gehlot, R., Siddiqui, S. and Rekha. (2016). Changes in chemical constituents and overall acceptability of Guava-Mango jam and chutney during storage. <i>Beverage & Food World</i> 43(2): 31-34.	Non-NAAS
24.	Harshitha, T., Gehlot, R., Siddiqui, S. and Rekha (2016). Physico-chemical composition of fresh fruits of mango cultivars. <i>Progressive Research</i> 11(2): 139-140.	3.16
25.	Harshitha, T., Gehlot, R., Siddiqui, S. and Rekha (2016). Changes in chemical constituents and overall acceptability of mango ready-to-serve drink and squash during storage. <i>Progressive Research</i> 11(2): 269-273.	3.16
26.	Harshitha, T., Gehlot, R., Siddiqui, S. and Rekha (2016). Development and evaluation of mango ready-to-serve drink and squash. <i>Progressive Research</i> 11(3): 349-354.	3.16
27.	Bhardwaj, R., Gehlot, R. and Mishra, D. (2016). Study of the Effect of Storage on Chemical Constituents of Guava-Jamun Jam. <i>Biosciences Biotechnology Research Asia</i> 13(3): 1703-1707.	4.93
28.	Bhardwaj, R., Gehlot, R., Mishra, D., Arora, S. and Sucheta (2016). Physico-chemical Quality Changes in Guava-Jamun Chutney During Storage. <i>Biosciences Biotechnology Research Asia</i> 13(4): 2269-2272.	4.93

29.	Sucheta, Gehlot, R., Siddiqui, S. and Grewal, R.B. (2016). Changes in texture and overall acceptability of guava-mango fruit cheese during storage. <i>Progressive Research</i> 11(3): 1913-1915.	3.16
2017		
30.	Vipin Saini and Siddiqui, S. (2017). Experimental study to improve the quality of dehydrated button mushrooms (<i>Agaricus bisporus</i>). <i>Journal of Agricultural Science and Technology</i> 6(2): 1-10.	6.82
31.	Arora, S. Siddiqui, S. and Gehlot, R. (2017). Effects of ultraviolet irradiation, hot water dip and ethanol vapours treatment on keeping quality of moth bean (<i>Phaseolus aconitifolius</i> Jacq.) sprouts. <i>International Journal of Current Microbiology and Applied Sciences</i> 6(8): 2143-2151.	5.38
32.	Arora, S., Siddiqui, S. and Gehlot, R. (2017). Effects of ethanol vapours, hot water dip and ultraviolet irradiation treatments on nutritional quality of chickpea sprouts. <i>Journal of Food Legumes</i> 30(2): 77-82.	5.97
2018		
33.	Rahul; Gehlot, R.; Siddiqui, S.; Singh, R.; Rekha and Kumari, A. (2018). Changes in chemical constituents and overall acceptability of guava-jamun cheese and toffee during storage. <i>International Journal of Chemical Studies</i> 6(1): 1022-1025	5.31
34.	Sachin; Gehlot, R.; Siddiqui, S.; Rekha; Kumari, A. and Singh, R. (2018). Studies on development and evaluation of aonla-papaya jam and chutney. <i>International Journal of Chemical Studies</i> 6(2): 1187-1190	5.31
35.	Sachin; Gehlot, R.; Siddiqui, S.; Rekha; Kumari, A. and Singh, R. (2018). Changes in chemical constituents and overall acceptability of Aonla-Papaya jam and chutney during storage. <i>International Journal of Current Microbiology and Applied Sciences</i> 7(3): 2001-2007	5.38
36.	Seema R., Siddiqui, S. and Gandhi, K. (2018). Effect of individual vacuum and modified atmosphere packaging on shelf life of guava. <i>International Journal of Chemical Studies</i> 6(2): 966-972.	5.31

FST Publications from Ph.D. students' research

Ph.D. started in FST w.e.f. 2010-11

LIST OF PUBLICATIONS		
S. No.	Title	NAAS rating
2013		
1.	Khatak, A and Grewal, R.B. (2013). Physico-chemical and functional properties of newly developed hybrid and traditional pearl millet varieties. <i>International Journal of Agriculture and Food Science Technology</i> 4(8): 739-740.	Non-NAAS
2016		
2.	Sucheta, Gehlot, R. and Siddiqui, S. (2016). Review Paper on Osmotic Dehydration: A Process for Improved Quality of Fruit and Vegetable Products. <i>Beverage & Food World</i> 43(5): 34-35.	Non-NAAS
3.	Bishnoi, J.P., Gehlot, R. and Siddiqui, S. (2016). Effect of different pretreatments on physico-chemical and sensory characteristics of Aonla (<i>Phyllanthus emblica</i>	2.98

	L.) fruit pulp. <i>Annals of Biology</i> 32(1): 90-93 (2.98).	
4.	Jain, A., Gehlot, R., Siddiqui, S. and Harshita, T. (2016). Standardization of Optimum Blends for Processing Value Added Ready-To-Serve Drink from <i>Aloe Vera</i> , Aonla and Papaya. <i>Indian Journal of Ecology</i> 43(1): 180-187.	4.47
5.	Bishnoi, J.P., Gehlot, R. and Siddiqui, S. (2016). Change in chemical constituents and overall acceptability of frozen and dehydrated aonla pulp during storage. <i>Journal of Applied and Natural Science</i> 8(3): 1615-1617.	5.08
	2017	
6.	Kaushik, I. and Grewal, R.B. (2017). Antinutrients & mineral content of Thirteen Different Varieties of Pearl Millet Locally Grown in Haryana India. <i>Int. J.Curr. Microbiol.App.Sci.</i> 6 (5) : 2136-2143	5.38
7.	Kaushik, I. and Grewal, R.B. 2017. Trans Fatty Acids: Replacement Technologies in Food . <i>Advances in Res.</i> 9(5):1-14	4.77
	2018	
8.	Simran Arora, Siddiqui, S.; Gehlot, R. and Ahmed, N. (2018). Effects of anti-browning pretreatments on browning of banana pulp. <i>International Journal of Current Microbiology and Applied Science</i> 7(04): xxxx. doi: https://doi.org/10.20546/ijcmas.2018.704.xx	5.38
9.	Jyoti Prabha, Gehlot, R. and Siddiqui, S. (2018). Utilization of <i>Glycyrrhiza glabra</i> for preparation of herbal aonla laddoo. <i>Journal of Pharmacognosy and Phytochemistry</i> 7(2): 446-450.	5.21
10.	Jyoti Prabha, Gehlot, R. and Siddiqui, S. (2018). Development of low calorie aonla laddoo using <i>Stevia rebaudiana</i> . <i>Journal of Pharmacognosy and Phytochemistry</i> 7(2): 741-745.	5.21
11.	Jyoti Prabha, Gehlot, R. and Siddiqui, S. and Isha Kaushik (2018). Processing and utilization of Satavari roots for preparation of Herbal Aonla Laddoo. <i>International Journal of Current Microbiology and Applied Sciences</i> 7(3): 2698-2706.	5.38

Annexure FST –III (a)**Workshops/ Seminars/Trainings and Conferences attended by students****WORKSHOP**

1. Technology Exhibition at SAU-ICAR-CII Northern Region Meet, College of Home Science on September 4, 2012. (Dr. Rajendra Singh, Dr. R.B.Grewal, Dr.S. Siddiqui, Dr. Rakesh Gehlot, Dr. Rekha & all M.Sc. and Ph.D. students of CFST).
2. Workshop on “Preventive measures to eliminate the crimes of ‘Honour Killing’ on 25-26 Feb., 2014 organized by the Department of HDFS-COHS, CCS HAU, Hisar.(Dr. Rekha, Dr. Anju and M.Sc. & Ph.D. students of the Centre)
3. Dr. Rekha and Dr Anju Kumari along with M.Sc. and Ph.D. students attended Workshop on “Scientific / Technical writing” on April 18-19, 2017
4. Dr. Rekha and Dr Anju Kumari along with M.Sc. and Ph.D. students attended Workshop on “Capacity building on IPR Instruments” on May 6, 2017

SEMINAR

1. Industrial/Entrepreneurial Motivational Campaign organized by DHRM in collaboration with MSME at CCSHAU, Hisar on November 29, 2012. (Dr. Rajendra Singh, Dr. (Mrs.) R.B. Grewal, Dr. S. Siddiqui, Dr. Rakesh Gehlot, Dr. (Mrs.) Rekha, M.Sc. & Ph.D. students of the Centre)
2. National Seminar on Technological Upgradation and Modernization of Food Processing Industries in India at Pragati Maidan, New Delhi on March 15, 2013 (Dr. Rekha & 14 M.Sc. and Ph.D. students).
3. National Seminar on “Reorientation of Agricultural Research to Ensure Food Security” (RARFS-2014) organized by Directorate of Research from Jan.6-7, 2014. (Faculty members, M.Sc. & Ph.D. students of the centre)
 - Ms. Simran Arora was awarded 1st Prize in oral presentation in Theme VI,
 - Ms. Harshitha T. was awarded 1st prize in poster presentation in Theme VIII.
 - Ms. Jyoti Prabha was awarded 2nd position in poster presentation in Theme VI
4. Ms. Charul Chaudhary, Ph.D. student Participation in National Education Summit 2014 at Mahatma Mandir, Gandhinagar Gujarat organized by Education Department, Govt. of Gujarat. Jan.10-11, 2014.
5. Akanksha Jain presented research paper in Seminar on “Recent Approaches to Sustainable Research & Development of Aromatic and Medicinal Plants” organized by Medicinal, Aromatic and Potential Crops Section, Department of Genetics and Plant Breeding at COBS&H, CCSHAU, Hisar from February 29 to March 01, 2016
6. Isha Kaushik attended 5th National Seminar on Coarse Cereals Development-Challenges and Opportunities in the Country organized by Department of Genetics and Plant Breeding, CCSHAU, Hisar from March 20 to 21, 2016

CONFERENCES**2012-13**

1. Aneeta, Anuradha & Charul (Ph.D. students) attended International Conference on “Innovation in Food Processing, Value Chain Management and Food Safety” at NIFTEM, Kundli, January 10-12, 2013.

2013-14

2. Oral research paper presentation by Ph.D. student Sonu Panwar in International Congress in 2nd International Conference on “Agriculture, Food Technologies and Environment - New Approaches: (AFTENA-2013) organized by Krishi Sanskriti, held at JNU, New Delhi from 19-20 October, 2013.
3. International Conference on BIFDM at NIFTEM, Kundli on 16-17 November, 2013
 - Oral presentation by Madushika Keshani Ransingha
 - Poster presentation by Neeraj, Anuradha & Harshitha T
4. Oral presentation at International Conference by Ms. Charul (Ph.D. student) on “Role of Plant Biochemistry & Biotechnology in Food and Nutritional Security” organized by Department of Biochemistry, Sri Venkateswara University, Tirupati, India. Dec.11-14, 2013.
5. Oral research paper presentation by Ms. Charul (Ph.D. student) in International Congress on “Agriculture, Food Engineering and Environmental Sciences - Sustainable Approaches” organized by Krishi Sanskriti, held at JNU, New Delhi from 29-30 March, 2014.

6. Ms. Aneeta Khatak and Ms. Charul Chaudhary (Ph.D. students) attended 4th International Conference on “Updating Food Technology: A challenge towards Public health nutrition” (ICUFT-2014) held at Jawahar Lal Nehru University, New Delhi from May 7-8, 2014.

2014-15

7. Aneeta, Charul & Jyoti Prabha (Ph.D. students) attended and presented 4 posters in “National Symposium on Advances in Biotechnology for crop improvement” at Eternal University, Baru Sahib, Himachal Pradesh on July 12, 2014.
8. Harishita & Akanksha Jain (students) attended 23rd Indian Convention of Food Scientist & Technologist organized by AFSI(I), Mysore held at NIFTEM, Kundli, Sonipat from Dec 13-14, 2014.
9. Ms. Charul (Ph.D. student) attended 7th National Conference on “Recent Advances in Chemical, Biological & Environmental Sciences” held at M.M. Modi College, Patiala from Jan 30-31, 2015.
10. Ms. Harshitha (M.Sc. student) attended XII Agricultural Science Congress held at NDRI, Karnal from Feb 3-6, 2015.
11. Aneeta Khatak, Charul Chaudhary, Akanksha Jain, Isha Kaushik, & Neeraj (Ph.D. students) attended 3rd International Conference on “Impacting Food Value Chain & Leveraging Innovation” held at NIFTEM, Kundli, Sonapat from Feb 26-28, 2015

2015-16

12. Akanksha Jain and Isha Kaushik (Ph.D. students) attended 56th Annual conference of AMI-2015 & International Symposium on “Emerging Discoveries in Microbiology” at JNU, New Delhi from December 7 to 10, 2015
13. Akanksha Jain (Ph.D. student) participated in National Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences at RVSKVV, Gwalior from December 12 to 13, 2015
14. Akanksha Jain participated in International Conference-2016 on Natural Resource Management: Ecological Perspectives Organized by Indian Ecological Society at SKUAST, Jammu from February 18 to 20, 2016.
15. Akanksha Jain (Ph.D. student) participated in National Conference on Food Processing and Technology (Current Status and Future Prospects (NCFPT-2016) organized by School of Bioengineering and Food Technology Shoolini University, Solan from February 25 to 26, 2016
16. Oral Presentation by Ms. Neeraj (Ph.D. student) in the 7th International Conference organized by IIFANS on “Growing Trends in Food Technology and Nutrition for Public Health” held on 26-27 May, 2016 New Convention Centre, JNU University, New Delhi.

2016-17

17. 25th Indian Convention of Food Scientists & Technologists (ICFoST-XXV) on Food Processing for Sustainable Agriculture & Industry organized by AFSTI at GNDU, Amritsar from November 10-12, 2016.
18. National Conference on Trends in Nanobiotechnology (NCTN-2016) organized by College of Basic Sciences and Humanities, CCS HAU, Hisar from November 29-30, 2016.
19. International Conference on Emerging Areas of Environmental Science and Engineering (EAESE-2017) organized by Departmental of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar from February 16-18, 2017

20. National Conference on Advances in Food Science and Technology- Current Trends and Future Perspectives (AFST-2017) organized by Department of Food Technology, Akal College of Agriculture, Eternal University, Baru Sahib, Distt. Sirmour (HP) India from March 24-25, 2017.
21. National Conference on Food Processing India - 2017 organized by Department of Food Technology, Guru Jambheshwar University of Science and Technology, Hisar from March 03-04, 2017.

2017-18

22. National Symposium on Innovations in Horticulture: Production to Consumption jointly organized by Departments of Vegetable Science and Horticulture, G.B. Pant University of Agriculture and Technology, Pantnagar, U.S. Nagar, Uttarakhand from September 14-15, 2017.
23. Naseer Ahmed (Ph.D. student) presented poster in 3rd International Conference on “Bioresource and Stress Management” on Nov., 8-11, 2017 at Agriculture Research Institute, Jaipur.
24. Simran Arora (Ph.D. student) presented poster in National Conference on “Food Processing for Value Addition: Trends and Innovations” on Nov., 27, 2017 in the Department of Food Technology Maharshi Dayanand University, Rohtak, Haryana.

Annexure FST- IV

Awards/Prizes – Academic activity & co curricular activities:

1. Quiz Participation on World Food Day, October, 2012
2. First Prize- Sushil
3. Participation- Charul Chaudhary, Yudhvir, Akanksha, Jitender, Sucheta, Simran, Rashmi, Sunil, Vikas, Sonal
4. General Science Quiz in 2012 - Participation- Jitender
5. JAM session in Youth Festival, 2012 –Participation – Sushil
6. Dumbshreads in Youth Festival, 2012 –Participation – Sushil, Sucheta
7. Quiz Participation on World Food Day, October, 2013
8. First Prize- Sunil Kumar H C
9. Second Prize- Sushil
10. Participation- Yudhvir, Sucheta, Charul Chaudhary
11. Street Play in Youth Festival, 2013 - Participation –Sushil
12. Clay Modelling in Youth Festival, 2013 - Participation – Charul Chaudhary
13. Solo Dance (Classical) in Youth Festival, 2013 - First Prize- Akanksha Jain
14. Group Dance (Folk) in Youth Festival, 2013 - Second Prize- Akanksha Jain and Jyoti Bishnoi
15. College Procession in Youth Festival, 2013 - First Prize - Charul Chaudhary, Isha Kaushik
16. Haryanvi Skit - Third Prize – Rahul (College Freshers Party)
17. Participated in elocution- Akanksha Jain (UTSAV –I, 2013)
18. Participated in JAM session- Isha Kaushik (UTSAV –I, 2013)
19. Participated in Poster making- Rahul (UTSAV -I, 2013)
20. Participated in Street Play- Rahul (UTSAV -II, 2014)
21. Participated in Banner making- Rahul (UTSAV -II, 2014)
22. Participated in Group Dance (Folk) -Jyoti Bishnoi (UTSAV -II, 2014)
23. Fancy Dress Parade-Guest participation – Dang Linh Man (UTSAV -II, 2014)
24. Solo Song (Western) - First Prize- Madushika Keshani Ransingha (UTSAV -II, 2014)

25. Group Dance (General) - Second Prize- Madushika Keshani Ransingha (UTSAV -II, 2014)
26. College Procession- First Prize - Rahul, Priyanka and Harshitha T. (UTSAV -II)
27. Positions in Youth Festival 2016
28. College Procession- First Prize – Sachin, Sumit, Nidhi, Harsha, Akanksha Jain
29. English Debate-- First Prize – Nidhi Dalal
30. English Poetry-- First Prize – Harsha Rohilla
31. Group Discussion- First Prize – Nidhi Dalal
32. Group Dance (Folk) - First Prize- Akanksha Jain
33. Group Dance (General) - Second Prize- Akanksha Jain
34. Mime - Second Prize- Sachin & Sumit
35. World Food Day 2016
36. Slogan Writing – 2nd Prize Priyanka,
37. Food Quiz – 3rd Prize Sumit and Rahul

Annexure FST - V**Students Participation in seminar/ Conferences etc****Ph.D Students**

Sr. No.	Name of student	Number of Students	Department	Seminar/ Conf./Workshop Details
2012				
1.	Aneeta, Anuradha and Sonu	3	Food Science & Technology	Technology Exhibition at SAU-ICAR-CII Northern Region Meet, College of Home Science on September 4, 2012.
2.	Aneeta, Anuradha and Sonu	3	Food Science & Technology	Industrial/Entrepreneurial Motivational Campaign, CCSHAU, Hisar on November 29, 2012
2013				
3.	Aneeta, Anuradha, Charul	3	Food Science & Technology	International Conference on Innovation in Food Processing, Value Chain Management and Food Safety, January 10-12, 2013, NIFTEM, Kundli
4.	Anuradha, Jyoti, Sangeeta and Sonu	4	Food Science & Technology	National Seminar on Technological Upgradation and Modernization of Food Processing Industries in India, Pragati Maidan, New Delhi on March 15, 2013
5.	Sonu Panwar	1	Food Science & Technology	2 nd International Conference on Agriculture, Food Technologies and Environment - New Approaches: (AFTENA-2013), October 19-20, 2013, JNU, New Delhi

6.	Madushika, Neeraj, Aunradha Harshitha T	4	Food Science & Technology	International Conference on BIFDM, November 16-17, 2013, NIFTEM, Kundli
7.	Charul	1	Food Science & Technology	International Conference on Role of Plant Biochemistry & Biotechnology in Food and Nutritional Security, Dec.11-14, 2013, Sri Venkateswara University, Tirupati.
2014				
8.	Simran Arora, Jyoti Prabha	2	Food Science & Technology	Preventive measures to eliminate the crimes of 'Honour Killing' on 25-26 Feb., 2014 organized by the Department of HDFS-COHS, CCS HAU, Hisar
9.	Simran Arora, Jyoti Prabha and Charul	3	Food Science & Technology	National Seminar on Reorientation of Agricultural Research to Ensure National Food Security, January 6-7, 2014, CCSHAU, Hisar
10.	Charul Chaudhary	1	Food Science & Technology	National Education Summit 2014, Mahatma Mandir Jan.10-11, 2014, Gandhinagar Gujarat
11.	Charul	1	Food Science & Technology	International Congress on Agriculture, Food Engineering and Environmental Sciences-Sustainable Approaches, March 29-30, 2014 JNU, New Delhi
12.	Aneeta Khatak Charul Chaudhary	2	Food Science & Technology	4 th International Conference on Updating Food Technology: A challenge towards Public health nutritio" (ICUFT-2014), May 7-8, 2014, JNU, New Delhi
13.	Aneeta, Charul Jyoti Prabha	3	Food Science & Technology	National Symposium on Advances in Biotechnology for crop improvement, July 12, 2014, Eternal University, Baru Sahib, Himachal Pradesh
14.	Harishita Akanksha Jain	2	Food Science & Technology	23 rd Indian Convention of Food Scientist & Technologist, Dec 13-14, 2014, NIFTEM, Kundli, Sonipat
2015				
15.	Charul	1	Food Science & Technology	7 th National Conference on Recent Advances in Chemical, Biological & Environmental Sciences, Jan 30-31, 2015, M.M. Modi College, Patiala
16.	Aneeta Khatak, Charul, Akanksha Isha Kaushik, Neeraj	5	Food Science & Technology	3 rd International Conference on Impacting Food Value Chain & Leveraging Innovation Feb 26-28, 2015, NIFTEM, Kundli, Sonapat

17.	Akanksha Jain Isha Kaushik	2	Food Science & Technology	56 th Annual conference of AMI-2015 & International Symposium on Emerging Discoveries in Microbiology, December 7-10, 2015, JNU, New Delhi
18.	Akanksha Jain	1	Food Science & Technology	National Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences December 12-13, 2015, RVSKVV, Gwalior
2016				
19.	Akanksha Jain	1	Food Science & Technology	Seminar on Recent Approaches to Sustainable Research & Development of Aromatic and Medicinal Plants, February 29 to March 01, 2016, CCSHAU, Hisar
20.	Isha Kaushik	1	Food Science & Technology	5 th National Seminar on Coarse Cereals Development-Challenges and Opportunities in the Country, March 20-21, 2016, CCS HAU, Hisar
21.	Akanksha Jain	1	Food Science & Technology	International Conference-2016 on Natural Resource Management: Ecological Perspectives, February 18-20, 2016, SKUAST, Jammu
22.	Akanksha Jain	1	Food Science & Technology	National Conference on Food Processing and Technology (Current Status and Future Prospects (NCFPT-2016) organized by School of Bioengineering and Food Technology Shoolini University, Solan from February 25 to 26, 2016
23.	Neeraj	1	Food Science & Technology	7 th International Conference organized by IIFANS on "Growing Trends in Food Technology and Nutrition for Public Health" held on 26-27 May, 2016 New Convention Centre, JNU University, New Delhi
24.	Naseer	1	Food Science & Technology	25 th Indian Convention of Food Scientists & Technologists (ICFoST-XXV) on Food Processing for Sustainable Agriculture & Industry organized by AFSTI at GNDU, Amritsar from November 10-12, 2016.
25.	Naseer, Simran, Sucheta	3	Food Science & Technology	National Conference on Trends in Nanobiotechnology (NCTN-2016) organized by College of Basic

				Sciences and Humanities, CCS HAU, Hisar from November 29-30, 2016
2017				
26.	Simran	1	Food Science & Technology	Workshop on “Capacity building on IPR Instruments” on May 6, 2017
27.	Simran	1	Food Science & Technology	International Conference on Emerging Areas of Environmental Science and Engineering (EAESE-2017) organized by Departmental of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar from February 16-18, 2017
28.	Simran	1	Food Science & Technology	National Conference on Advances in Food Science and Technology-Current Trends and Future Perspectives (AFST-2017) organized by Department of Food Technology, Akal College of Agriculture, Eternal University, Baru Sahib, Distt. Sirmour (HP) India from March 24-25, 2017.
29.	Ratan, Simran	2	Food Science & Technology	National Symposium on Innovations in Horticulture: Production to Consumption jointly organized by Departments of Vegetable Science and Horticulture, G.B. Pant University of Agriculture and Technology, Pantnagar, U.S. Nagar, Uttarakhand from September 14-15, 2017.
30.	Naseer Ahmed	1	Food Science & Technology	3rd International Conference on “Bioresource and Stress Management” on Nov., 8-11, 2017 at Agriculture Research Institute, Jaipur.
31.	Simran Arora	1	Food Science & Technology	National Conference on “Food Processing for Value Addition: Trends and Innovations” on Nov., 27, 2017 in the Department of Food Technology Maharshi Dayanand University, Rohtak,

Annexure STAT-I

List of Research Scholars Passed Out During Last Five Years

S. No.	Name and Admn. No.	Guide	Date of Admission	Date of Completion
1	Hemant Kumar 2009BS65D	BK Hooda	2010	15.05.2014
2.	B.Bhushana Babu 2009BS66D	BK Hooda	2010	15.10.2015
3.	Suman and 2012BS20D	Urmil Verma	2012	28.09.2017
4.	Salinder 2012BS21D	Urmil Verma	2012	28.09.2017
1.	Poonam Godara 2011BS103M	D.R. Aneja	2011	01.09.2014
2.	Sanjeev 2012BS20M	Urmil Verma	2012	18.08.2015
3.	Mujahid Khan 2013BS21M	R.C.Hasija	2013	29.05.2015
4.	Nisha Sumbherwal 2013BS22M	D.R.Aneja	2013	08.06.2016
5.	Swati 2013BS23M	Veena Manocha	2013	17.11.2015
6.	Nishu Lohmor 2013BS24M	Kiran Kapoor	2013	17.11.2015
7.	Sudha Bishnoi 2013BS25M	BK Hooda	2013	29.10.2015
8.	Poonam 2013BS26M	D.R. Aneja	2013	27.07.2016
9.	Ravita 2013BS27M	Urmil Verma	2013	16.05.2016
10.	Rekha Bishnoi 2014BS21M	D.R. Aneja	2014	15.12.2016
11.	Bhushan Kumar 2014BS16M	BK Hooda	2014	18.05.2017
12.	Ekta Hooda 2014BS17M	Veena Manocha	2014	17.07.2016
13.	Mohit Nain 2014BS18M	BK Hooda	2014	15.12.2017
14.	Sudesh Rani 2014BS20M	Urmil Verma	2014	18.03.2017

Annexure STAT-IIA**List of Students Publications****M.Sc.**

Sanjeev, Verma, Urmil and Tonk, M.S.(2015). Time series modelling for sugarcane yield estimation in Haryana. *International Journal of Applied Mathematics and Statistical Sciences*, 4(6): 53-62.(3.45)

Khan, Mujahid, Hasija, R.C., Aneja, D.R. and Sharma, Manish (2016). A uniformity trial on Indian Mustard for determination of optimum size and shape of blocks. *Journal of Applied and Natural Science*, 8(3): 1589-1593 (5.09)

Ravita and Verma, Urmil (2016). Application of ARIMA modeling for mustard yield prediction in Haryana. *International Journal of Applied Mathematics and Statistical Sciences*, 4(6): 23-28.(3.45)

Sudesh, Roy, R. and Verma, Urmil (2016). Development of weather-yield models for wheat crop in western zone of Haryana. *International Journal of Pure and Applied Mathematical Technologies*, 1(2): 30-36.

Sanjeev and Verma, Urmil (2016). ARIMA versus ARIMAX modelling for sugarcane yield prediction in Haryana. *International J. of Agricultural and Statistical Sciences*, 12(2): 327-334. (5.13)

Sudesh, Verma, P. and Verma, Urmil (2016). Use of Transfer Function Models for FDI Estimation in India. *International Journal of Pure and Applied Mathematical Technologies*, 1(2): 37-43.

Godara, P. and Aneja, D.R. (2017). Pre-harvest wheat yield prediction through agrometeorological models for western zone of Haryana. *Environment & Ecology*. 35(4D): 3395-3400 (4.18)

Hooda, Ekta, Hooda, B.K. and Manocha, Veena. (2017). Dynamics of Inter-Districts Developmental Disparities in Haryana. *Journal of Applied and Natural Science* 9(2): 983-991. (5.09)

Hooda, Ekta, Hooda, B.K. Manocha, Veena and Tanwar Nitin (2017). Principal Dimensions of Regional Agricultural and Socio-Economic Disparities in Haryana. *Advances in Research*, 10(6): 1-11 (4.80)

Khan, Mujahid, Hasija, R.C., Hooda, B.K., Tanwar, Nitin and Kumar, Banti (2017). Relative Efficiency of Experimental Designs in Relation to Various Size and Shape of Plot and Blocks in Indian Mustard (*Brassica Juncea L.*) Crop. *Int. J. Agricul. Stat. Sci* 13(1): 253-258. (5.13)

Ravita and Verma, Urmil (2017). Use of crop condition based dummy regressor and weather input for parameter estimation of mustard yield forecast models in Haryana. *Journal of Applied and Natural Science*, 9(3): 1703-09. (5.09)

Annexure STAT-IIB**Ph. D.**

Kumar, Hemant and Hooda, B.K. (2014): Prediction of milk production using artificial neural network. *Current Advances in Agricultural Sciences*, 6(2): 173-175 (4.69)Goyal, M. and Verma, Urmil (2015). Development of weather-spectral models for pre-harvest wheat yield prediction on agro-climatic zone basis in Haryana. *International J. of Agricultural and Statistical Sciences*, 11(1): 73-79. (5.13)

- Goyal, M. and Verma, Urmil (2015). Spectral-weather-crop yield forecasting: Discriminant function analysis. *Journal of Applied Probability and Statistics*, 10(1): 1-14.
- Kumar, H and Hooda, B.K (2015). Comparison of penalized and multiple linear regression for prediction of milk yield in crossbred cattle. *Int. J. Agricult. Stat. Sci.* 11(1): 151-156. (5.13)
- Salinder and Verma, Urmil (2016). Impact of climatic variables on wheat yield estimation in southern zone of Haryana. *International Journal of Computer & Mathematical Sciences*: 5 (12): 20-25.
- Salinder and Verma, Urmil (2016). Linear mixed effects models for wheat yield estimation in Haryana. *International Journal of Computer & Mathematical Sciences*, 5(12): 12-19.
- Suman and Verma, Urmil (2016). Autoregressive Integrated Moving Average models for sugarcane yield estimation in Haryana. *International Journal of Computer & Mathematical Sciences*, 5 (12): 33-38.
- Tanwar, Nitin, Kumar Sunil, Siodia, B.V.S. and Hooda, B.K. (2016) Dynamics of Socio-Economic Development of Districts of Eastern Uttar Pradesh. *Journal of Applied and Natural Science* 8(1): 5-9 (5.09)
- Salinder and Verma, Urmil (2017). Multivariate statistical techniques for parameter estimation of weather-crop yield forecast models on agro-climatic zone basis in Haryana. *International J. of Agricultural and Statistical Sciences*, 13(1): 97-104. (5.13)
- Tanwar, Nitin and Hooda, B.K. (2017). Estimation of Aspect Based Multi-dimensional Poverty in Rural Haryana. *Advances in Research* 10(5): 1-8. (4.80)

Annexure STAT-III

Student Participation in Academic Activities

Participation of M.Sc. students

- Five students participated in National Conference on “**Recent trends and development in Statistics** (NCRTDS) at MDU, Rohtak during 21-23 February, 2014
- Sudesh, Verma, P. and **Urmil Verma** (2016). Using logistic regression to predict wheat yield in western zone of Haryana. 3rd International Conference on Recent Development in Engineering, Science, Management and Humanities (ICRESMH-16) at Indian Federation of United Nation Association, IFUNA, Qutub Institutional Area, Delhi, India on 11th December, 2016.

Participation of Ph.D students

- Goyal, M. and **Urmil Verma** (2014). Use of remote sensing and weather data for wheat yield modelling on agro-climatic zone basis in Haryana. Paper presented by the other author in ‘XVI Annual Conference of the Society of Statistics, Computer and Applications’ held at BPSMV, Khanpur Kalan, Sonapat, Haryana during February 24-26, 2014.
- Babu, V.Bhushana and **Hooda B.K.** (2015). Probability models for spatial and temporal distributions of daily rainfall in western zone of Haryana. International conference on statistics and related areas for equity, sustainability and development during November 28-30, 2015.

- Babu, V.Bhushana and **Hooda B.K.** (2015). Probability models for spatial and temporal distributions of daily rainfall in eastern zone of Haryana. 69th annual conference of Indian society of Agricultural Statistics during December 14-16, 2015.
- Salinder and **Urmil Verma** (2016). Linear mixed effects models for wheat yield estimation in Haryana. 2nd International conference on innovative trends in Engineering, Science and Management (ICITESM-16) at YMCA , Jai Singh Road, Delhi, India on 19th November, 2016.

Annexure STAT-IV

Extra Co-curricular Activities Performed by Students

Name of the event	Date	Name of the student	Deptt.	Competition	Position
Bharat Ratan Dr. B.R. Ambedkar Remembrance Programme	20-21/1/17	Tanu	Math, Stat and Physics	Declamation	Consolation
Matribhasha Diwas	3.3.16	Sudha Bishnoi*	Math, Stat and Physics	Poster Making	Consolation
		Tanu	do-	Prerak Prasang	II
Teachers' Day Celebration	5.9.16	Naveen	Math, Stat and Physics	Quiz	I
		Mamata	do-	Slogan Writing(English)	II
		Deepankar	do-	Slogan Writing(Hindi)	II
Utsav 2016	12-18/ 1/ 16	Ekta	Math, Stat and Physics	Group discussion	I

* Ph. D student

Annexure MICRO - I

List of students admitted in last five years

2012-13					
M. Sc.- 07			Ph. D. -06		
Sr. No.	Name	Admission No.	Sr. No.	Name	Admission No.
1	Sneh Lata	2012BS12M	1	Shikha	2012BS13D
2	Swati	-13-	2	Manisha	-14-
3	Jennifer	-14-	3	Pooja	-16-
4	Dhinu Yadav	-15-	4	Hemanta Kumar	-17-
5	Shikha	-16-	5	Rashmi	-18-
6	Manjeet	-18-	6	Priyanka	-19-
7	Aastha	-19-			
2013-14					
M. Sc.-7			Ph. D.-7		
Sr. No.	Name	Admission No.	Sr. No.	Name	Admission No.
1	Subhash (Left)	2013BS8M	1	Subha	2013BS13D
2	Rakhi	-9-	2	Anju	-14-
3	Kavita	-10-	3	Umang	-15-
4	Sonu Boora	-11-	4	Aarti	-16-
5	Khushboo	-12-	5	Tanvi	-17-
6	Ruchi	-14-	6	Monika	-18-
7	Anita	-15-	7	Rekha	-19-
2014-15					
M. Sc.-5			Ph. D.-6		
Sr. No.	Name	Admission No.	Sr. No.	Name	Admission No.
1	Raman	2014BS9M	1	Swati	2014BS13D
2	Deepak	-10-	2	Kuldeep	-14-
3	Kamalpreet Kaur	-11-	3	Atul	-15-
4	Savita	-12-	4	Anupama	-16-
5	Harpreet Kaur	-13-	5	Suman	-17-
6			6	Rinku	-18-
2015-16					
M. Sc.-6			Ph. D.-4		
Sr. No.	Name	Admission No.	Sr. No.	Name	Admission No.
1	Vivek	2015BS11M	1	Kavita	2015BS7D
2	Satish	-12-	2	Jennifer	-8-
3	Pankaj	-13-	3	Dhinu Yadav	-9-
4	Nandini	-14-	4	Ruchi	-10-
5	Sujeeta	-15-			

6	Sushila	-16-			
2016-17					
M. Sc.-4			Ph. D.-3		
Sr. No.	Name	Admission No.	Sr. No.	Name	Admission No.
1	Sonam Antil	2016BS6M	1	Athira	2016BS3D
2	Sachin	-7-	2	Harpreet	-4-
3	Dolly	-8-	3	Aastha	-5-
4	Rajkumar (Left)	-9-	4		
2017-18					
M. Sc.-5			Ph. D.-5		
Sr. No.	Name	Admission No.	Sr. No.	Name	Admission No.
1	Aman Kumar	2017BS12M	1	Pankaj Sharma	Fresher
2	Sheetal Yadav	-13-	2	Satish	Fresher
3	Dilbag	-14-	3	Rakhi	Fresher
4	Priya	-15-	4	Savita	Fresher
5	Deeksha	-16-	5	Shreeniketan	Fresher

Annexure MICRO - II**List of students on roll presently**

Sr. No.	Name & AdmissionNo.	Guide	Title of research problem
Ph. D.			
1	Subha 2013BS13D	Dr. Rajesh Gera	Development of promiscuous and effective rhizobia nodulating Kharif legumes
2	Swati 2014BS13D	Dr. Rajesh Gera	Molecular diversity of indigenous rhizobial population infecting Chickpea (<i>Cicer arietinum L.</i>) grown in hyper-arid zone of Rajasthan
3	Kuldeep 2014BS14D	Dr. Rajesh Gera	Genetic diversity of rhizobia nodulating <i>Sesbania</i> cultivars in Indian soils
4	Atul 2014BS15D	Dr. Leela Wati	Evaluation of thermotolerant bacteria for growth and yield of summer mungbean (<i>Vigna radiata L.</i>)
5	Anupama 2014BS16D	Dr. S. S. Sindhu	Bioherbicidal potential of antagonistic rhizosphere bacteria in management of wild oat (<i>Avena fatua L.</i>) and their inoculation effect on growth of wheat (<i>Triticum aestivum L.</i>)
6	Suman 2014BS17D	Dr. Sneha Goyal	Characterization of sulphur oxidizing bacteria and their effects on growth of mustard (<i>Brassica juncea L.</i>).

7	Rinku 2014BS18D	Dr. Sneh Goyal	Impact of municipal solid waste on soil microbiological properties and wheat (<i>Triticum aestivum</i>) growth
8	Kavita 2015BS7D	Dr. Leela Wati	Evaluation of plant growth promoting actinomycetes on chickpea (<i>Cicer arietinum</i> L.)
9	Jennifer 2015BS8D	Dr. Rajesh Gera	Interaction of <i>Sesbania</i> rhizobia with different species of <i>Sesbania</i> and Kharif legumes
10	Dhinu Yadav 2015BS9D	Dr. Sneh Goyal	Effect of conservational practices on physico-chemical and microbiological properties of soil under different cropping systems
11	Ruchi 2015BS10D	Dr. S. S. Sindhu	Growth stimulation of Pigeon pea (<i>Cajanus cajan</i> L.) by antagonistic rhizospheric bacteria.
12	Athira 2016BS3D	Dr. Kamla Malik	Characterization and mass production of chitosan from fungi
13	Harpreet 2016BS4D	Dr. Seema Sangwan	Biochemical characterization of biosurfactants produced by bacteria and their application in pesticide degradation
14	Aastha 2016BS5D	Dr. Rakesh Kumar	Production and partial purification of bacterial keratinase for controlling root knot nematode
15	Pankaj Sharma, Fresher	Dr. Seema Sangwan	Yet to finalize
16	Satish, Fresher	Dr. Rakesh Kumar	Yet to finalize
17	Rakhi, Fresher	Dr. Rajesh Gera	Yet to finalize
18	Savita, Fresher	Dr. Leela Wati	Yet to finalize
19	Shreeniketan, Fresher	Dr. Leela Wati	Yet to finalize
M. Sc.			
1	Vivek 2015BS11M	Dr. S. S. Sindhu	Management of root rot diseases of mungbean (<i>Vigna 385radiata</i> L.) with application of antagonistic rhizosphere bacteria
2	Sonam Antil 2016BS6M	Dr. Rakesh Kumar	Biocontrol of <i>M. javanica</i> in Brinjal (<i>Solanum melangina</i> L.) using PGPR bacteria
3	Sachin 2016BS7M	Dr. D.V. Pathak	Exploration of thermotolerant Rhizobacteria to control root rot disease in cluster bean (<i>Cyamopsis tetragonolata</i> L.)
4	Dolly 2016BS8M	Dr. Seema Sangwan	Biochemical characterization and toxicity studies of biosurfactant produced by yeast
5	Sheetal Yadav 2016BS13M	Dr. D.V. Pathak	Yet to finalize

6	Dilbag 2016BS14M	Dr. Kamla Malik	Yet to finalize
7	Priya 2016BS15M	Dr. Seema Sangwan	Yet to finalize
8	Deeksha 2016BS16M	Dr. Rakesh Kumar	Yet to finalize

Annexure MICRO - III

Students Participation in seminar/ Conferences etc

Sr. No.	Name of student and Admn No.	Oral/ Poster	Seminar/ conf./workshop details
M.Sc. Students			
1.	Sujeeta (2015BS15M)	Poster	National Conference on “Biodiversity and sustainable utilization of plant resources” held on Feb. 17-18 at KUK, Kurukshetra, Haryana (MDM-03).
2.	Satish Kumar (2015BS12M)	Poster	National Conference on “Biodiversity and sustainable utilization of plant resources” held on Feb. 17-18 at KUK, Kurukshetra, Haryana (MDM-03).
3.	Satish Kumar (2015BS12M)	Poster	National Conference on Food Processing for Value Addition Trend and Innovation, GJUST, Hisar
4.	Raman Jangra (2014BS09M)	Oral	National Conference on Food Processing for Value Addition Trend and Innovation, GJUST, Hisar
5.	Raman Jangra (2014BS09M)	Poster	National Conference on “Biodiversity and sustainable utilization of plant resources” held on Feb. 17-18 at KUK, Kurukshetra, Haryana (MDM-03).
Ph.D. Students			
6.	Deepika Kadian (2011BS12D)	Poster	54 th Annual Conference of AMI-2013 and International Symposium on Frontier Discoveries and Innovations in Microbiology and its Interdisciplinary Relevance (FDMIR-2013) on 17-20 TH November, 2013 at Maharshi Dayanand University, Rohtak, Haryana
7.	Manisha Phour (2012BS14D)	Poster	54 th Annual Conference of AMI-2013 and International Symposium on Frontier Discoveries and Innovations in Microbiology and its Interdisciplinary Relevance (FDMIR-2013) on 17-20 TH November, 2013 at Maharshi Dayanand University, Rohtak, Haryana
8.	Harshpreet kaur (2014BS13M)	Poster	54 th Annual Conference of AMI-2013 and International Symposium on Frontier Discoveries and Innovations in Microbiology and its Interdisciplinary Relevance (FDMIR-2013) on 17-20 TH November, 2013 at Maharshi Dayanand University, Rohtak, Haryana
9.	Manisha Phour (2012BS14D)	Poster	National Seminar on “Reorientation of Agricultural Research to ensure National food Security” on 6-7 th January, 2014 at CCS HAU, Hisar

10.	Subha (2013BS13D)	Poster	National Seminar on “Reorientation of Agricultural Research to ensure National food Security” on 6-7 th January, 2014 at CCS HAU, Hisar
11.	ArtiYadav (2013BS16D)	Poster	National Seminar on “Reorientation of Agricultural Research to ensure National food Security” on 6-7 th January, 2014 at CCS HAU, Hisar
12.	Swati (2014BS13D)	Poster	National Seminar on “Reorientation of Agricultural Research to ensure National food Security” on 6-7 th January, 2014 at CCS HAU, Hisar
13.	Priyanka (2012BS19D)	Poster	India International Sciences Festival 2015 at IIT, Delhi, from 4-8 th December, 2015
14.	Monika (2013BS18D)	Poster	56 TH AMI Conference on “Emerging discoveries in Microbiology” organized by AMI at JNU, Delhi, from 7-10 th December, 2015
15.	Anju Sehrawat (2013BS14D)	Poster	56 TH AMI Conference on “Emerging discoveries in Microbiology” organized by AMI at JNU, Delhi, from 7-10 th December, 2015
16.	Rekha (2013BS19D)	Poster	56 TH AMI Conference on “Emerging discoveries in Microbiology” organized by AMI at JNU, Delhi, from 7-10 th December, 2015
17.	Umang (2013BS15D)	Poster	56 TH AMI Conference on “Emerging discoveries in Microbiology” organized by AMI at JNU, Delhi, from 7-10 th December, 2015
18.	Shikha Mehta (2012BS13D)	Poster	56 TH AMI Conference on “Emerging discoveries in Microbiology” organized by AMI at JNU, Delhi, from 7-10 th December, 2015
19.	Hemanta Kr. Mondal (2012BS17D)	Poster	56 TH AMI Conference on “Emerging discoveries in Microbiology” organized by AMI at JNU, Delhi, from 7-10 th December, 2015
20.	Hemanta Kr. Mondal (2012BS17D)	Poster	India International Sciences Festival 2015 at IIT, Delhi, from 4-8 th December, 2015
21.	Harpreet Kaur (2016BS04D)	Poster	National conference on Trends in Nanobiotechnology (NCTN-2016) organized by Department of MBB&B, CCS HAU, Hisar in collaboration with Biosensor Society (India)

Annexure MICRO - IV**Student participation in trainings**

S.No.	Name of student and Admn No.	Duration	Title
1.	Rekha 2013BS19D Umang Ahlawat 2013BS15D Monika 2013BS18D Tanvi 2013BS17D Shikha Mehta 2012BS13D Manisha Phour 2012BS14D	21 days (2016-17)	Basic biotechnology and bioinformatics tools organized by Animal biotechnology, LUVAS
2.	Rekha 2013BS19D Umang Ahlawat 2013BS15D Tanvi 2013BS17D Swati 2014BS13D Suman Chaudhary 2014BS17D Rinku Dhanker 2104BS18D Kuldeep 2104BS14D Hemantha Kumar 2012BS17D Subha 2013BS13D Aarti Yadav 2013BS16D Pooja 2012BS16D	2 days (2016-17)	Workshop on 2-D gel electrophoresis, western blotting and RT-PCR organized by BIORAD

Annexure MICRO - V**Placements record**

Sr. No.	Name of Student(s)	Placements (duration 2012-2017)
1.	Monika Aggrawal	Quality control Inspector in FCI since 2014.
2.	Ritu Grover	School teacher in Haryana Government since 2014
3.	Deepika Kadyan	School lecturer in Haryana Government since 2014
4.	Deepika Chaudhary	SRF in DST funded project in 2013-14
5.	Sita Ram Chaudhary	Probationary officer Oriental Bank of Commerce, Karnal since 2013
6.	Anupama Deora	Research associate in Animal Biotechnology, LUVAS since 2012

7.	Niti Chawla	Working as Teaching Associate, in Chaudhary Bansi Lal University, Bhiwani. Since 2015
8.	Annu Goel	Research Associate in Central Pollution Control Board (New Delhi) since 2013
9.	Harshpreet Kaur	Research Fellow in Department of Biotechnology, MDU, Rohtak since 2015
10.	Manjeet Chhikara	District Coordinator in Agriculture, Belgaum, Maharashtra since 2017
11.	Monika:	Asstt Professor Rai University, Gujarat since 2017
12.	Amrita Narula	Asstt Professor, Modi University, Rajasthan since 2015

Annexure MICRO -VI

Scholarship And Financial Support

Sr. No.	Name	Class and Year	Type of Support (University/ Centre Govt./State Govt./ Other)	Name of scholarship Support
1.	Nandni 2015BS14M	M Sc. 2015	University	CCS HAU, merit Fellowship
2	Sushila Devi 2015BS16M	M Sc. 2015	University	CCS HAU, merit Fellowship
3	Sonam Antil 2016BS06M	M Sc. 2016	University	CCS HAU, merit Fellowship
4	Sachin 2016BS07M	M Sc. 2016	University	CCS HAU, merit Fellowship
5	Dolly Rani 2016BS08M	M Sc. 2016	University	CCS HAU, merit Fellowship
6	Aman Kumar 2017BS12M	M Sc. 2016	University	CCS HAU, merit Fellowship
7	Sheetal Yadav 2017BS13M	M Sc. 2016	University	CCS HAU, merit Fellowship
8	Dilbag 2017BS14M	M Sc. 2016	University	CCS HAU, merit Fellowship
9	Priya 2017BS15M	M Sc. 2016	University	CCS HAU, merit Fellowship
10	Deksha 2017BS16M	M Sc. 2016	University	CCS HAU, merit Fellowship
11	Rekha 2013BS19D	PhD 2013	University	CCS HAU, merit Fellowship
12	Subha 2013BS13D	PhD 2013	University	CCS HAU, merit Fellowship
13	Suman Chaudhary 2014BS17D	PhD 2014	Centre Govt	DST INSPIRE

14.	Rinku Dhanker 2014BS18D	PhD 2014	University	CCS HAU, merit Fellowship
15.	Swati 2014BS13D	PhD 2014	University	CCS HAU, merit Fellowship
16.	Anupama 2014BS16D	PhD 2014	Centre Govt	Rajiv Gandhi National Fellowship
17.	Atul Parashar 2014BS15D	PhD 2014	University	CCS HAU, merit Fellowship
18.	Kuldeep 2014BS14D	PhD 2014	University	CCS HAU, merit Fellowship
19.	Dhinu Yadav 2015BS09D	PhD 2015	University	CCS HAU, merit Fellowship
20.	Jennifer Christina Masih 2015BS08D	PhD 2015	University	CCS HAU, merit Fellowship
21.	Kavita Rani 2015BS07D	PhD 2015	University	CCS HAU, merit Fellowship
22..	Ruchi Sharma 2015BS10D	PhD 2015	University	CCS HAU, merit Fellowship
23	Harpreet Kaur 2016BS04D	PhD 2016	University	CCS HAU, merit Fellowship
24.	Aathira 2016BS03D	PhD 2016	University	ICAR
25	Aastha 2016BS05D	PhD 2016	University	CCS HAU, merit Fellowship

Annexure MICRO – VII

Name of students cleared NET, ARS, GATE or any other examination:

2012-13	2013-14	2014-15	2015-16	2016-17	Total
2	6	4	9	6	27
Name of the student	Name of the student	Name of the student	Name of the student	Name of the student	
Shifa Narula	Hemanta Kumar Mondal	Priyanka Parmar	Umang Ahlawat	Pankaj	
Annu Goel	Khan Mohd Sarim	Deepika Kadian	Rekha	Suman Chaudhary	
	Rashmi Yadav	Manisha Phour	AartiYadav	Swati Sindhu	
	Snehlata	Anju Sehwat	Rinku	Anupama Dahiya	
	Ajay Mangtu Ram		Subha	Kavita	

	Monika		Rashmi	Ruchi Sharma	
			Kavita	Raman Jangra	
			Ruchi Sharma		
			Suman		
			Shikha Mehta		
			Kuldeep		
			Swati		
			Aakaknsha		
			Aastha		
			Tanvi		

Annexure MICRO - VIII**Name of students got fellowships:**

Year	Name of student	Name of Fellowship
2012-13	Hemanta Kumar Mondal	ICAR-SRF(PGS)
2014-15	Suman Chaudhary	INSPIRE, DST
2015-16	Monika	Rajiv Gandhi National Fellowship
2015-16	Anupma Dahiya	Rajiv Gandhi National Fellowship
2016-17	Aathira S. Kumar	ICAR-SRF (PGS)

Annexure MICRO IX**Publications from M.Sc. students**

S. No.	Title of the paper/book	NAAS rating
2012-2013		
1	Kumari, B., Wati, L., Narula, A. & Kapoor, K. K. (2012) Co-digestion of cattle dung and rice straw for biogas production. Pollution Research, 31(1), 11-15.	4.97
2013-2014		
2	Chaudhary, D. Narula, N., Sindhu, S.S. and Behl, R.K. (2013) Plant growth stimulation of wheat (<i>Triticum aestivum</i> L.) by inoculation of salinity tolerant <i>Azotobacter</i> strains. Physiology and Molecular Biology of Plants. 19 (4) 515-519.	7.35
3	Giri, R., Kundu, B.S., Diwan, P., Raj, K. & Wati, L. (2013) Ethanol production from direct sugarcane and juice by yeast. Agricultural Science Digest, 33(3), 188-192.	4.21
4	Parmar, P. and Sindhu, S.S (2013) Potassium Solubilization by Rhizosphere Bacteria: Influence of Nutritional and Environmental Conditions. Journal of Microbiology Research. 3(1): 25-31	-----
2014-2015		
5	Choudhary, S.R. & Sindhu, S.S. (2015). Suppression of <i>Rhizoctonia solani</i> root rot disease of clusterbean (<i>Cyamopsis tetragonoloba</i>) and plant growth promotion by rhizosphere bacteria. Plant Pathology Journal, 14, 48-57.	6.92

6	Salma, Z., Sindhu, S.S. & Ahlawat, A.P. (2014) Suppression of Fusarium wilt disease in Gladiolus by using rhizobacterial strains. <i>Journal of Crop and Weed</i> , 10, 466-471.	5.28
7	Narula, A. & Wati, L. (2014) Paddy straw supplementation to cattle dung for enhanced biogas production and enrichment of effluent slurry. <i>Journal of Pure and Applied Microbiology</i> , 8(4), 3269-72.	5.00
8	Grover, R., Goel, A., Wati, L. & Raj, K. (2015) Ethanol production from spent oyster mushroom substrate. <i>Pollution Research</i> , 34(1): 139-142.	4.97
9	Kumari, A., Goyal, R.K., Sehrawat, S.K., Choudhary, M. & Sindhu, S.S. (2014) Growth, yield and quality of Chrysanthemum (<i>Chrysanthemum morifolium</i> Ramat.) cv. Dolly orange as influenced by biofertilizers in combination with phosphorous. <i>International Journal of Agriculture, Environment and Biotechnology</i> , 7(3), 555-564.	4.69
10	Kumari, A., Goyal, R.K., Choudhary, M. & Sindhu, S.S. (2014) Effect of different nitrogen levels and biofertilizers on growth, yield and nutrient of Chrysanthemum. <i>Annals of Agricultural Research</i> , 35(2), 156-163.	4.01
11	Khare, N., Pathak, D.V., Sangwan, S. & Chawla, N. (2014) Effect of Microbial enrichment on microbial population and nutritional status of vermicompost. <i>Research in Environment and Life Sciences</i> , 7(3), 153-156.	3.74
2015-2016		
12	Monika, Dahiya, S. & Goyal, S. (2016) Pretreatment of lignocellulosic biomass for bioethanol production. <i>Journal of agriculture science and technology</i> , 5(2),1-7.	6.82
13	Garg, V., Kukreja, K. & Gera, R. (2016) Molecular diversity of berseem (<i>Trifolium alexandrinum</i> L.) rhizobia isolated from Haryana soil. <i>Legume Research.</i> , 39 (5), 729-733.	6.15
14	Kuldeep, Gera, R. & Padder, S, A. (2016) Evaluation of rhizobial strains for abiotic stress tolerance in pigeon pea from arid and semi-arid zones of Haryana, India. <i>The Ecoscan.</i> , 9, 401-407.	5.26
15	Grover, R., Goel, A., Wati, L. & Raj, K. (2015) Ethanol production from spent oyster mushroom substrate. <i>Pollution Research</i> , 34(1), 139-142.	4.97
16	Meenakshi, Kundu, B. S. & Wati, L. (2016) Isolation and characterization of cadmium remediating bacteria from industrial effluent. <i>Pollution Research</i> , 35 (4), 183-188.	4.97
17	Garg, V., Kukreja, K., Gera, R. & Singla, A. (2015) Production of indole-3-acetic acid by berseem (<i>Trifolium alexandrinum</i> L.) rhizobia isolated from Haryana, India. <i>Agricultural Science Digest</i> , 35 (3), 229-232.	4.21
18	Barkodia, M., Goyal, S. & Wati, L. (2015) Alkaline pretreatment an effective approach for saccharification of sugarcane bagasse. <i>International journal of tropical agriculture</i> , 33, 1267-1273.	3.49
19	Dahiya, S., Barkodia, M., Goyal, S. & Wati, L. (2015) Acid pretreatment of wheat straw for bioethanol production. <i>International Journal of Tropical Agriculture</i> . 33, 1275-1278.	3.49
20	Kumari, A., Goyal, R.K., Choudhary, M. and Sindhu, S.S. (2015) Response of single and co-inoculation of plant growth promotion rhizobacteria on growth, flowering and nutrient content of Chrysanthemum. <i>African Journal of Microbiological Research</i> , 9, 1896-1906.	-----

21	Meenakshi, Wati, L. & Raj, K. (2015) Simultaneous saccharification and fermentation of sugarcane bagasse to ethanol. <i>Indian Journal of Scientific Research and Technology</i> , 3(6), 7-11.	-----
2016-2017		
22	Chaudhary, S.R. and Sindhu, S.S. (2016) Growth stimulation of clusterbean (<i>Cyamopsis tetragonoloba</i>) by coinoculation with rhizosphere bacteria and Rhizobium. <i>Legume Research</i> , 39(6)1003-1012.	6.15
23	Meenakshi, Wati, L. & Raj, K. (2016) Evaluation of Alkaline Pretreatments for Delignification of Sugarcane Bagasse. <i>Environment and Ecology</i> , 34 (4D), 2523—2527.	4.18
24	S Rakshiya, Y & Verma, Manoj & S Sindhu, S. (2016). Efficacy of antagonistic soil bacteria in management of subterranean termites (Isoptera). <i>Res. Environ. Life Sci.</i> 9. 949-955.	3.74
2017-18		
25	Sujeeta, Malik, K. Mehta, S. & Sihag, K. (2017) Isolation and screening of amylase producing fungi. <i>International Journal of Current Microbiology and Applied Science</i> , 6(4), 783-788.	5.38
26	Yadav, D. & Wati, L. (2016) Microbial delignification and hydrolysis of paddy straw for ethanol production. <i>Agricultural Research Journal</i> 53(4), 528-531.	4.71

Publications Ph.D. students

Sr. No.	Title of the paper/book	NAAS rating
2012-2013		
1	Deora, A., Giri, R., Suneja, S., Goyal, S. & Kukreja, K. (2012) Isolation and characterization of pyrene degrading bacteria. <i>Pollution research</i> , 31(1), 25-32.	4.97
2	Deora, A., Giri, R., Suneja, S., Kukreja, K. & Kumar, P. (2013) Evaluation of Paenibacillus strains for the degradation of Pyrene- A Polycyclic Aromatic Hydrocarbon. <i>Annals of Biology</i> , 29(1), 7-14.	4.08
3	Chawla, N., Suneja, S., Kukreja, K. & Kumar, R. (2013) Bioremediation: An emerging technology for remediation of pesticides. <i>Research Journal of Chemistry and Environment</i> , 17(4), 88-104.	4.00
4	Dua, S. and Sindhu, S.S. (2012) Effectiveness of rhizosphere bacteria for control of root rot disease and improving plant growth of wheat (<i>Triticum aestivum</i> L.). <i>Journal of Microbiology Research</i> 2(2) 26-35.	-----
2013-2014		
5	Kayasth, M., Gera, R., Dudeja, S.S., Sharma, P.K. & Kumar, V. (2014) Studies on salinization in Haryana soils on free-living nitrogen-fixing bacterial populations and their activity. <i>Journal of Basic Microbiology</i> , 54(3), 170-179. DOI 10.1002/jobm.201200158	7.59
6	Kumar, V., Kayasth, M., Chaudhary, V. & Gera, R. (2013) Diversity of diazotrophs in arid and semi-arid regions of Haryana and evaluation of their plant growth promoting potential on Bt-cotton and pearl millet. <i>Annals of Microbiology</i> , DOI 10.1007/s13213-013-0774-y.	7.23

7	Kumar, V. and Gera, R. (2014). Isolation of a multi-trait plant growth promoting <i>Brevundimonas</i> sp. and its effect on the growth of Bt-cotton. 3 <i>Biotech.</i> 4: 97-101. DOI 10.1007/s13205-013-0126-4.	6.99
8	Kayasth, M., Kumar, V. and Gera, R. (2014). <i>Gordonia</i> sp: A salt tolerant bacterial inoculant for growth promotion of pearl millet under saline soil conditions. 3 <i>Biotech.</i> 4: 553-557. DOI: 10.1007/s13205-013-0178-5.	6.99
9	Goel, A. & Wati, L. (2013) Ethanol production from rice (<i>Oryza sativa</i>) straw biomass by separate hydrolysis and fermentation. <i>Journal of Pure and Applied Microbiology</i> , 74(4).	5.00
10	Kayasth, M., Kumar, V., Gera, R. & Dudeja, S.S. (2013) Isolation and characterization of salt tolerant phosphate solubilising strain of <i>Pseudomonas</i> sp. from rhizosphere soil of weed growing in saline field. <i>Annals of Biology</i> , 29(2), 224-227.	4.08
11	Sonia, K., Wati, L., Kant, R., Chourasia, S.K. & Singh, U. (2013) Management of spent mushroom substrate (SMS) through enrichment of biogas plant slurry. <i>Trends in Biosciences</i> , 6(5), 589-591.	3.94
12	Khandelwal, A. and Sindhu, S. S. (2013) ACC Deaminase containing rhizobacteria enhance nodulation and plant growth in clusterbean (<i>Cyamopsis tetragonoloba</i> L.), <i>Journal of Microbiology Research</i> , Vol. 3 No. 3, 2013, pp. 117-123.	-----
2014-2015		
13	Chawla, N., Phour, M., Suneja, S., Sangwaan, S. & Goyal, S. (2014). <i>Gluconacetobacter diazotrophicus</i> : An overview. <i>Research in Environment and Life Sciences</i> , 7(1), 1-10.	3.74
14	Priyanka & Wati, L. (2015) Assessment of endophytic bacteria for growth promotion in chickpea. <i>Indian Journal of Scientific Research and Technology</i> , 3(4), 25-29.	-----
2015-2016		
15	Goel, A. & Wati, L. (2016) Ethanol production from Rice (<i>Oryza sativa</i>) straw by Simultaneous saccharification and co-fermentation. <i>Indian Journal of Experimental Biology</i> , 54, 525-529.	7.17
16	Putatunda, C., Malik, R. K. & Wati, L. (2015) Solid state semi-continuous anaerobic digestion of cattle dung supplemented with poultry waste. <i>Journal of Pure and Applied Microbiology</i> , 9(4), 2955-2960.	5.00
2017-18		
17	Chaudhary, D. and Sindhu, S.S. (2017) Amelioration of salt stress in chickpea (<i>Cicer arietinum</i> L.) by coinoculation of ACC deaminase-containing rhizospheric bacteria with <i>Mesorhizobium</i> strains. <i>Legume Research</i> . 40 (1)80-86	6.15
18	Sarim, K.M., Kukreja, K., Kumar, R & Iqbal (2017) Biological decolorization of reactive textile dye Yellow CRG. <i>International Journal of Current Microbiology and Applied Science</i> , 6(2),117-126.	5.38
19	Dhull S. and Gera R. (2017). Assessing stress tolerant rhizobial isolates of clusterbean (<i>Cymopsis tetragonoloba</i> (L.) Taub.) Retrieved from semi arid regions of Haryana, India. <i>International Journal of Current Microbiology and Applied Science</i> . 6(4): 744-753.	5.38

20	Mondal, H. K., Mehta, S., Kaur, H. & Gera, R. (2017) Characterization of Stress Tolerant Mungbean Rhizobia as PGPR and Plant Growth Promotion under Abiotic Stress. <i>Indian Journal of Ecology</i> , 44, 38-42, ISSN: 0304-5250. 4.38	4.96
21	Mehta, S., Malik K.& Mondal,H.K. (2017) Sustainable utilization of wastes for enhancement of biogas production. <i>Indian Journal of Ecology</i> , 44, 512-516.	4.96
22	Monika, Priyanka & Wati, L. (2017) Screening of rhizobial isolate from <i>Vigna radiata</i> for plant growth promoting traits. <i>Research on crops</i> , 18, 190-195.	4.75
23	Yadav,D. & Wati,L. (2016) Microbial delignification and hydrolysis of paddy straw for ethanol production. <i>Agricultural Research Journal</i> 53(4), 528-531.	4.71
24	Monika & Wati,L. (2016) Evaluation of plant growth promoting traits of mungbean rhizobia. <i>Environment and Ecology</i> . 35, 117-121.	4.18
25	Mondal, H.K., Gera, R. & Kumar, R. (2017) Alleviation of high abiotic stress in clusterbean using stress-tolerant rhizobia as multi-trait PGPR. <i>Green Farming</i> , 8, 394-398.	4.38



Students placement record**i a. M.Sc. (Bioinformatics) students placement record**

S.No.	Name	Admission No.	Position held
1.	Divya Ray	2004BS122M	Faculty, Bharati Vidyapeeth Deemed University
2.	Ritesh	2004BS123M	Teaching Associate, Guru Jambheshwar University of Science and Technology, Hisar
3.	Puneet	2004BS186M	Legislative Officer, PARLIAMENT OF INDIA, New Delhi, India
4.	Aakanksha	2004BS256M	Lecturer, GBSSS NIT 5, Faridabad
5.	Bhavna Sharma	2005BS121M	Assistant commissioner, MP STATE Tax Department, Indore, India
6.	Yogender Yadav	2005BS122M	Entrepreneur, RATATOUILLE SOLUTIONS, New Delhi, India
7.	Shalini Sharma	2005BS124M	PGT Lecturer, OPS International School
8.	Tara Devi	2005BS131M	Research Fellow, School of Agricultural Biotechnology Punjab Agricultural University, Ludhiana, Punjab, India
9.	Ritu Setia	2005BS132M	Probation Officer, Indian Bank
10.	Divya	2006BS85M	Assistant Professor, Ambala College of Engineering & Applied research, Mithapur, Haryana
11.	Anuja	2006BS89M	Technical Assistant, Dept. of Biotechnology, Kurukshetra University, Kurukshetra
12.	Saroj	2006BS90M	SRF, Directorate of Wheat Research, Karnal
13.	Deepshikha	2006BS91M	Teaching Assistant, Netaji Subhash Institute(NSIT), Dwarka, New Delhi
14.	Sonika	2006BS93M	Teaching Assistant, Sri Venkateswara College, New Delhi
15.	Arun	2006BS94M	Scientist, Indian Council of Medical Research, New Delhi, India
16.	Ritesh Arora	2007BS149M	Database Administrator, Hewlett Packard Enterprise, Bangalore, India
17.	Vandana Saini	2007BS154M	Research Associate Maharishi Dayanand University, Rohtak
18.	Santosh	2007BS157M	PGT Lecturer, GMS Tigri, Bhiwani
19.	Monica Vashist	2008BS137M	PO, Union Bank, New Delhi
20.	Richa Sethi	2008BS139M	Quality Control Inspector, Food Corporation of India
21.	Ojasvi	2008BS140M	Research fellow, Translational Health Science and Technology Institute, Faridabad, Haryana
22.	Ravi Kant	2008BS142M	Guest Faculty, Govt. College, Safidon
23.	Preeti	2008BS143M	National Post Doctorate Fellow, National Agri-Food Biotechnology Institute (NABI), Punjab

24.	Punam	2008BS144M	Assistant Manager, Central Bank of India
25.	Deepshikha	2009BS110M	Assistant Professor, Jaipur National University

ii b. Ph.D. students placement record

S.No.	Name	Admission No.	Position held
1.	Rekha Rani	2007BS5D	PGT Lecturer
2.	Jitender Kumar	2010BS7D	Technical Officer, IFFCO
3.	Rekha Malik	2008BS9D	Principal Scientist, IIW&B, Karnal
4.	Nikita Sandhu	2009BS38D	Project Scientist, IRRI, Philippines
5.	Surender Kumar	2009BS41D	Assistant Professor, Amity University
6.	Meenu Gupta	2009BS37D	Assistant Professor, Central University, Mahendergarh, Haryana
7.	Naveen Kumar	2010BS41D	Research Associate, Wheat & Barley Section, CCS HAU, Hisar, Haryana
8.	Iqbal	2009BS43D	Research Associate, Department of Animal Biotechnology, LUVAS, Hisar, Haryana
9.	Bharti Aneja	2010BS39D	Research Associate, IIW&B, Karnal, Haryana
10.	P.Vishnu Vardhan Reddy	2009BS44D	Research Associate, DRR, Hyderabad
11.	Zeenat Wadhwa	2011BS20D	Guest Faculty, F. C. College, Hisar, Haryana
12.	Priyanka Walia	2009BS40D	PGT Lecturer, Govt. of Haryana
13.	Monika	2011BS16D	PGT Lecture, Govt. of Haryana
14.	Pardeep Kumar		Scientist, NBPGR
15.	Reema Sherwal	2011BS17D	Scientist, ARS, ICAR

ii. a. Students (MBB) Participation in Academic Activities since 2014:

- Rahul Kumar Meena (2012BS30D), Aditi (2012BS25D), Kirti Mehta attended National workshop on “Genomics in crop improvement, Maharshi Dayanand University, Rohtak (27-28 February, 2014)
- Aditi (2012BS25D), Kirti Mehta, Rahul Kumar Meena (2012BS30D) attended Hands on Training on “Bioinformatics Tools & Techniques for Gene and Protein Analysis, Department of Bio and Nanotechnology Guru Jambheshwar University, Hisar (6-7 March, 2014)
- Rahul Kumar Meena (2012BS30D) Participated in National Conference on Contemporary Issues in Biotechnology: Progress and Future Applications and Panel Discussion on “Attracting Talent” April 02, 2014, organized by Amity Institute of Biotechnology Amity University Haryana, Gurgaon (Manesar)-122413.
- Ravi Mehndiratta Attended a Master class in Real Time PCR conducted by BioRad Laboratories at New Delhi on 30 May 2014.
- Aditi (2012BS25D) attended National symposium on Advances in Biotechnology for Crop improvement, Eternal University- Baru Sahib (June, 2014).
- Rahul Kumar Meena (2012BS30D), Kirti Mehta Participation in National Symposium on Advances in Biotechnology for Crop Improvement organised by Eternal University, Baru Sahib, Himachal Pradesh and Department of Biotechnology, Govt. Of India (12th July, 2014).

- Rahul Kumar Meena (2012BS30D) Attended National Workshop on “*Emerging Trends in Nano Science and Biotechnology*” on August 19, 2014.
- Sonali Sangwan, Ravi Mehndiratta Poster presentation in 6th world congress on Biotechnology held at New Delhi on Oct 5-7, 2014.
- Kirti Mehta presented a Poster on ‘Pyramiding of bacterial blight resistance genes in rice (*Oryza sativa* L.) using marker assisted selection’ at International Conference on Emerging Trends in Biotechnology (ICETB), Jawaharlal Nehru University (JNU), New Delhi (6-9th November, 2014).
- Priti Saini (201326D) Hands on Training on “Bioinformatics Tools for Genomics Research Problems Solving”, Department of Bio and Nanotechnology Guru Jambheshwar University, Hisar (19-20 March, 2015)
- Rahul Kumar Meena (2012BS30D) Attended National Conference on “*Biodiversity and Sustainable Development*” on March 27, 2015 held at Hisar.
- Sonali Sangwan Poster presentation in 1st International Young Scientist Congress from Aug 8-9, 2015 held at Maharaja Ranjit Singh College of Professional Sciences, Indore, MP, India
- Rahul Kumar Meena (2012BS30D), Ravi Mehndiratta Poster Presentation in National Symposium on Germplasm to Genes: Harnessing Biotechnology for Food Security and Health from August 9-11, 2015 at National Agriculture Science Centre, Pusa New Delhi.
- Kirti Mehta Presented a Poster on ‘Molecular analysis of rice (*Oryza sativa* L.) for bacterial blight resistance genes’ at National Conference on ‘Emerging Challenges in Biotechnology’ organised by Department of Biotechnology, Chandigarh Group of Colleges Landran and Association of Microbiologists of India, Chandigarh Unit (21-22nd August, 2015).
- Sonali Sangwan, Rahul Kumar Meena (2012BS30D), Aditi (2012BS25D) attended 6th World Congress on Biotechnology and published the work in Proceedings of *Journal of Biotechnology and Biomaterials* 5:6, OMICS International, New Delhi (5-7 October, 2015)
- Disha Kamboj (2013BS24D), Kirti Mehta, Rahul Kumar Meena (2012BS30D) Participated in the Workshop on Bioprocess Technology organised by the Department of Bio and Nano Technology, Guru Jambheshwar University of Science and Technology, Hisar, sponsored by Department of Biotechnology, Ministry of Science and Technology, Govt. of India, New Delhi (1-3 February, 2016).
- Neha, Gagandeep, Rakshita, Preeti Saini, Rahul Kumar Meena (2012BS30D), Aditi (2012BS25D) attended National Symposium on Transgenic crops in India-Progress and Challenges-Department of MBB&B, CCS HAU, Hisar (16-17 March, 2016)
- Aditi (2012BS25D) attended Workshop on “Bioprocess Technology”, Department of Bio and Nanotechnology Guru Jambheshwar University, Hisar (1-3 February, 2016)
- Sonali Sangwan, Disha Kamboj (2013BS24D){“Optimization for Agrobacterium-mediated transformation in Indian Mustard}, Sumit Jangra (2013BS28D), Pratik (2012BS29D), Ravi Mehndiratta , Priti Saini (201326D){ Transgenics and Genome Editing}, Mahavir (2012BS31D){Prospects to Rice Transgenics for abiotic stress and its impact on cereal production}Poster Presentation in “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
- Sumit Jangra (2013BS28D) Poster Presentation “Marker assisted selection in Pearl millet for drought tolerance” in 5th National Seminar on Coarse Cereals Development – Challenges and opportunities in the Country held at CCS HAU, Hisar during March 20-21, 2016.

- Mahavir (2012BS31D), Amit Pippal (2012BS29D) Attended a workshop on Drug Discovery technology: a molecular modelling approach on March 28-30 2016 at GJUS&T Hisar.
- Kirti Mehta Participation in BIOTIKOS 2016 'National Symposium on Nanotechnology' organised by TERI University Biotechnology Society at TERI University, New Delhi (31st March-1st April, 2016).
- Disha Kamboj (2013BS24D), Sumit Jangra (2013BS28D), Aditi (2012BS25D), Priti Saini (201326D), Rahul Kumar Meena (2012BS30D) attended Workshop on 2D electrophoresis, western Blotting and quantitative PCR, BIORAD, Department of MBB&B-CCS HAU, Hisar (29-30 August, 2016)
- Rahul Kumar Meena (2012BS30D) Awarded First Prize in quiz competition held at COBS&H, CCSHAU, Hisar, on the occasion of teachers day 5 September 2016.
- Rahul Kumar Meena (2012BS30D) Government of India has selected for Study Tour to London School of Economics, United Kingdom (U.K.) w.e.f. 24th to 31st October, 2015 on the occasion of 125th Birth Anniversary of Dr. Ambedkar.
- Rahul Kumar Meena (2012BS30D) Participated in National symposium on *genomics-based next generation crop improvement approaches*, held at ICAR-IARI, during November 11-12, 2016.
- Sonali Sangwan, Preeti Attended Author Workshop (jointly organized by Elsevier and Maharshi Dayanand University 2016) at Radhakrishnan Auditorium, Maharshi Dayanand University, Rohtak on Friday, November 18, 2016.
- Kritika Sharma, Rinku 2015BS30M, Divya, Gagandeep, Preeti, Rakshita, Disha Kamboj (2013BS24D), Sumit Jangra (2013BS28D), Rahul Kumar Meena (2012BS30D), Aditi (2012BS25D), Kirti Mehta, Sonali Sangwan, Priti Saini (201326D) {DNA Assembly at Nanoscale for Various Applications} attended National Conference and presented poster on Trends in Nanobiotechnology(NCTN-2016), Department of MBB&B, CCS HAU, Hisar (29-30 November, 2016)
- Sumit Jangra (2013BS28D) Poster Presentation "Using Marker Assisted Selection for drought tolerance in Pearl millet" in Indian International Science Festival held at NPL-CSIR, New Delhi during December 7-11, 2016.
- Reema Sherwal attended International Conference on "Microbes for Health and Wealth" in Maharshi Dayanand University, Rohtak on 14th Nov, 2017.
- Sumit Jangra (2013BS28D) attended National Seminar on Climate Change and Food Security, held at Maharshi Dayanand University, Rohtak on January 25th, 2018.
- Sumit Jangra (2013BS28D) attended International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry, held at GJUS&T on February 21-23, 2018. pp: 189-190

ii. b. Students (Bioinformatics) Participation in Academic Activities since 2012:

- Drishta Sharma (2010BS140M) attended International Conference on Biotechnology: Emerging Trends (ICB-2012) on September 18-20, 2012p: 210
- Mamta Rani (2010BS139M) attended International Conference on Biotechnology: Emerging Trends (ICB-2012) on September 18-20, 2012p: 211
- Savita (2010BS136M) attended International Conference on Biotechnology: Emerging Trends (ICB-2012) on September 18-20, 2012p: 210-211
- Simerpreet (2015BS39M) attended Three weeks training: Use of Biotechnology & Bioinformatics Tools for Genome Analysis organized by Dept. of MBBB, CCS Haryana Agricultural University, on July 17 to August 7, 2017.

- Naina Kumari (2016BS25M) attended International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry, held at GJUS&T on February 21-23, 2018. pp: 90
- Ritu Jakhar (2016BS28M) attended International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry, held at GJUS&T on February 21-23, 2018. pp: 92
- Manisha (2016BS27M) attended International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry, held at GJUS&T on February 21-23, 2018. pp: 91

Students Awards

- Monsanto-Beachell Borlaug Fellowship awarded to Ms Laxmi Tomar and Nitika Sandhu (Ph.D. students)
- BBSRC-DFID predoctoral award to Ms. Richa Singh and Jyoti Taunk
- UGC scholarships to Mr Surender and Jyoti Taunk
- Rajiv Gandhi National Fellowship awarded to Naveen (2010BS41D)
- Ms. Meenu Gupta (2009BS37D), a PhD scholar was awarded Commonwealth fellowship.
- Ravi Mehndiratta (2012BS24D) DST-INSPIRE
- Amit Pippal, 2012BS29D Rajiv Gandhi National Fellowship
- Rahul Kumar Meena, 2012BS30D Rajiv Gandhi National Fellowship
- Rizwana Rehsawla got Maulana Abdul Kalam Azad Fellowship
- Student Travel Award to Ms Rakshita (2014BS14D)

iii. a. Student (MBB) Participation in Extra Co-Curricular Activities

1. Ravi Mehndiratta was awarded First Prize in Youth fest held at CCSHAU, Hisar for Debate, Elocution, Group Discussion and Extempore.
2. Rahul Kumar Meena was awarded First Prize in quiz competition held at COBS&H, CCSHAU, Hisar, on the occasion of teachers' day 5 September 2016.
3. Rahul Kumar Meena was selected by Government of India for Study Tour to London School of Economics, United Kingdom (U.K.) w.e.f. 24th to 31st October, 2015 on the occasion of 125th Birth Anniversary of Dr. Ambedkar.
4. Disha Kamboj Got first prize in group dance during youth festival UTSAV 2016, held at CCSHAU, Hisar.
5. Divya got 1st prize in Youth Fest 2016 for English Poem Recitation
6. Divya got 2nd Prize in Youth Fest 2016 Group Dance.
7. Rinku got 2nd prize in Youth Fest 2016 for Poem Recitation.
8. **Rinku** got 1st prize in Youth Fest 2016 in Declamation.

iii. a. Student (Bioinformatics) Participation in Extra Co-Curricular Activities

1. Palak got 1st prize in Youth Fest 2016 for Group Dance.
2. Simerpreet got 2nd Prize in Youth Fest 2016 Group Dance.

No. of students who cleared NET during last five years:

2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Total
6	11	4	1	7	2	31
Names (Adm. No.)	Names (Adm. No.)	Names (Adm. No.)	Names (Adm. No.)	Names (Adm. No.)	Names (Adm. No.)	
1. Meenakshi Jain (2010BS40D) 1. Surender Khatodia (2009BS41D) 2. Sandeep Yadav (2011BS19D) 3. Prince Saini (2010BS126M) 4. Pradeep Kumar (2010BS38D) 5. Jitender Kumar (2007BS7D) 6. Iqbal (2009BS43D)	1. Jitender (2010BS07D) 2. Navin (2010BS41D) 3. Mukesh (2011BS18D) 4. Asha (2010BS43D) 5. Rajesh (2010BS42D) 6. Pradeep Kumar (2010BS38D) 7. Reema Sherwal (2011BS17D) 8. Anju Kharb (2014BS14D) 9. Jyoti Taunk (2009BS40D) 10. Niharika (2009BS121M) 11. Sumit Jangra (2013BS28D)	1. Sumit Jangra (2013BS28D) 2. Mukesh Jangra 3. Garima Arya (2010BS132M) 4. Kuldeep Sachdeva (2014BS26M)	Sumit Jangra (2013BS28D)	1. Shalu (2016BS12D) 2. Virender (2013BS36M) 3. Divya (2015BS29M) 4. Kuldeep (2014BS26M) 5. Disha (2013BS24D) 6. Priti (2013BS26D) 7. Rahul Kumar Meena (2012BS30D)	1. Kanika (2015BS17D) 2. Shalu (2016BS12D)	

v. List of Research Scholars enrolled during last five years

Sr. No.	Name	Topic of Research in brief	Name of Supervisor	Year of Enrollment	Extension Granted (if any)	Details of Fellowship /Bursary / Travel and any other research grants In source
1.	Aditi	EST-SSR and RGA polymorphism for diversity analysis and bacterial blight resistance in clusterbean { <i>Cyamopsis tetragonoloba</i> (L.) Taub.}	Neelam R.Yadav	2012	Yes for one semester	-
2.	Mahavir	Genetic and molecular analysis of Basmati x <i>indica</i> (salt tolerant) derived segregating population(s) in rice (<i>Oryza sativa</i> L.)	Shikha Yashveer	2012	Yes for one semester	-
3.	Disha Kamboj	Marker assisted selection for white rust resistance in Indian mustard	Neelam R.Yadav	2013	-	-
4.	Bhoyar Pratik Istari	Molecular breeding of Indica rice genotypes with aerobic adaptation	Shikha Yashveer	2013	-	-
5.	Priti Saini	Microsatellite analysis for targeting bacterial leaf blight resistance in Cluster bean { <i>Cyamopsis tetragonoloba</i> (L.) Taub.}	Neelam R.Yadav	2013	-	-
6.	Sunita Devi	Organogenesis and somatic embryogenesis for micropropagation of some elite cultivars of guava (<i>Psidium guajava</i> L.)	Neelam R.Yadav	2013	-	-
7.	Sumit	Molecular breeding for drought tolerance in pearl millet [<i>Penisetum glaucum</i> (L.) R. Br.]	Neelam R.Yadav	2013	-	-
8.	Pratibha	Development of transgenic pigeonpea (<i>Cajanus cajan</i> L.) plants containing lectin receptor like kinase (<i>Lec-RLK</i>) gene for improving salt tolerance	Pushpa Kharb	2013	-	-
9.	Gagandeep	Development of transgenic chickpea (<i>Cicer arietinum</i> L.) plants with Lectin Receptor-Like Kinase (<i>Lec-</i>	Pushpa Kharb	2014	-	-

		<i>RLK</i>) gene for improving salt tolerance				
10.	Rakshita Singh	Development and characterization of transgenic pigeonpea (<i>Cajanus cajan</i> (L.) Mill-sp.) with <i>OsRuvB</i> gene for salinity tolerance.	Pushpa Kharb	2014	-	-
11.	Vrantika Chaudhary	Development of micro-RNA and EST-SSR markers for diversity analysis in clusterbean { <i>Cyamopsis tetragonoloba</i> (L.) Taub}	Neelam R. Yadav	2014	-	-
12.	Preeti	Development and characterization of transgenic chickpea (<i>Cicer arietinum</i> L.) plants with <i>OsRuvB</i> gene for salt stress tolerance	Pushpa Kharb	2014	-	-
13.	Kanika	Synthesis, characterization and bioefficacy studies of silver nanoparticles from extracts of Trivrit [<i>Operculina turpethum</i> Linn. (syn. <i>Ipomoea turpethum</i>)] and Mulahatti (<i>Glycyrrhiza glabra</i> Linn.)	Pushpa Kharb	2015	-	-
14.	Sonali Sangwan	Effect of salicylic acid nanoformulation(s) on thermotolerance in wheat (<i>Triticum aestivum</i> L. em. Thell)	Shikha Yashveer	2015	-	-
15.	Rizwana Rehsawla	Molecular approaches for detection and forecasting of wheat yellow rust	Neelam R. Yadav	2015	-	Maulana Azad pre doctoral Fellowship
16.	Pratibha Yadav	Understanding galactomannan synthesis using molecular approaches in Cluster bean (<i>Cyamopsis tetragonoloba</i> (L.) Taub)			-	
17.	Nisha Devi	Synthesis, characterization and bioefficacy of silver nanoparticles from extracts of Balsam apple (<i>Momordica balsamina</i> Linn.) and Makhana (<i>Euryale ferox</i> Salisb).	Pushpa Kharb	2015	-	-
18.	Shalu Chaudhary	Molecular approaches for diagnosis, rapid, detection and control of fungal pathogens causing wilt and	K.P.Singh	2016	-	CSIR-JRF

		root rot diseases in chickpea (<i>Cicer arietinum</i> L.)				
19.	Dinesh	Diagnosis, identification and control of fungal pathogens causing stem rot and Alternia blight in indian mustard (<i>Brassica juncea</i> (L.) Czernajew.)	K.P.Singh	2016	-	-
20.	Swati Verma	Genome wide association mapping in barley for terminal heat tolerance and malting quality	Shikha Yashveer	2016	-	-
21.	Rinku Chaudhary	To be decided	Pushpa Kharb	2017	-	-
22.	Pooja	To be decided	Upendra Kumar	2017	-	-
23.	Vijeta	To be decided	Upendra Kumar	2017		
24.	Ritu Khasa	To be decided	Pushpa Kharb	2017	-	-
25.	Hembade Vivekanand Laxman	To be decided	Shikha Yashveer	2017	-	ICAR
26.	Kritika Sharma	To be decided	Shikha Yashveer	2017	-	-

v. a. Students passed out (MBB) data for the last five years

Degree Program	Specialization	Year of start	No. of seats							No. of students passed out						
			Y1	Y2	Y3	Y4	Y5	Y6	Total	Y1	Y2	Y3	Y4	Y5	Y6	Total
a. M.Sc.	Molecular Biology & Biotechnology	1997	6+	4+	4+	4+	2+	5+	33	6	6	3	4	3	3	25
b. Ph.D.	Molecular Biology & Biotechnology	1997	3	2	2	2+	-	3+	14	1	2	9	7	4	3	26

v. b. Students passed out (Bioinformatics) data for the last five years

Degree Program	Specialization	Year of start	No. of seats							No. of students passed out						
			Y1	Y2	Y3	Y4	Y5	Y6	Total	Y1	Y2	Y3	Y4	Y5	Y6	Total
M.Sc.	Bioinformatics	2004	6+	4+	4+	4+	3+	3+	31	2	-	-	-	2	-	4

Research Publications M.Sc. (MBB)

1. Passricha, N., Batra, R., Behl, R.K. and Sikka, V.K. 2015. Differential and temperature dependent regulation of ADP–glucose pyrophosphorylase by specific chromosome in wheat grains. *Cereal Research Communications*, 43(4): 591–603. (NAAS Rating: 6.53)
2. Deyol, A., Taunk, J., Khirbat, S.K., Yadav, R.C. 2015. Molecular diversity and pathogenic variability in *Colletotrichum capsici* of chilli (*Capsicum annum*) in Haryana. *Indian J of Agricultural Sciences*, 85(6) 854-858. (NAAS Rating: 6.17)
3. Kamboj, D., Yadav, R.C., Singh, A., Yadav, N.R. and Singh, D. 2015. Plant regeneration and *Agrobacterium*-mediated transformation in Indian mustard (*Brassica juncea* L. Czern. & Coss.). *Journal of oilseed Brassica*, 6(1):191-197. (NAAS Rating: 4.67)
4. Singh, V., Yadav, N.R., Arora, A., Batra, P. and Yadav, R.C. 2015. TDZ induced shoot organogenesis in wild guar (*Cyamopsis serrata* Shinz). *Journal of Cell and Tissue Research*, 15(1):4891-4896. (NAAS Rating:4.04)
5. Aneja, B., Yadav, N.R., Yadav, R.C., Chhabra, A.K. and Kumar, R. 2014. Genotype Identification of greengram (*Vigna radiata* L. Wilczek) genotypes based on Sequence Related Amplified Polymorphism (SRAP) marker analysis. *Ind J of Agricultural Sci.*, 84: 376-81. (NAAS Rating: 6.17)
6. Jangra, S., Kharb, P., Mitra, C. and Uppal, S. 2014. Early diagnosis of sex in Jojoba (*Simmondsia chinensis* Link Schneider) by SCAR marker. *Proc. Natl. Acad. Sci., India, Sect. B Biol.Sci.*, 84:251-255. (NAAS Rating: 5.00)
7. Taunk, J., Yadav, N.R., Yadav, R.C. and Kumar, R. 2014. Use of RAPD marker for genotype Identification in greengram (*Vigna radiata* L. Wilczek). *Annals of Biology*, 30 (4):574-578. (NAAS Rating: 4.08)
8. Chawla, D., Valia, P., Yadav, N.R. and Yadav, R.C. 2014. An efficient *in vitro* regeneration from hypocotyls and cotyledon explants of *Brassica juncea* (L.) coss. *Journal of Agroecology and Natural Resource Management*, 1 (2):86-91. (NAAS Rating: NA)
9. Aneja, B., Yadav, N.R., Yadav, R.C., Kumar, R. 2013. Sequence related amplified polymorphism (SRAP) analysis for genetic diversity and micronutrient content among gene pools in mungbean [*Vigna radiata* (L.) Wilczek]. *Physiol Mol Bol Plants*19(3):399–407. (NAAS Rating:7.35)
10. Jangra, S., Kharb, P., Mitra, C. and Uppal, S. 2013. Early diagnosis of sex in Jojoba (*Simmondsia chinensis* Link Schneider) by SCAR marker. *Proc. National Academy of Sciences, India; Section B: Biological Sciences*. DOI 10.1007/s40011-013-0226-2. (NAAS Rating:6.0)

11. Kaur, R.D., Yadav, R.C., Yadav, N.R., Rani, A., Saini, P. and Singh, D. 2013. *In vitro* plant regeneration from anthers of Indian mustard. *Cruciferae Newsletter*, 32: 8-10. (NAAS Rating :NA)
12. Prince Saini, Bharti Aneja, Neelam R Yadav & R. C. Yadav (2013) Isolation of genomic DNA from leaf samples of Indian mustard without liquid nitrogen for use in molecular marker analysis. *Crop Improvement*. 40 (1) 30-33. (NAAS Rating :NA)
13. Jyoti Taunk, NR Yadav, RC Yadav & Ram Kumar (2012) Genetic diversity among greengram (*Vigna radiata* (L)wilczek) genotypes varying in micronutrient(Fe & Zn) content using RAPD markers. *Indian J. Biotechnology*. 11(1): 48-53. (NAAS Rating :6.29)
14. Bharti Aneja, NR Yadav, V. Chawla & RC Yadav (2012) Sequence related amplified polymorphism(SRAP) molecular marker system and its applications in crop improvement. *Molecular Breeding*. 30:1635-1648. (NAAS Rating :8.47)

Research Publications Ph.D. (MBB)

2018

15. Vrantika Chaudhary, Sumit Jangra and Neelam R. Yadav (2018). Nanotechnology based approaches for detection and delivery of microRNA in healthcare and crop protection. *Journal of Nanobiotechnology* 16:40 <https://doi.org/10.1186/s12951-018-0368-8>(NAAS rating 10.95)
16. Taunk J. , Sehgal D., Yadav, Neelam R., Howarth C., Yadav, Ram C. and Yadav R. S. (2018) Mapping of easy to screen SSR markers for selection of RFLP markers-bracketed downy mildew resistance QTLs in pearl millet. *European Journal of Plant Pathology* (online first) <https://doi.org/10.1007/s10658-017-1381-8> (NAAS rating: 7.48).
17. Rekha Patel, Ram C. Yadav , Ram Avtar , Sumit Jangra , Geeta D. Boken , Baldeep Singh , and Neelam R. Yadav (2018) Genetic Diversity Analysis for Salinity Tolerance in Indian Mustard [*Brassica juncea* (L.)] Using SSR Markers *Int. J. Curr. Microbiol. App. Sci* 7(1): 1776-1785 (NAAS Rating: NA)

2017.

18. Batra, R., Kumar,P., Jangra,M.R., Passricha, N. and Sikka, V.K. 2017.High precision temperature controlling AGPase in wheat affecting yield and quality traits. *Cereal Research Communication*, DOI: 10.1556/0806.45.2017.039. (NAAS Rating: 6.53).
19. Iqbal, Jangra, M.R., Sarim, K.M. and Sikka, V.K. 2017. Development of promiscuous rhizobia for diverse rabi legumes (Chickpea, Pea and Lentil) *Journal of Applied and Natural Science*, 9 (1): 215 – 221 (NAAS Rating: 4.84)
20. Sumit Jangra, Disha Kamboj, Priti, Rahul Kumar Meena and **R. C. Yadav** (2017) GM CROPS: THE NEED OF TOMORROW'S . *International Journal of Agriculture, Environment and Bioresearch* 2(02) pp 83-94.

2016

21. Ambawat, S., Senthilvel, S., Hash, C.T., Nepolean, T., Rajaram, V., Eshwar, K., Sharma, R., Thakur, R.P., Rao, V.P., Yadav, R.C. and Srivastava, R.K. 2016. QTL mapping of pearl millet rust resistance using an integrated DArT- and SSR-based linkage map. *Euphytica* DOI 10.1007/s10681-016-1671-9. (NAAS Rating: 7.62).

22. Singal, M., Yashveer, S., Vikram, S. and Dhillon, S. 2016. Expression analysis of *HSP 101* gene in bread wheat (*Triticum aestivum* L.Em.Thell.). *Research Journal of Biotechnology* 11 (5): 1-9. (NAAS Rating: 6.24)
23. Jain, M., Khatodia, S., Kharb, P., Batra, P. and Chowdhury, V.K. 2016. Determination of *CryIAc* copy number in transgenic pigeonpea plants using quantitative real time PCR. *Legume Research*,40(4): 643-648.(NAAS Rating: 6.15)
24. Ikbal, Jangra, M.R. and Sikka, V.K. 2016. Superior rhizobia infecting across strict legume host range and higher nitrogen fixation. *The Bioscan*, 11(3): 1401-1406. (NAAS Rating: 5.26)
25. Jangra, M.R., Jain, A., Batra, R., Ahlawat, R. and Sikka, V.K. 2016. Statistical Analysis for optimization of bacterial polyhydroxy butyrate production using agriculture by products. *Ind. J. of Ecology*. 43 (Special Issue-1): 557-562. (NAAS Rating;4.96)
26. Sumit Jangra, Rahul Kumar Meena, Monika & R C Yadav (2016) GM Crops: Effect on Non Target Environment .*Advances in Life Sciences* 5 (17) : 6482-6486. (NAAS Rating: 3.15)

2015

27. Sandhu, N., Torres, R.O., Cruz, M.T.S., Maturan, P.C. and Jain R.K., Kumar, A., Henry, A. 2015. Traits and QTLs for development of dry direct-seeded rainfed rice varieties. *Journal of Experimental Botany*, 66: 225–244. (NAAS Rating: 11.68)
28. Sehgal, D., Skot, L., Singh, R., Srivastava, R.K., Das, S.P. and Taunk, J. 2015. Exploring potential of pearl millet germplasm association panel for association mapping of drought tolerance traits. *PLoS ONE*, 10(5): e0122165. (NAAS Rating:9.06)
29. Aneja, B., Yadav, N.R., Kumar, N. and Yadav, R.C. 2015. Hsp transcript induction is correlated with physiological changes under drought stress in Indian mustard. *Physiol. Mol. Biol. Plants*. 21(3): 305–316.(NAAS Rating:7.35)
30. Brar, B., Jain, R.K. and Jain, S. 2015. Correlation of molecular marker allele size with physio-morphological and micronutrient (Zn, Fe) traits among rice genotypes. *Int J Curr Sci*, 15:42-50. (NAAS Rating: 6.97)
31. Summy, Sharma, K.D., Boora, K.S. and Kumar, N. 2015. Plant water status, canopy temperature and chlorophyll fluorescence in relation to yield improvement in chickpea (*Cicer arietinum* L.) under soil moisture stress environments. *Journal of Agrometeorology*, 17 (1): 11-16. (NAAS Rating: 6.36)
32. Jangra, M.R., Ikbal, Batra, R., Sikka, V.K. 2015. Poly--hydroxy butyrate production in bacteria employing ecofriendly and renewable agri byproducts. *The Ecoscan* 9: 89-93. (NAAS Rating:4.56)
33. Kharb, A., Sandhu, N., Jain, S. and Jain, R.K. 2015. Linkage Mapping of Quantitative Trait Loci for Traits Promoting Aerobic Adaptation on Chromosome 8 in indica Rice (*Oryza sativa* L.). *Rice Genomics and Genetics*, 6: 1-5. (NAAS Rating: NA)

2014

34. Sandhu, N., Singh, A., Dixit, S., Cruz, M.T.S., Maturan, P.C., Jain, R.K. and Kumar, A. 2014. Identification and mapping of stable QTL with main and epistasis effect on rice grain yield under upland drought stress. *BMC Genetics*, 15: 63-78. (NAAS Rating:8.15)
35. Singh, R., Kumar, R., Van Heusden, A.W., Yadav, R.C. and Visser, R.G. 2014. Genetic improvement of mungbean (*Vigna radiata* L.): Necessity to increase the levels of the

- micronutrients iron & zinc. A review. *Journal of current research in Science*, 2: 1-11. (NAAS Rating: 6.87)
36. Kumar, J., Jain, S. and Jain, R.K. 2014. Linkage mapping for grain iron and zinc content in F2 population derived from the cross between PAU201 and Palman579 in rice (*Oryza sativa* L.). *Cereal Res Comm.*, 42(3):389-400. (NAAS Rating:6.53)
37. Rani, P., Sandhu, N., Jain, S., Mahla, B.S. and Jain, R.K. 2014. Marker-assisted selection and QTL mapping for yield, root morphology and agronomic traits using MASARB25 (aerobic) × Pusa Basmati 1460 F3 mapping populations. *Indian J. Genet. Plant Breeding*, 74(4):602-607.(NAAS Rating: 6.28)
38. Brar, B., Jain, S. and Jain, R.K. 2014. Molecular profiling of rice (*Oryza sativa* L.) genotypes differing in micronutrients (iron and zinc) content. *Ind. J. Genet. Plant Breeding*, 74: 81-85. (NAAS Rating: 6.28)
39. Khatodia, S., Kharb, P., Batra, P., Kumar, P.A. and Chowdhury, V.K. 2014. Molecular characterization of Bt chickpea (*Cicer arietinum* L.) plants carrying cry1Aa3gene. *Internatl. J. Current Microbiol. & Applied Sci.*, 3(8):632-642. (NAAS Rating:5.38)
40. Khatodia, S., Kharb, P., Batra, P. and Chowdhury, V.K. 2014. Development and characterization of transgenic chickpea (*Cicer arietinum* L.) plants with cry1Ac gene using tissue culture independent protocol. *Internatl. J. Advanced Res.*, 2(8):323-331. (NAAS Rating: NA)
41. Khatodia, S., Kharb, P., Batra, P. and Chowdhury, V.K. 2014. Real time PCR based detection of transgene copy number in transgenic chickpea lines expressing Cry1Aa3 and Cry1Ac. *Int. J. Pure App. Biosci.*, 2 (4): 100-105. (NAAS Rating: 4.75)
- 2013**
42. Cavanagh, C.R., Chao, S., Wang, S., Huang, B.E., Stephen, S., Kiani, S., Forrest, K., Sainenac, C., Brown-Guedira, G.L., Akhunova, A., See, D., Bai, G., Pumphrey, M., Tomar, L., Wong, D., Kong, S., Reynolds, M., da Silva, M.L., Bockelman, H., Talbert, L., Anderson, J.A., Dreisigacker, S., Baenziger, S., Carter, A., Korzun, V., Morrell, P.L., Dubcovsky, J., Morell, M.K., Sorrells, M.E., Hayden, M.J. and Akhunov, E. (2013) Genome-wide comparative diversity uncovers multiple targets of selection for improvement in hexaploid wheat landraces and cultivars. *Proceedings of National Academy of Sciences USA*. 110 (20): 8057-62. (NAAS Rating:15.42)
43. Dhawan, C., Kharb, P., Sharma, R., Uppal, S. and Aggarwal, R.K. 2013. Development of male-specific SCAR marker in date palm (*Phoenix dactylifera* L.). *Tree Genet and Genomes*, DOI 10.1007/s1 1295-013-0617-9.(NAAS Rating:8.45)
44. Sandhu, N., Jain, S., Kumar, A., Mehla, B.S., Jain, R.K. 2013. Genetic variation, linkage mapping of QTL and correlation studies for yield, root and agronomic traits for aerobic adaptation. *BMC Genetics*, 14: 104-119.(NAAS Rating:8.15)
45. Ambawat, S., Sharma, P., Yadav, N.R. and Yadav, R.C. 2013. MYB transcription factor genes as regulators for plant responses: an overview. *Physiol Mol Biol Plants*,19(3):307–321. (NAAS Rating:7.35)
46. Dawar, C., Jain, S. and Kumar, S. 2013. Insight into the 3D structure of ADP-glucose pyrophosphorylase from rice (*Oryza sativa* L.). *J. Mol. Model*, 19: 3351–3367. (NAAS Rating: 7.74)
47. Chawla, S., Jain, S. and Jain, V. 2013. Salinity induced oxidative stress and antioxidant system in salt-tolerant and salt-sensitive cultivars of rice (*Oryza sativa* L.). *J. Plant Biochem. Biotech.* 22(1): 27–34. (NAAS Rating:7.09)

48. Singh, R., Van Heusden, A.W., Kumar, R., Visser, R.G., Yadav, R.C. 2013. Genetic diversity of Mungbean (*Vigna radiata* L.) in iron and Zinc content as implicated by Farmers' varietal selection in Northern India. *Ecology of Food & Nutrition*, 52(2):148-62. (NAAS Rating: 6.81)
49. Saharan, V., Meena, V., Jain, H.K., Yadav, R.C. 2013. Stable GUS Gene expression in three chickpea varieties viz. Pratap-1, Dahod yellow and GNG-469. *Legume research*, 36(1)15-20. (NAAS Rating: 6.15)
50. Singh, V., Yadav, R.K., Yadav, R., Malik, R.S., Yadav, N.R., Singh, J. 2013. Stability analysis in mung bean [*Vigna radiata* (L) wilczek] for nutritional quality and seed yield. *Legume Research*, 36(1):56-61. (NAAS Rating: 6.15)
51. Rani, T., Yadav, R.C., Yadav, N.R., Kumar, M. 2013. Effects of explant orientation on shoot regeneration in tomato. *Indian J of Agril Sciences*, 83: 367-373. (NAAS Rating: 6.14)
52. Rani, T., Yadav, R.C., Yadav, N.R., Rani, A. and Singh, D. 2013. Genetic Transformation in Oilseed Brassicas – A Review. *Indian Journal of Agricultural Sciences*, 83:367-373 (NAAS Rating: 6.14)
53. Maurya, R.P., Yadav, R.C., Godara, N.R. and Beniwal, V.S. 2013. In vitro regeneration of Rose (*Rosa hybrida* L.) cv. Benjamin Paul through various explants. *Journal of Experimental Biology and Agricultural Sciences*, 1(25): 111-119. (NAAS Rating:5.07)
54. Kumari, P., Ahuja, U., Jain, R.K., Yadava, R.K. 2013. Genetic analysis of recombinant inbred lines (RILs) of CSR10 x Taraori Basmati. *Vegetos*, 26(1):127-142. (NAAS Rating: 5.0)
55. Singh, R., Van Heusden, A.W., Kumar, R., Yadav, R.C. 2013. A comparative genetic diversity analysis in mungbean (*Vigna radiata* L) using inter-simple sequence repeat (ISSR) and amplified fragment length polymorphism (AFLP). *African J. Biotech.*, 12: 6574- 6582. (NAAS Rating: NA)
56. Singh, V., Yadav, R.K., Yadav, R., Malik, R.S., Yadav, N.R., Singh, J. and Meena, M.D. 2013. Effect of different iron and zinc application on growth, yield and quality parameters of mungbean (*Vigna radiata* L.). *Annals of Agri Bio Research*, 18(2), 164-175. (NAAS Rating:3.97)

2012

57. Sandhu, N., Jain, S., Battan, K.R. and Jain, R.K. 2012. Aerobic rice genotypes displayed greater adaptation to water-limited cultivation and tolerance to polyethyleneglycol-6000 induced stress. *Physiol Mol Biol Plants*, 18: 33-44. *Physiol. Mol. Biol. Plants*. 21(3): 305–316. (NAAS Rating:7.35)
58. Kaushik R, Vashist M, Jain S, Sikka V K and Sudhir Kumar (2012) Subtle Structural Differences Crucial for Function in Similarly Engineered ADP-Glucose Pyrophosphorylase Larger Subunit in Rice and Maize. *J. Pl. Biochem Biotechnol*. 21(2), 275-278. (NAAS Rating: 6.95)
59. Singh I, Kumar U, Singh SK, Gupta C, Singh M, Kushwaha SR (2012) Physiological and biochemical effects of 24- Epibrassinolide on cold tolerance in maize seedlings. *Physiology and molecular biology of plants*. 18(3)- 229-236. (NAAS Rating:6.88)
60. Disha Sharma, Swati Chauhan, Govind Kumar, K. P. Singh and Rajesh Kumar (2012) Cadmium stabilization by plant growth promotory fluorescent *Pseudomonas* in combination with Indian mustard var. Kranti” *South Asian J Exp Biol*; 2 (3): 128135. (NAAS Rating :4.79)

Research Publications (Bioinformatics)

1. Gupta N., Rani G., Redhu N.S., Kumar S. (2018) In Silico characterization and modeling of *Drosophila melanogaster* chitin synthase, International Journal of Chemical Studies. 6(2): 1903-1909. (NAAS Rating:5.31).
2. Gupta N., Rani G., Redhu N.S., Kumar S. (2018) In Silico characterization and modeling of *Drosophila melanogaster* krotzkopf verkehrt protein, International Journal of Chemical Studies. (Accepted). (NAAS Rating:5.31).
3. Dawar C, Jain S and Kumar Sudhir (2013). Insight into the 3D structure of ADP-glucose pyrophosphorylase from rice (*Oryza sativa* L.). J. Mol. Model. 19(8), 3351-3367. (NAAS Rating: 7.74).
4. Kaushik R, Vashist M, Jain S, Sikka V K and Kumar Sudhir (2012) Subtle Structural Differences Crucial for Function in Similarly Engineered ADP-Glucose Pyrophosphorylase Larger Subunit in Rice and Maize. J. Pl. Biochem Biotechnol. 21(2), 275-278. (NAAS Rating:7.09).

b) List of Publications in Conference Proceedings during last five years (MBB)

1. Disha Kamboj, Rekha Patel, R.C. Yadav, N.R. Yadav and Ram Avtar (2017). Validation of IP markers for white rust resistance in Indian Mustard. Poster was presented at International Seminar on Oilseed Brassica held in State Institute of Agriculture Management, Jaipur during February 23-27, 2017.
2. Disha Kamboj, Rekha Patel, Sumit Jangra, Ram Avtar, Neelam R. Yadav and R. C. Yadav (2017). Marker Assisted Selection in Indian Mustard for white rust resistance. Poster was presented at International Conference on Emerging Areas of Environmental Science and Engineering held in Guru Jambheshwar University of Science and Technology, Hisar during February 16-18, 2017.
3. Jangra S, Rani A, Yadav RC, Yadav NR and DevVart. Molecular breeding for drought tolerance in pearl millet [*Pennisetum glaucum* (L.) R.Br.] using microsatellite markers. (2017). Inter Drought V held at Hyderabad International Convention Center.
4. Sumit Jangra, Asha Rani, Rekha Patel, R. C. Yadav, N. R. Yadav and Dev Vart. (2017). Improving pearl millet hybrids for drought tolerance using microsatellite markers. Emerging Areas of Environmental Science and Engineering, held at GJUS&T, Hisar.
5. Sumit Jangra, Asha Rani, R. C. Yadav, N. R. Yadav and Dev Vart. (2017). Molecular approaches for improving drought tolerance in pearl millet. National Conference on Food Processing India 2017 held at GJUS&T, Hisar.
6. Bhojar PI, Kuldeep K (2016) Transgenics as an efficient biomass for biofuel production. In: "National Symposium on Transgenic Crops in India: Progress and Challenges" on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
7. Bishnoi M, Priyanka, Pippal A (2016) Prospects to Rice Transgenics for abiotic stress and its impact on cereal production. In: "National Symposium on Transgenic Crops in India: Progress and Challenges" on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
8. Chhabra N, Kharb P (2016) Recent Advances in genetic engineering against Abiotic Stress. In: "National Symposium on Transgenic Crops in India: Progress and Challenges" on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
9. Kamboj D, Yadav RC (2016) Optimization for *Agrobacterium*-mediated transformation in Indian mustard. In: "National Symposium on Transgenic Crops in India: Progress and

- Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
10. Kumar K, Bhojar PI, Kumar R, Pippal A, Bishnoi M (2016) Mitigating ROS: A tool for establishment of plant stress tolerance. In: “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 11. Kumar R, Mehndiratta R, Pippal A (2016) Review and perspectives of transgenic rice research. In: “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 12. Monika, Rekha, Jangra S, Rani A, Virender, Yadav RC (2016) Transgenic development for drought tolerance in indian mustard (*Brassica juncea* L.Czern & coss.). In: “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 13. Pippal A, Kumar R, Mehndiratta R (2016) Genetically Engineered Rice with high levels of Iron and Zinc. In: “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 14. Preeti, Kharb P (2016) Transgenic approaches for biotic stress tolerance in plants. In: “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 15. Saini P, Sunita D (2016) Transgenics and genome editing. In: “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 16. Singh G, Kharb P (2016) Molecular mechanism of Drought and Salinity tolerance in transgenic plants. In: National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 17. S Sumit Jangra, Asha Rani, R.C. Yadav, N.R. Yadav and Dev Vart. (2016). Using Marker Assisted Selection for drought tolerance in Pearl millet” Indian International Science Festival held at NPL-CSIR, New Delhi.
 18. Singh R, Kharb P (2016) Developing transgenic plants for abiotic stress tolerance: manipulation of stress tolerance mechanisms. In: “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 19. Sushil K, Walia P (2016) Wheat Transgenics: Need and Prospects under Future Climatic Conditions. In: “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University.
 20. Taneja A, Yadav P, Yadav NR (2016) High throughput phenotyping has a central role for engineering abiotic stress tolerance. In: “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17, 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 21. Vats K, Sangwan S, Sharma N, Yadav NR (2016) A robust screening approach: Southern-by-sequencing for molecular evaluation of transgenic plants. In: “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 22. Mehndiratta R, Yashveer S, Kumar R, Pippal A (2016) Micro RNAs: The new frontier in crop engineering. In: “National Symposium on Transgenic Crops in India: Progress and

- Challenges on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
23. Patel R, Monika, Asha, Sumit , Virender, Yadav RC (2016) Transgenics in *Brassica juncea* for salinity tolerance. In: “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 24. Sangwan S, Vats K, Geetika, Yashveer S, Yadav NR (2016) Role of transgenic plants in basic studies. In: “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 25. Jangra S, Rani A, Monika, Patel R, Kamboj D, Yadav RC (2016) Enhancing C3 photosynthesis: A feasible intervention for crop improvement. In: “National Symposium on Transgenic Crops in India: Progress and Challenges on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 26. Chaudhary V, Yadav NR, Yadav RC (2016) Identification of microRNA and their use for engineering agronomically important traits in crops. In: “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 27. Wadhwa Z, Yadav RC, Yadav NR, Sharma SS, Yadav S (2016) Molecular Characterization of Transgenic Tomato (*Lycopersicon esculentum* Mill.) for fruit borer [*Helicoverpa armigera* Hübner] resistance. In: “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 28. Mehta G, Deviand G, Sangwan S (2016) Possibility of using ISSR Marker for the development of drought tolerant genotypes in chickpea. In: “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 29. Mehta G, Verma PK, Yashveer S (2016) Changes in ISSR patterns and correlations among yield and yield contributing traits in chickpea grown under rainfed and irrigated conditions. In: International conference on “Natural Resource Management: Ecological Perspective” from 18-20 Feb, 2016 at SKUAST Jammu.
 30. Rehsawla R and Yadav P (2016) Transgenics: savior of farmers. IN: “National Symposium on Transgenic Crops in India: Progress and Challenges” on March 16-17 2016 held at Chaudhary Charan Singh Haryana Agricultural University Hisar.
 31. Kaur A, Taunk J, Yadav NR, Yadav RC (2014) Data mining for EST-SSRs identification for targeting bacterial leaf Blight resistance in cluster bean [*Cyamopsis tetragonoloba* L. Taub.]. In: National Seminar on “Reorientation of Agricultural Research to Ensure National Food Security” (RARFS 2014) held on 6-7th January, 2014 at CCS HAU Hisar, Haryana.
 32. Kaur A, Taunk J, Yadav NR, Yadav RC (2014) *In silico* identification of EST-SSRs and designing primers for targeting bacterial blight resistance in guar (*Cyamopsis tetragonoloba* L. Taub.) In: National Conference on the “Science of Omics for Agricultural Productivity: Future Perspectives” held on Mar 4-6, 2014 in GBUAT, Pant Nagar Uttarakhand.
 33. Kumar A, Yashveer S, Dhillon S (2014) Genetic diversity among pearl millet [*Pennisetum glaucum*(L.) R. Br.] genotypes using SSR markers. In: National conference on the “Science of Omics for Agricultural Productivity: Future Perspectives” held on Mar 4-6, 2014 at GBUAT, Pant Nagar, Uttarakhand.
 34. Taunk J, Rani A, Yadav RC, Yadav NR, Kumar R, Devvrat, Yadav HP (2014) Marker assisted selection for improving downey mildew resistance in HHB197, a commercial hybrid of pearl millet (*Penisetum glaucum* (L.) R. Br.). In: National Conference on “Science of Omics for

- Agricultural Productivity: Future Perspectives” held on Mar 4-6, 2014 at GBUAT, Pant Nagar Uttarakhand.
35. Tomar L, Yadav RC, Singh R, Dhanda SS, Dubcovsky J, Yadav NR (2014) Introgression of *Gpc-B1* allele provides stripe rust resistance in addition to improved grain protein and micronutrient content in Indian wheat cultivars. In: BGRI workshop, March 22-25, 2014, CIMMYT, Mexico.
 36. Wadhwa Z, Rani T, Yadav RC, Yadav NR, Sharma SS (2014) Molecular characterization and expression of *CryIAc* gene in T₁ generation of tomato developed through *Agrobacterium* mediated transformation. In: National Conference on “Science of Omics for Agricultural Productivity: Future Perspectives” held on Mar 4-6, 2014 at GBUAT, Pant Nagar Uttarakhand.
 37. Wadhwa Z, Kharb A, Yadav RC, Yadav NR (2014) Genome Editing: Tools for crop Improvement. In: National workshop on Genomics in Crop Improvement 27-28th Feb. 2014, Centre for biotechnology MDU, Rohtak.
 38. Yashveer S, Khurana N, Yadav RC (2014) Second green revolution in agriculture through public Private partnership. In: National Seminar on “Reorientation of Agricultural Research to Ensure National Food Security” (RARFS 2014) held on 6-7th January, 2014 at CCS HAU Hisar, Haryana.
 39. Singh R, Sehgal D, Yadav R C , Howarth CJ, Yadav NR, Yadav R (2013). Mapping of pearl millet gene based markers underlying drought tolerant QTL across sorghum, rice and ryegrass. In: 21st International Congress of Genetics at The sands Expo and Convention Center, Marina Bay Sands, Singapore from April 13-18, 2013.
 40. Aneja B, Taunk J, Yadav NR, Yadav RC, Kumar R (2012) Genetic diversity study among green gram (*Vigna radiata* (L.) Wilczek) genotypes using SRAP and RAPD markers. In: VI International Conference on Legume Genetics and Genomics from October 2-7, 2012 held at Hyderabad convention centre, Hyderabad.
 41. Brar B, Jain S, Jain RK (2012) Enhancement of the iron and zinc content in rice (*Oryza sativa* L.) via crossing and microsatellite marker assisted selection. In: International Conference on Biotechnology: Emerging Trends (ICB-2012)”, Sept. 18-20, 2012, organized by Dept of Biotechnology, CDLU, Sirsa. P-53-54.
 42. Kajal, Sandhu N, Jain RK (2012) Molecular diversity for aerobic root traits and aroma in Basmati x aerobic segregating rice populations. In: International Conference on Biotechnology: Emerging Trends (ICB-2012)”, Sept. 18-20, 2012, organized by Dept of Biotechnology, CDLU, Sirsa. P-55-56.
 43. Kumar J, Brar B, Kumar N, Chawla A, Battan KR, Jain S, Chowdhury VK, Jain RK (2012) In: Intl Conf on Biotechnology : Emerging Trends (ICB-2012)”, Sept. 18-20, 2012, organized by Dept of Biotechnology, CDLU, Sirsa. P-53-54.
 44. Kumar K, Beniwal J, Sikka VK (2012) Polyphenolics and polysaccharides free DNA isolation from cotton leaf curl diseased plants and white fly. In: Silver Jubilee International Symposium on Global Cotton Production Technology vis Climate Change organized by Cotton Research and Development Association, Hisar, Oct 10-12, 2012.
 45. Nishat P, Jain PP, Sikka VK (2012) Characterization of Bt Cotton (*Gossypium hirsutum*) hybrid varieties for their relative expression of cry Proteins in Haryana. In: Silver Jubilee International Symposium on Global Cotton Production Technology vis Climate Change organized by Cotton Research and Development Association, Hisar, Oct 10-12, 2012.
 46. Vashist U, Kumar P, Sangwan MS, Dhillon S, Boora KS(2012) Molecular mapping of QTLs for resistance to *Fusarium* wilt in chickpea (*Cicer arietinum* L.) In: VI International Conference on Legume Genetics and Genomics held on Oct 2-7, 2012 at ICRISAT, Hyderabad.

47. Vashist U, Kumar P, Sangwan MS, Dhillon S and Boora KS (2012) Identification and mapping of QTLs conferring resistance to ascochyta blight in chickpea (*Cicer arietinum* L.) In: VI International Conference on Legume Genetics and Genomics held on Oct 2-7, 2012 at ICRISAT, Hyderabad.

b) List of Publications in Conference Proceedings during last five years (Bioinformatics)

1. Jain S (2015) Phylogenetic analysis: Methods and software. In: 'Molecular Strategies towards Improving crop Productivity' June 17-July 6, 2015, Department of MBBS, CCSHAU, Hisar-125004
2. Panwar A, Redhu NS, Poonia H and Pal A (March 27, 2015) Homology Modeling: An in silico approach to proteomics. . National Conference. Biodiversity and sustainable development, CRMJC, Hisar. p:19
3. Jain S (2014) *In silico* mutagenesis in large subunit of ADP-glucose phosphorylase of rice (*Oryza sativa* L.) and its comparison with Rev6 mutant of maize (*Zea mays* L.) In "National conference on science of Omics for Agricultural productivity: Future Perspective" held on March 4-6, 2014 at GBUAT, Pantnagar, Uttarakhand.
4. Panwar A, Redhu NS, Jain S and Kumar S (Nov 28-29, 2014) Insight in Subunit-Subunit Interactions in AGPase of Rice (*Oryza sativa*) having P493A mutant large subunit. National Conference. Converging Technologies Beyond 2020, UIET, Kurukshetra.
5. Vicky, Redhu NS, Kumar S and Jain S (January 6-7, 2014) Modelling and Comparison of In Silico Mutagenesis Generated ADP-Glucose Pyrophosphorylase large subunits in rice (*Oryza sativa* L.) with Rev6 Mutant of Maize (*Zea mays* L.). National seminar. Reorientation of Agricultural Research to Ensure National Food Security, CCS HAU, Hisar. p:60
6. Sharma S, Redhu NS, Jain S and Kumar S (Dec 16-17, 2013) In silico identification and analysis of Simple Sequence Repeats (SSRs) in Rice (*Oryza sativa*) ESTs. National Symposium. Emerging Trends in Agri-Bioinformatics (ETAB), DWR, Karnal. p:91
7. Sharma D, Redhu NS, Jain S and Kumar S (Sept. 2012) PGMB-12- High-throughput screening of peroxisome proliferator-activated receptors inhibitors. International Conference on Biotechnology: Emerging Trends (ICB-2012) p: 210
8. Rani M, Redhu NS, Jain S and Kumar S (Sept. 2012) PGMB-13- In Silico Identification of miRNA in Rice (*Oryza sativa*) International Conference on Biotechnology: Emerging Trends (ICB-2012) p: 211
9. Kumari N, Redhu NS and Kumar S (Feb 2018). In silico Characterization and Modeling of Sodium Channel Protein from Thrips palmi. International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry (ICBN 2018). p:90.
10. Manisha, Redhu NS and Kumar S (Feb 2018). In silico Characterization of *Oryza sativa* Pyrophosphatase. International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry (ICBN 2018). p:91.
11. Jakkar R, Redhu NS and Kumar S (Feb 2018). In silico Characterization of Wheat (*Triticum aestivum*) Glutamate Decarboxylase. International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry (ICBN 2018). p:92.
12. Rani G, Gupta N, Redhu NS and Kumar S (Feb 2018), Virtual high throughput screening of Ecdysone inhibitors. National conference on Recent advancements in Bioinformatics cum Workshop on Protein Bioinformatics - 2018. p:17.

13. Rani G, Redhu NS and Kumar S (Feb 2018). Phylogenetic and comparative analysis of *Drosophila melanogaster* ecdysone receptor, International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry (ICBN 2018).
14. Gupta N, Rani G, Redhu NS and Kumar S (Feb 2018), Finding Potential Inhibitors Of Acetylcholinesterase Using Molecular Docking Studies. National conference on Recent advancements in Bioinformatics cum Workshop on Protein Bioinformatics - 2018. p:8.
15. Gupta N, Redhu NS and Kumar S (2018). In silico characterization and modelling of *Drosophila melanogaster* chitin synthase, International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry (ICBN 2018).p:21.

Manuals (MBB and Bioinformatics):

- 1 Use of Biotechnology & Bioinformatics Tools for Genome Analysis (2017) and Plant Tissue Culture, Genomics and Computational Tools for Crop Improvement (2017)
- 2 Integrating molecular and recombinant DNA technologies in crop breeding programs for food and nutritional security” and “Plant Tissue Culture and Molecular approaches for supplementing plant breeding efforts” (2016) 179 pages.
- 3 A training manual on Biotechnological approaches for complementing conventional plant improvement methods (2015) pages: 119.
- 4 A training manual on Genomics, molecular and tissue culture approaches for genetic improvement and value addition in plants & microbes & “Biotechnological and molecular tools for improving crop productivity & nutritional quality” (2014) pages: 87.
- 5 A training manual on “Crop improvement through genomics” & “Biotechnological tools for improvement in agricultural production” (2013) pages: 86.
- 6 A practical training course on Techniques in Plant Tissue Culture, Genetic Engineering and Molecular Biology (2012) pages: 82
- 7 Training course on Agricultural Biotechnology (2012) pages: 72
- 8 Manual for entrepreneurs in Biotechnology, liquid bio fertilizers and food Products (2012) pages: 46
- 9 A Manual of Practical Training on Genomics, Transformation and Molecular Marker Tools for Crop Improvement (2011) pages: 87
- 10 Anil Panwar, Neeru Singh Redhu (2017). Homology Modeling: A way to protein Structure prediction.

e-learning modules for PG teaching:

MBB

1. Yashveer S, Tokas J, Jain S and Yadav H (2013) Nobel Laureates
URL: [http:// www.pitt.edu/~super1/lecture/lec50491/index.htm](http://www.pitt.edu/~super1/lecture/lec50491/index.htm)
2. Yashveer S, Tokas J, Jain S and Yadav H (2013) Molecular Mechanism of Mutation
URL: <http://www.pitt.edu/~super1/lecture/lec50501/index.htm>
3. Yashveer S, Tokas J, Jain S, Yadav H (2013) Molecules of Genetic Inheritance
URL: <http://www.pitt.edu/~super1/lecture/lec50511/index.htm>

Bioinformatics

4. Redhu Neeru (2011) Fundamentals of computing
URL: <https://www.scribd.com/presentation/341835706/01-BIF-506-Fundamentals-of-Computing>

5. Redhu Neeru (2012) Constant, Variables and Data Types in C
URL:<https://www.scribd.com/document/351967946/2-Constant-Variables-and-Data-Types>
6. Redhu Neeru (2013) Introduction to Datamining
URL: <https://www.scribd.com/document/352419410/Data-Mining-Intro-1>
7. Redhu Neeru (2015) Computer Software
URL: <https://www.scribd.com/presentation/341836382/04-BIF-506-Computer-Software>
8. Redhu Neeru (2016) Decision Making, Branching and Looping in C
URL:<https://www.scribd.com/document/352044861/4-Decision-Making-Branching-and-Looping>
9. Redhu Neeru (2017) Prediction of Protein Secondary Structure
URL:<https://www.scribd.com/document/352572980/Protein-Secondary-Structure-Prediction>

d) List of scientific/ technical Books /Book Chapters in the Department:

1. S Jangra, Aakash Mishra, Disha Kamboj, NR Yadav & R C Yadav (2017) Engineering Abiotic Stress Tolerance Traits for Mitigating Climate Change. (eds Suresh Kumar Gahlawat, Raj Kumar Salar, Priyanka Siwach, Joginder Singh Duhan, Suresh Kumar, Pawan Kaur Plant Biotechnology: Recent Advancements and Developments, Springer eds. Pp 59-73.
2. Pushpa Kharb and Charu Mitra (2017).Early sex identification in date palm by male-specific sequence-characterized amplified region (SCAR) markers. In: Date Palm Biotechnology Protocols Volume II: Germplasm Conservation and Molecular Breeding .pp.199-207.
3. Neelam R. Yadav and Yadav R.C. (2017) Biotechnology and Bioethics: Where we are going? In Professional Bioethics Eds. Chamola S.D.; Studera Press; pp. 53-64.
4. Upendra Kumar, Narendra Singh Dhaka, Priyanka and Sundip Kumar (2017) Wheat Cytogenetics: Present Scenario and Future Prospects. Wheat A Premier Food Crop: Anil Kumar et.al. (Eds.) Kalyani Publishers, New Delhi. pp 01-22 ISBN: 978-93-272-0000-0.
5. Upendra Kumar, Priyanka and Sundip Kumar (2016) Genetic Improvement of Sugarcane through Conventional and Molecular Approaches. Sustainable Devel., Biodivers., Vol. 11, Vijay Rani Rajpal et al. (Eds): Molecular Breeding for crop improvement. pp 325-342 ISSN: 2352-4758.
6. Sikka VK (2014). Ecofriendly Biopolymers and Biodegradable Plastics. In: Human and Animal Health: Environmental Perspectives. Ed. S R Garg, Satish Serial Publishing House, New Delhi. pp 257 – 266.
7. Yadav NR, Taunk J, Rani A, Anejaa B, Yadav RC (2014) Role of transcription factors in abiotic stress tolerance in crop plants. In: N Tuteja & S.S.Gill (eds.) Climate change & plant abiotic stress tolerance Vol. 2: 605-627 Wiley Blackwell-VCH Verlag GMBH & Co RGaA
8. Vinod Saharan, Ajay Pal, RC Yadav, Savita Budania & RA Kaushik (2013) *In vitro* applications of nanomaterials for plants In NK Navani, S. Sinha & J.N. Govil (eds). Nanaotechnology: Fundamentals & Applications, Studium Press LLC. Vol 1:PP 435-454.
9. Jain RK, Kumar J, Jain, Chowdhury VK (2013) Molecular strategies for improving mineral density and bioavailability in rice. In: Biotechnology: Prospects and applications. Eds. RK Salar, SK Gahlawat, P Siwach and JS Duhan), Springer-verlag, pp53-66.
10. Sood S, Batra P, Chowdhury VK (2013) Regeneration & Genetic Transformation in Chickpea (*Cicer arietinum* L) – A Non-Conventional Approach. LAMBERT Academic Publishing. Copyright © AV Akademikerverlag GmbH & Co. KG.

11. Yadav RC, Solanke AU, Kumar P, Pattanayak D, Yadav NR, Anand Kumar P (2013) Genetic engineering for tolerance to climate change related traits. In: 'Genomics and Breeding for climate –resilient crops' Ed. C. Kole, Springer-Verlag, Germany Vol.1 pp. 285-330.
12. Champa Rani, Subhash Kajla, Minakshi Pal, Anil K. Poonia and Pushpa Kharb (2013) . Jatropha curcas: A potential source for Bio-fuel production. (Edt.) Agro-bios International, Jodhpur pp 155-170.
13. S. Kajla, A.K. Poonia, P. Kharb and J.S. Duhan (2013).Role of Biotechnology for Commercial Production of Fruit Crops. In "Biotechnology: Prospects and Applications (Eds. Salar R.K., Gahlawat S.K, Siwach P. and Duhan J.S.).Springer, New Delhi, Heidelberg, New York, Dordrecht, London, 27-38. ISBN 978- 81-322-1683-4 (eBook).DOI 10.1007/978-81-322-1683-4
14. Meenakshi Jain and Pushpa Kharb.2013.Transgenic crops and their status. In:Emerging science and technology for food, agriculture and environment. (Eds. Sandeep Kumar, P. K. Yadav and Sunil Kumar). Agrobios (International). pp 375-38

Annexure MBBB II**Seminar/Conference/Workshops organized**

Title of the event	Type	Agency	Level	Place & Date (s)	No. of Participating Faculty	No. of faculty acted as resource persons	Name of the Organizer
Transgenic Crops in India: Progress and Challenges'	Conference/	Society for Plant Bioch. and Biotech.	National	Department of MBBB	100 Approx.	5	Dr. R.C.Yadav
National Conference on Trends in Nanobiotechnology	Conference	DST/ CCS HAU	National/ International	Department of MBBB	200 Approx.	22	Dr. Neelam R.Yadav
State Level Biosafety Capacity Building Workshop	Workshop	Biotech Consortium India Limited (BCIL)	National	Auditorium, College of Agriculture, 14-03-2018	260 Approx.	7	Dr. Pushpa Kharb

Faculty served on higher positions

1. Three faculty members namely Drs. V.K.Chowdhury, Santosh Dhillon and R.K. Jain served as Dean, COBS&H.
2. Two faculty members namely Drs. V.K.Chowdhury and Pushpa Kharb served as Director (Technical), Centre for Plant Biotechnology, DST-Haryana on deputation.

Annexure MBBB III

Additional information of the Department:

Details of Extension Activities						
Topic of Activity	Category of activity	Level of Activity	Duration in days	No. of participants	Institution/ Place	Date(s)
Active participation in Kisan Melas	Extension Lectures/ Exhibition	National/ State	Two day each	More than 35000	Research Farm gate	Third week in March & Sept
Active participation in Chrysanthemum Show	Exhibition	Local	Two days	More than 5000	Botanical Garden, CCS HAU	December/January
Active participation in Agri Summit	Exhibition	State	Three days	More than 45000	Suraj Kund, Faridabad	March

Student oriented initiatives/fairs/exhibitions

Sr. No	Name of the event	Type	Level	Venue	Date
1	A three week training on Crop Improvement through Genomics	Training	National	Dept.	June 18 - July 9, 2013
2	A six week training on Biotechnological Tools for Improvement in Agricultural Production	Training	National	Dept.	June 18 – July 30, 2013
3	One to six month training on Project cum Practical training in Plant / Microbial Biotechnology	Training	National	Dept.	Open throughout the year
4	A three week training on Genomic, molecular and tissue culture approaches for genetic improvement and value addition in plants and microbes	Training	National	Dept.	June 17 - July 7, 2014
5	A six week training on Biotechnological and molecular tools for improving crop productivity and	Training	National	Dept.	June 17 – July 28, 2014

	nutritional quality				
6	Molecular Strategies towards Improving crop Productivity-Three weeks	Training	National	Dept.	June 17 to July 6, 2015
7	Biotechnological approaches for complementing conventional plant improvement methods-	Training	National	Dept.	June 17 to July 28, 2015
8	Three weeks training course on Integrating molecular and recombinant DNA technologies in crop breeding programs for food and nutritional security	Training	National	Dept.	June 22 to July 12, 2016
9	Six weeks hands on practical training course on Plant tissue culture and Molecular approaches for supplementing plant breeding efforts”	Training	National	Dept.	June 22nd to August 2nd , 2016.
10	Western Blotting, 2D Electrophoresis & Real Time PCR in collaboration with Bio Rad India	Training	University level	Dept.	29th-30th August, 2016
11	Three weeks training: Use of Biotechnology & Bioinformatics Tools for Genome Analysis-	Training	National	Dept.	July 17 to August 7, 2017
12	Six weeks training: Plant Tissue Culture, Genomics and Computational Tools for Crop Improvement	Training	National	Dept.	July 17 to August 28, 2017
13	Seminar on “Surface Plasmon Resonance and its application” for faculty and students (Key speaker: Metrohm India Limited)	Lecture	College Level	College Committee Room	27th April, 2017
14	Seminar on “Molecular Cytogenetics assisted pre-breeding for quality improvement in wheat” delivered by Dr Sandeep Malik, Professor from GBPUAT	Lecture	University level	Dept.	3 rd April 2017

Annexure SOC-I

Department is involved in organization of various extension activities in adopted village “Shamsukh” under Unnat Bharat Abhiyan, Adarsh Gram Yojna and Swachh Bharat Abhiyan. Dr. (Mrs.) Vinod Kumari, Convener; Dr. (Mrs.) Jatesh Kathpalia, Dr. Rashmi Tyagi and Dr. Subhash Chander are members during the period under report. Following important activities were undertaken and expert lectures were delivered by the faculty.

Programmes/Activities undertaken:

- Organized “Gram Udai Se Bharat Udai Abhiyan” on the occasion of 125th Birth Anniversary of Dr. B.R. Ambedkar in April, 2016.
- Organized Awareness Drive on “Swachh Bharat Abhiyan” on Swachhata Abhiyan. Gram Yojana” in June 2, 2016
- Organized Cleanliness Drive in the adopted village in November, 2016
- Celebrated Agricultural Education Day on 3.12.2016 and delivered lecture on “Importance of agriculture education in today’s scenario and “Various problems faced by farmers”. Various competitions were organized and prizes were given to the winners.



**Preparation of Bajra Ladoos
at village Shamsukh**



**Celebration of Agricultural
Education Day at village Shamsukh**

- Organized demonstration “How to prepare nutritious ‘Bajra Ladoos’ by the Foods & Nutrition Experts in January, 2017.
- Organized Slogan Writing Competition on Agriculture Education Day on 25.11.2017.
- Demonstration on stitching of different types of bags on 12.2.2018.

Prograss Report of Adopted village ‘Shamsukh’ for the year 2015-16

S.No.	Dated	Name of Faculty	Awareness/Activities Campaigns
1.	16.8.2015	Dr. Subhash Chander, Asstt. Scientist with 16 students from UG and PG programme	Awareness was created by the students among the villagers regarding sanitation, drainage system, education, health, gender biasness and waste management.
2.	1.9.2015	Dr. B.S. Duhan, Principal Scientist (Soil Science)	Testing of Soil and Water
		Dr. Neelam Khetarpaul, Professor, F&N, COHS	Awareness regarding calories, protein and carbohydrates

3.	6.10.2015	Dr. Saroj Yadav, Asstt. Scientist, TAD(COHS);	Textiles and apparel designing and its utility
		Dr. Jatesh Kakthpalia, Asstt. Scientist	Beti Bachao Beti Padhao
		Dr. Subhash Chander, Asstt. Scientist	Sanitation and Education
4.	5.12.2015	Dr. Rakha Nain, Asstt. Professor, CFST	Vegetable and fruit pickles
		Dr. Rashmi Tyagi, Asstt. Professor;	Dowry problem in society
		Dr. Subhash Chander, Asstt. Scientist	Role of Swachh Bharat Abhiyan and Adarsh Gram Yojana.
5.	30.3.2016	Dr. Sushila Dahiya, Prof (Retd.) Sociology	Interaction with new panchayat members on various issues including social welfare programmes, public distribution system, development of agriculture, horticulture and waste management, gram sabha, sanitation and family welfare programme.
		Dr. Dharambir Singh, Asstt. Professor, (Zoology)	
		Dr. Subhash Chander, Asstt. Scientist, (Sociology).	

Progress Report of Adopted village 'Shamsukh' for the year 2016-17

S.No.	Dated	Name of Faculty	Awareness/Activities Campaigns
1.	22.4.2016	Dr. U.N. Joshi, Consultant Faculty, Department of Chemistry and Biochemistry	A gram sabha was organized in the village as per instructions issued by Government of India regarding "Gram Uday se Bharat Uday Abhiyan" on the occasion of 125th Birth Anniversary of Dr. Bhim Rao Ambedkar. The representatives of various department i.e. public health, education, panchayat, social welfare and animal husbandary presented various departmental facilities. Dr. Subhash Chander shared his views on various training programme and under graduation and post graduation programmes of various discipline and their scopes.
		Dr. Jatesh Kakthpalia, Asstt. Scientist	
		Subhash Chander, Asstt. Scientist	
2.	2.6.2016	Dr. Samunder Singh, Department of Agronomy	Weed Management on various crop
		Dr. Dharambir Singh, Department of Zoology	Alcoholism and drug addition
3	9.11.2016	Dr. Vinod Kumari Dr. Jatesh Kathpalia Dr. Subhash Chander	Organized cleanliness drive
4	9.11.2016	Dr. Vinod Kumari	How to maintain health and hygiene through cleanliness in rural houses

5	3.12.2016	Dr. Vinod Kumari	Importance of Agriculture Education in Today's Scenario
6	3.12.2016	Dr. Jatesh Kathpalia	Problems faced by farmers
7	3.12.2016	Dr. Vinod Kumari and Dr. Jatesh Kathpalia	Slogan writing competition and debate on agriculture education
8	17.1.2017	Dr. Veenu Sangwan	Demonstration on how to prepare nutritious 'Bajra Ladoos'
		Dr. Vinod Kumari	Tips to improve the health of rural women
		Dr. Jatesh Kathpalia	Importance of good habits to remain healthy
9	27.2.2017	Dr. Krishna Hooda	Haryanvi Sanskriti aur Fagun ke Geet
		Dr. Jatesh Kathpalia & Dr. Manju Tonk	Organized folklore activities

Progress Report of Adopted village 'Shamsukh' for the year 2017-18

S.No.	Dated	Name of Faculty	Awareness/Activities Campaigns
1.	27.4.2017	Dr. Dharambir Malik Department of Zoology	Vermi composting
		Dr. Rashmi Tyagi	Control of menance of rats.
		Dr. Ravi Kant Department of Zoology	Decreasing sex ratio and rural society.
2.	27.5.2017	Dr. Pushpa Kharab	Tissue Culture
		Dr. Rashmi Tyagi	Different training imparted by CCSHAU, Hisar.
3.	14.6.2017	Dr. Vinod Kumari	Dowry and eve-teasing
		Dr. Manju S. Tonk	Domestic violence and burning problems of society.
		Dr. Jatesh Kathpalia	How to maintain hygiene in rural area.
		Dr. Hemant poonia	Role of linear programme Model in increasing the income of farmer.
4.	31.7.2017	Dr. Vinod Kumari	How to make kitchen pollution free.
		Dr. Rashmi Tyagi	Cleanliness of house in general
5.	30.10.2017	Dr. Jatesh Kathpalia	Swachhata hi jeevan hai.
		Dr. Rashmi Tyagi	Cleanliness drive
6.	25.11.2017	Dr. Vinod Kumari	Importance on agriculture in modern time
		Dr. Jatesh Kathpalia	Slogan writing competition on Agriculture and Education.
7.	30.01.2018	Dr. Rashmi Tyagi	Right to Education
		Dr. Dharambir Malik	Vermi Composting

		Dr. Subhash Chander	Rural Development Programmes.
8.	12.2.2018	Dr. Rajvir Singh, Dean	Interaction with Principal and Staff Members
		Dr. Vinod Kumari	How to keep healthy through improving food habits and lifestyles.
		Dr. Saroj Yadav	Demonstration on stitching of different types of bags
		Dr. Jatesh Kathpalia	Empowerment of women through self help group.

Annexure SOC II

Research publications by M.Sc., Ph.D. students

M.Sc. Students' research publications

Chander, S. and Kumari, V. (2012). Education and mass media exposure vis a vis small family norms among scheduled caste of Haryana. *International Journal of Innovations in Engineering and Technology*. 1(3): 32-39.

Chander, S. and Kumari, V. (2012). Effect of occupation and marriage age on small family norms among scheduled castes of Haryana. *Indian Journal of Health and Wellbeing*. 3(3): 815-819.

Chander, S. and Kumari, V. (2012). Knowledge and attitude of scheduled caste of Haryana towards small family norms across different age groups. *International Journal of Education and Management*. 2(4): 455-457.

Jain, M.; Punia, R.K.; Punia, D. and R.C. Hasija (2012). Job Satisfaction of Extension Personals. *Environment and Ecology*. 30(1) : 193-197.

Rekha; Punia, R.K., Punia, D and Hasija, R.C. (2012). Entrepreneurship among students. *Environment & Ecology* 30(1):172-178.

Mukesh; Kaur, S. and Jyoti, R. (2014) Factors responsible for declining sex ratio in Haryana. *Annals of Biology*. 30(4)751-753.

Deepika and Kathpalia, J. (2017). Attitude of parents and factors affecting gender discrimination in rural communities of Haryana. *International journal on biological sciences*. 8(1)48-51.

Deepika and Kathpalia, J. (2017). Gender discrimination in girl child in education among parents in rural communities of Haryana. *Annals of Agri Bio Research*. 22 (1):64-67.

Rahul and Tyagi, R. (2017). A study on domestic problems faced by women scientists in Hisar district of Haryana. *The Journal of Rural and Agricultural Research*. 17(1), 28-31.

Rahul and Tyagi, R. (2017). Nature and extent of problems of women scientists in Haryana : A sociological study. *Annals of Agri-Bio Research*. 22(1) : 68-70.

Rahul and Tyagi, R. (2017). Social problems and women scientists in Hisar district of Haryana. *Journal of Progressive Agriculture*. 8(1):69-73.

Ph.D. Students' research publications

Rani, J., Tyagi, R. and Kathpalia, J.. (2013). Impact of caste on vegetable cultivation in Haryana. *International J. of Agriculture Statistics*, 9(1) : 77-79.

Rani, J.; Kathpalia, J. and Tyagi, R. (2013). "Empowering women through agriculture". *International Journal of Education & Management*, 3(2): 265-267.

Rani, J.; Tyagi, R.; Chahal, S. and Bhatari (2013). Impact of nutritional knowledge status of adolescents on their health. *International J. of Innovations in Engineering and Technology*, 3(2) : 275-278.

Singh, S.; Kumari, V. and Chander, S. (2013). Constraints and suggestions to promote women participation in Gram Panchyat activities. *International Journal of Social Science Review Studies*. 1(1): 1-3.

Singh, S.; Kumari, V. and Chander, S. (2013). Knowledge and involvement of elected women in various activities of Gram Panchyat. *International Journal of Innovations in Engineering, Education and Technology*. 3(1): 296-305.

Singh, S; Kumari, V. and Chander, S. (2013). Age and education of women affecting gram panchayat activities in Haryana. *International Journal of Education and Management Studies*. 3(3):381-385.

Singh, S. & Kumari, V. (2016). Association of caste with knowledge level of women representatives in Gram Panchayat activities. *International Journal of Social Science Review*. 4(2):220-223.

Singh, S. and Kumari, V. (2016). Association of income and occupation with knowledge level of women representatives in Gram Panchayat activities. *International Journal of Social Science Review* 4(2);181-186.

Annexure SOC-III**Student data for the last five years**

Degree Program	Specialization	Year of start	No. of seats							No. of students passed out						
			Y1	Y2	Y3	Y4	Y5	Y6	Total	Y1	Y2	Y3	Y4	Y5	Y6	Total
M.Sc.	Sociology	1971	0	0	0	04	04	06	26	-	0	-	02	01	01	06
			4	4	4					2						
PhD	Sociology	1971	0	0	0	04	04	04	18	0	0	-	-	01	-	03
			2	2	2					1	1					

List of Research Scholars passed out during last five years

Sr. No.	Name	Topic of Research	Name of Supervisor	Year of Enrollment	Extension Granted (if any)	Details of Fellowship /Bursary / Travel and any other research grants In and source
1.	Subhash Chander	Problem of debt among farmers of rural Haryana–a sociological study.	Savita Vermani	2007	04 Semesters	UGC (RGNF)
2.	Sunita Singh	Socio-economic factors affecting women participation in Gram Panchayat in Haryana – A Sociological Study.	Vinod Kumari	2007	05 Semesters	-
3.	Rijul Sihag	“Women Empowerment through Self Help Groups (SHGs) in rural communities of Haryana”	Savita Vermani	2013	01 Semester	-



List of Research Scholars passed out during last five years

Ph.D. Students

S. No.	Name and Admn. No.	Detail of Fellowship	Guide	Date of Admission	Date of Completion	Present Status
Ph.D. Students						
1	Anand Kumar 2008BS25D	RGNF	Dr. V.P. Sabhlok	1/2008	2012	Scientific Assistant, Forensic Science Laboratory, Madhuban (Karnal)
2	Nidhi	MERIT	Dr. R.C. Sihag	1/2008	2012	Assistant Professor, Jat College, Hisar 2012-14
3	Nitish Bansal (2010BS51D)	MERIT	Dr. R.K. Gupta	1/2010	2013	RA, Dept. Of Biotechnology, LUVAS
4	Kanika 2009BS67D	MERIT	Dr. Rachna Gulati	1/2009	2013	RA, NRCE, 2014
5	Sunita Godara (2009BS52D)	INSPIRE	Dr. R.K. Gupta	1/2009	2013	Assistant Professor, Jat College, Hisar
6	Sunita Rani (2008BS14D)	RGNF	Dr. R.K. Gupta	1/2008	2014	Assistant Professor, Jat College, Hisar
7	Manju Rani (2008BS23D)	RGNF	Dr. R.K. Gupta	1/2008	2015	Junior Lecturer, Karnal
8	Chhavi (2012BS22D)	INSPIRE	Dr. R.K. Gupta	1/2012	2015	Junior Lecturer, Faridaad 2017 Faculty at Miso Study, New Delhi 2018
9	Reema (2012BS23D)	MERIT	Dr. Rachna Gulati	1/2012	2015	Assistant Professor Suraj Group of Education, Gurgaon
10	Anita (2011BS26D)	MERIT	Dr. Rachna Gulati	1/2011	2017	Extension Lecturer, Govt.College, Ratia
11	Itisha (2013BS22D)	MERIT	Dr. Rachna Gulati	1/2013	2017	Assistant Professor Ad-Hoc College Sonipat
12	Komal Duhan (2013BS22D)	MERIT	Dr. Rachna Gulati	1/2013	2017	Extension Lecturer, Govt. Post Graduate College, Jind
13	Arvind (2014BS22D)	MERIT	Dr. Rachna Gulati	1/2014	3/ 2018	

14	Jyoti Yadav (2014BS20D)	MERIT	Dr. Dharambir Singh	1/2014	4/2018	
15	Monika (2014BS21D)	MERIT	Dr. Rachna Gulati	1/2014	3/2018	
M.Sc Students						
1	Arvind (2011BS104M)	MERIT	Dr. Rachna Gulati	7/2011	12/2014	Joined Ph.D
2	Monika (2012BS21M)	MERIT	Dr. Rachna Gulati	7/2012	10/2014	Joined Ph.D
3	Jyoti Yadav (2012BS22M)	MERIT	Dr. R.K. Gupta	7/2012	10/2014	Joined Ph.D
4	Parveen Gill (2012BS23M)	MERIT	Dr. R.K. Gupta	7/2012	9/2015	Joined Ph.D
5	Abhinav Hooda (2012BS17M)	MERIT	Dr. R.K. Gupta	7/2012	10/2015	Higher studies from Canada
6	Virangna (2013BS28M)	MERIT	Dr. R.K. Gupta	7/2013	3/2016	
7	Sonika (2013BS29M)	MERIT	Dr. Rachna Gulati	7/2013	9/2015	Joined Ph.D
8	Hemlata (2013BS30M)	MERIT	Dr. R.K. Gupta	7/2013	3/2016	Teaching, Jat College, Hisar
9	Urmila (2014BS23M)	MERIT	Dr. R.K. Gupta	7/2014	5/2016	Joined Ph.D
10	Manoj (2014BS24M)	MERIT	Dr. Rachna Gulati	7/2014	8/2017	
11	Sandeep (2014BS25M)	MERIT	Dr. Dharambir Singh	7/2014	3/2017	
12	Ritu Rani (2015BS26M)	MERIT	Dr. Dharambir Singh	7/2015	8/2017	
13	Neetu (2015BS27M)	MERIT	Dr. Ravikant	7/2015	8/2017	
14	Anju (2015BS28M)	POSE	Dr. Ravikant	7/2015	9/2017	Joined Ph.D

Annexure ZOO II

Students on roll as on March 2018

S. No.	Name	Admission No.
M.Sc. Students		
2016-17		
1.	Renu	2016BS17M
2.	Ajay	2016BS18M
3.	Rahul	2016BS19M
2017-18		
4.	Sukhbir Singh	2017BS36M
5.	Karuna Bamal	2017BS37M
6.	Sakshi S. No.	2017BS38M
7.	Poonam	2017BS39M
8.	Deepak	2017BS40M
9.	Akshay Kumar	2017BS41M
Ph.D Students		
2014-15		
10.	Jyoti Yadav	2014BS20D
11.	Monika	2014BS21D
12.	Arvind	2014BS22D
2015-16		
13.	Sonika	2015BS14D
14.	Shefali	2015BS15D
15.	Parveen Gill	2015BS16D
2016-17		
16.	Urmila	2016BS10D
17.	Sumti Rani	2016BS11D
2017-18		
18.	Anju	2017BS16D
19.	Poonam Devi	2017BS17D
20.	Vikram Delu	2017BS18D

Annexure ZOO III

Students who cleared NET/ARS/GATE or any other examination

Year	Name of student	NET/ARS/GATE or any other
2013-14	Nitish	NET
2014-15	Kavita Sharma	ARS/ NET
2015-16	Itisha	NET
2016-17	Komal, Itisha, Monika	HPSC cleared
2016-17	Sonika	HTET (PGT Biology)
2017-18	Asha, Vijayanti	Joined as Assistant Prof. through HPSC

Name of student who got fellowships other than university merit fellowship

Year	Name of student	Fellowships
2012-13	Sunita Godara (2009BS52D)	INSPIRE
2012-14	Sunita Rani (2008BS14D)	RGNF
2012-15	Manju Rani (2008BS23D)	RGNF
2014-15	Chhavi (2012BS22D)	INSPIRE
2015-17	Anju (2015BS28M)	DST-POSE
2016-18	Renu (2016BS17M)	DST-POSE
2017-18	Ajay (2016BS18M)	Post Matric Fellowship
2017-18	Parveen Gill (2015BS16D)	RGNF

Annexure ZOO IV**Research Publications during last five years****M.Sc. Students**

Sr. no.	Research publications	NAAS rating
1.	Asha, Gulati, R. and Sharma, S.K. 2012. Efficacy of formic acid against <i>Varroa destructor</i> Anderson and Trueman in <i>Apis mellifera</i> L. colonies. <i>International Journal of Agricultural Sciences</i> , 3 (1): 29-33.	4.82
2.	Asha, and Gulati, R. 2012. Control of <i>Varroa destructor</i> : A review. <i>International Journal of Agricultural Sciences</i> , 3 (1): 85-90.	4.82
3.	Anita, Gulati, R., Kaushik, H.D. and Arvind. 2013. Effect of <i>Tyrophagus putrescentiae</i> Schrank on weight loss in stored oats and green gram. <i>Annals of Plant Protection Sciences</i> , 21 (1): 90-93.	4.82
4.	Asha, Gulati, R., Thakur, D. and Giroh, M. 2013. Effect of <i>Varroa destructor</i> Anderson and Trueman infestation on <i>Apis mellifera</i> L. adults. <i>Journal of Applied and Natural Science</i> , 5 (2): 455-458.	4.84
5.	Kalyankar, A.D., Gupta, R.K. Bansal, N., Sabhlok, V.P. and Singh, D. 2013. Effect of garlic (<i>Allium staivum</i>) against <i>aeromonas hydrophila</i> and health management in sword tail, <i>Xiphophorus helleri</i> . <i>Journal of Environment Science and Sustainability</i> , 1 (2): 41-48.	-
6.	Anita, Gulati, R., Kaushik, H.D. and Arvind. 2014. Efficacy of <i>Ocimum sanctum</i> and <i>Glycyrrhiza glabra</i> against stored Mite, <i>Tyrophagus putrescentiae</i> Schrank in oat flakes. <i>Biopesticides International</i> , 10 (1): 41-49.	4.82
7.	Anita, Gulati, R., Monika, Kaushik, H.D. and Arvind. 2014. Quantitative losses in green gram [<i>Vigna radiata</i> (L.) Wilczek) due to <i>Tyrophagus putrescentiae</i> (Schrank) (Acari: Acaridae). <i>Legume Research</i> , 37 (6): 670-674.	6.15

8.	Asha, Gulati, R. and Sharma, S.K. 2014. Effect of environmental factors on the population of <i>Varroa destructor</i> in <i>Apis mellifera</i> L. colonies. <i>The Ecoscan</i> , 8 (1&2): 23-25	
9.	Devi, S., Gulati, R., Tehri, K. and Asha. 2014. Diversity and abundance of insect pollinators on <i>Allium cepa</i> L. <i>Journal of Entomology and Zoology Studies</i> , 2 (6): 34-38.	5.53
10.	Arvind, Gulati, R. and Anita. 2015. Comparative susceptibility and weight loss of wheat grains and flour due to <i>Tyrophagus putrescentiae</i> (Schrank). <i>Annals of Plant Protection Sciences</i> , 23 (2): 246-249.	4.82
11.	Asha, Gulati, R., Sharma, S.K. and Aneja, D.R. 2015. Comparative evaluation of sticky paper and hive debris as sampling methods for population assessment of <i>Varroa destructor</i> in <i>Apis mellifera</i> colonies. <i>Indian Journal of Agricultural Research</i> , 49 (6): 503-508.	4.86
12.	Devi, S., Gulati, R., Tehri, K. and Poonia, A. 2015. The pollination biology of onion (<i>Allium cepa</i> L.)- A Review. <i>Agricultural Reviews</i> , 36 (1): 1-13.	4.37
13.	Devi, S., Gulati, R., Tehri, K. and Poonia, A. 2015. Effect of different modes of pollination on yield parameters of <i>Allium cepa</i> L. <i>Journal of Entomological Research</i> , 39 (2): 111-117	5.05
14.	Arvind, Gulati, R. and Poonia, A. 2016. Effects of infestations by <i>Tyrophagus putrescentiae</i> [Schrank] [Acari: Acaridae] on biochemical composition of wheat grains. <i>International Journal of Agricultural Sciences</i> , 8 (50): 2133- 2136.	4.82
15.	Hem Lata, Singh, D., Yadav, J. and Sandeep. 2017 Impact of herbicides on biomolecular constituents of <i>Eisenia fetida</i> . <i>Journal of Entomology and Zoology Studies</i> , 5 (2): 1375-1378.	5.53
16.	Jangra, M., Gulati, R., Sonika, and Batra, V.K. 2017. Influence of environmental factors on population builds up of <i>Polyphagotarsonemus latus</i> (Banks) infesting chilli. <i>Royal</i> , VI (I): 41-47.	
17.	Jangra, M., Gulati, R., Sonika, and Batra, V.K. 2017. Bioecological studies of <i>Polyphagotarsonemus latus</i> (Banks) (Acari: Tarsonemidae): A Review. <i>Annals of Biology</i> , 33 (2): 319-324.	
18.	Jangra, M., Gulati, R. and Sonika. 2017. Incidence of chilli mite, <i>Polyphagotarsonemus latus</i> (Banks) on chilli fruit parameters under field conditions. <i>Emergent Life Sciences Research</i> , 3 (2): 26-31.	
19.	Malik, A, Gulati, R., Duhan K. and Poonia, A. 2017. Comparative efficacy of different concentrations of <i>Withania somnifera</i> , <i>Pongamia pinnata</i> and <i>Azadirachta indica</i> against <i>Tyrophagus putrescentiae</i> (Schrank) (Acari: Acaridae) in wheat grains. <i>Journal of Entomology and Zoology Studies</i> , 5 (4): 996-1001.	5.53

20.	Sandeep, Singh, D. and Yadav, J. 2017. Comparative impact of phorate and cartap on biomolecules of <i>E. fetida</i> . <i>International Journal of Agriculture Sciences</i> , 8 (16): 4117-4119.	4.57
21.	Sandeep, Singh, D., Yadav, J. and Urmila. 2017. Assessment of nutrient status of vermicompost of leaf litter using <i>Eisenia fetida</i> . <i>Journal of Entomology and Zoology studies</i> , 5 (2): 1135-1137.	5.53
22.	Sonika, Gulati, R. and Jangra, M. 2017. Bioecological Studies of <i>Tetranychus urticae</i> Koch (Acari: Tetranychidae): A Review. <i>Annals of Biology</i> , 33 (2): 331-337.	
23.	Sonika, Gulati, R. and Jangra, M. 2017. Incidence of <i>Tetranychus urticae</i> Koch on brinjal under field and screen house conditions. <i>Emergent Life Sciences Research</i> , 3 (2): 16-22.	
24.	Yadav, J., Gupta, R.K. and Kumar D. 2017. Chances in C:N of different substrates during vermicomposting. <i>Ecology, Environment and Conservation</i> , 23 (1): 368-372.	5.02
25.	Yadav, J. and Gupta, R.K. 2017. Dynamics of nutrient profile during vermicomposting. <i>Ecology, Environment and Conservation</i> , 23 (1): 516-521.	5.02
26.	Yadav, J. and Gupta, R.K. 2017. Effects of Cd and Zn toxicity on biomolecules of <i>Eisenia fetida</i> . <i>Pollution Research</i> , 36 (2): 291-295.	4.96
27.	Yadav, J., Gupta, R.K. and Kumar, Deepak. 2017. Heavy metals' toxicity on growth and reproduction of <i>Eisenia fetida</i> . <i>Research in Environment and Life Sciences</i> , 10 (6): 565-568.	4.09
28.	Geroh, M., Gulati, R., Asha and Kanika 2012. Effects of Radiation on Honeybees. In: <i>Proceedings of International Conference on Emerging Frontiers & New Challenges in Radiation Biology</i> (January 24-25, 2012), Govt Dungar College, Bikaner, Rajasthan: 157-164.	
29.	Asha, Gulati, R., and Geroh, M. 2012. Effects of Cell Phone Radiations on Honeybees. In: <i>Proceedings of International Conference on Emerging Frontiers & New Challenges in Radiation Biology</i> (January 24-25, 2012), Govt Dungar College, Bikaner, Rajasthan: 92-98.	
30.	Gill, P., Singh, D. and Gupta, R.K. 2015. Production of high quality vermicompost from different organic waste by using <i>Eisenia fetida</i> . 4 th Jammu and Kashmir Agricultural Sciences Congress held on 28-30 October in Chatha, Jammu. pp : 153	
31.	Jangra, M., Gulati, R. and Batra, V.K. 2016. Management of Chilli mite <i>Polyphagotarsonemus latus</i> (Banks) by using poultry manure. In: <i>Recent Advances in Emerging Technologies</i> (eds. Singh, K. and C. Rajesh), Shaheed-a-azam Printing Press, Patiala: 361-369.	

Ph.D. Students

Sr. no.	Research publications	NAAS rating
1.	Gupta, R.K. Bansal, N. and Kalyankar, A.D. 2013. Efficient utilization of solid organic waste through vermicomposting and its impact on growth parameters of different vegetable crops. <i>Journal of Environment Science and Sustainability</i> , 1 (3): 85-88.	-
2.	Kanika, Gulati, R. and Geroh, M. 2013. Influence of abiotic stresses on the population dynamics of two spotted spider mite (<i>Tetranychus urticae</i> Koch) in cucumber ecosystem. <i>Annals of Plant Protection Sciences</i> , 21 (2): 242-246.	4.82
3.	Bansal, N., Gupta, R.K., Garg, S., Singh, G. and Sharma, K. 2014. Effect of Vermicompost as Pond Fertilizer on Growth Performance of Common carp (<i>Cyprinus carpio</i> Linn.). <i>Journal of Environment Science and Sustainability</i> , 2 (1): 23-30.	-
4.	Geroh, M., Gulati, R. and Kanika. 2014. <i>Beauveria bassiana</i> (Balsamo) Vuillemin (Strain ITCC- 4668) as acaricide against <i>Tetranychus urticae</i> Koch (Acari: Tetranychidae). <i>Indian Journal of Agricultural Research</i> , 48 (3): 384-388.	4.86
5.	Kanika, Gulati, R. and Geroh, M. 2014. Impact of weather parameters on the population dynamics of <i>Tetranychus urticae</i> Koch on field grown cucumber. <i>Annals of Biology</i> , 30 (1): 140-145.	4.08
6.	Kanika, Gulati, R., Geroh, M., and Madan, S. 2014. Effect of two spotted spider mite infestation on some biochemical parameters of cucumber leaves. <i>Annals of Biology</i> , 30 (4) : 686-690	4.08
7.	Tehri, K. and Gulati, R. 2014. Field efficacy of some biorationals against the two spotted spider mite <i>Tetranychus urticae</i> Koch (Acari: Tetranychidae). <i>Journal of Applied and Natural Science</i> , 6 (1): 62-67.	4.84
8.	Tehri, K., Gulati, R. and Geroh, M. 2014. Damage potential of <i>Tetranychus urticae</i> Koch to cucumber fruit and foliage: Effect of initial infestation density. <i>Journal of Applied and Natural Science</i> , 6 (1): 170-176.	4.84
9.	Tehri, K., Gulati, R. and Geroh, M. 2014. Host plant responses, biotic stress and management strategies for the control of <i>Tetranychus urticae</i> Koch (Acarina: Tetranychidae). <i>Agricultural Reviews</i> , 35 (4): 250-260.	4.37
10.	Tehri, K., Gulati, R., Geroh, M. and Madan, S. 2014. Biochemical responses of cucumber to <i>Tetranychus urticae</i> Koch (Acari: Tetranychidae) mediated biotic stress. <i>Journal of Applied and Natural Science</i> , 6 (2): 687-692.	4.84
11.	Bansal, N., Gupta, R.K., Singh, D. and Shashank. 2015. Comparative study of antibacterial activity of two different earthworm species, <i>Perionyx</i>	4.84

	<i>excavates</i> and <i>Pheretima posthuma</i> against pathogenic bacteria. <i>Journal of Applied and Natural Science</i> , 7(2) : 666-671.	
12.	Geroh, M., Gulati, R. and Kanika. 2015. Determination of lethal concentration and lethal time of entomopathogen <i>Beauveria Bassiana</i> (Balsamo) Vuillemin against <i>Tetranychus urticae</i> Koch. <i>International Journal of Agricultural Sciences</i> , 7(5) : 523-528.	4.82
13.	Geroh, M., Gulati, R. and Kanika. 2015. Safety of fungal biocontrol agent, <i>Beauveria bassiana</i> (Balsamo) Vuillemin to spider mite natural enemy, <i>Stethorus punctillum</i> Weise under field conditions. <i>Journal of Entomological Research</i> , 39 (4): 333-336.	5.05
14.	Godara, S., Sihag, R.C. and Gupta, R.K. 2015. Effect of pond fertilization with vermicompost and some other manures on the growth performance of Indian Major Carps. <i>Journal of Fisheries and Aquatic Science</i> , 10 (3): 199-211.	
15.	Godara, S., Sihag, R.C. and Gupta, R.K. 2015. Effect of pond fertilization with vermicompost and some other manures on the hydrobiological parameters of treated pond waters. <i>Journal of Fisheries and Aquatic Science</i> , 10 (4): 212-231.	-
16.	Godara, S., Sihag, R.C. and Gupta, R.K. 2015. Effect of pond fertilization with vermicompost and some other manures on the pathogenic bacterial populations of treated waters. <i>Research Journal of Microbiology</i> , 10 (6): 230-245.	-
17.	Rani, S., Gupta, R.K and Tehri, K. 2015. Zinc and cadmium induced changed in the proteolytic and amylolytic enzyme activity in Indian major carps. <i>The Bioscan</i> , 10(2) : 613-616.	5.26
18.	Rani, S., Gupta, R.K. and Rani, M. 2015. Heavy metal induced toxicity in fish with special reference to zinc and cadmium. <i>International Journal of Fisheries and Aquatic Studies</i> , 3(2) : 118-123.	-
19.	Tehri, K. and Gulati, R. 2015. Might of the Mite: A review. <i>International Journal of Current Science</i> . 15 : 1-14.	-
20.	Tehri, K., Gulati, R., Geroh, M. and Dhankhar, S.K. 2015. Dry weather: a crucial constraint in the field efficacy of entomopathogenic fungus <i>Beauveria bassiana</i> against <i>Tetranychus urticae</i> Koch (Acari: Tetranychidae). <i>Journal of Entomology and Zoology Studies</i> , 3(3) : 287-291.	5.53
21.	Bansal, N., Gupta, R.K. and Shashank. 2016. Antimicrobial activity of earthworm Extract, <i>Eudrilus eugeniae</i> against fish bacterial pathogens. <i>The Ecoscan</i> , 10(1 and 2) : 01 – 06.	4.65
22.	Rani, S., Gupta, R.K. and Rani, M. 2016. Biochemical alterations in blood serum ions of Indian major carps induced by zinc and cadmium toxicity. <i>The Bioscan</i> , 11(3) : 1473-1476.	5.26

23.	Duhan K, Gulati, R., Malik, A. and Singh, S. 2017. Comparative evaluation of population dynamics of <i>Tyrophagus putrescentiae</i> Schrank (Acari: Acaridae) on fruiting body of <i>Pleurotus sajor caju</i> at different composition. <i>Journal of Entomology and Zoology Studies</i> , 5 (3): 1565-1567	5.53
24.	Duhan K, Gulati, R., Malik, A. and Singh, S. 2017. Comparative evaluation of medicinal plants against stored product mite, <i>Tyrophagus putrescentiae</i> in <i>Pleurotus sajor caju</i> compost. <i>International Journal of Basic and Applied Agricultural Research (Formerly Pantnagar Journal)</i> : accepted	5.20
25.	Duhan K, Gulati, R., Malik, A. and Singh, S. 2017. Qualitative losses in nutritional contents of <i>Pleurotus sajor-caju</i> (Oyster mushroom) in both compost and fruiting body by <i>Tyrophagus putrescentiae</i> (Acari: Acaridae) at different infestation levels. <i>Chemical Sciences and Reviews (International)</i> , 6 (21): 88-93.	5.20
26.	Duhan K. and Gulati, R. 2017. Review article on lignocellulose biomass as substrate for <i>Pleurotus</i> (oyster mushroom) cultivation. <i>International Journal of Technical Research and Science</i> , 2 (III): 137-141.	Impact Factor 1.50
27.	Duhan K. and Gulati, R. 2017. Review: Application of molecular markers in the study of genetic diversity in Acarology. <i>International Journal of Technical Research and Science</i> , 2 (VI): 399-401.	Impact Factor 1.50
28.	Itisha, Gulati, R., Manoj, Anita and Singh, S. 2017. <i>Tyrophagus putrescentiae</i> as causative agent of wet bubble disease in <i>Agaricus bisporus</i> . <i>International Journal of Current Microbiology and Applied Sciences</i> , 6 (10): 1172-1177.	5.38
29.	Itisha, Gulati, R., Anita and Manoj 2017. Damage potential of <i>Tyrophagus putrescentiae</i> Schrank (Acari: Acaridae) in mushrooms. <i>Emergent Life Science Research</i> , 3 (2): 6-15	
30.	Rani, M., Gupta, R.K., Kumar, S., Yadav, J. and Rani, S. 2017. Pesticides' induced alterations in blood serum ions of Indian major carps. Accepted for publication in <i>The Bioscan</i> .	5.26
31.	Rani, M., Gupta, R.K., Yadav, J. 2017. Effects of Dimethoate, Chlorpyrifos and Malathion on Growth Parameters of Indian Major Carps (Accepted for publication in <i>Ecology, Environment and Conservation</i>	
32.	Rani, M., Gupta, R.K., Yadav, J. and Kumar, S. 2017. Assessment of organophosphates' induced acetylcholinesterase inhibition in Indian major carps. <i>Journal of Entomology and Zoological studies</i> . 5 (2): 1369-1371.	5.53
33.	Rani, M., Gupta, R.K., Yadav, J. and Kumar, S. 2017. Comparative analysis of proteolytic and amylolytic activity in pesticides exposed Indian major carps. <i>The Bioscan</i> . 12 (1): 195-197.	5.26
34.	Rani, M., Gupta, R.K. and Yadav, J. 2017. Heavy metal induced alterations in acetylcholinesterase activity of Indian major carps. <i>Journal of Entomology and Zoological studies</i> , 5 (4): 818-821.	5.53

35.	Rani, R., Singh, D., Yadav, J. and Neetu. 2017. Pesticides' induced toxicity on survivability of <i>Eisenia fetida</i> . <i>The Bioscan</i> , 12 (2): 761-764.	5.26
36.	Shefali, Yadav, J., Gupta, R.K. and Singh, D. 2017. Earthworms as the modulators of soil properties. <i>Research Journal of Agriculture and Forestry Sciences</i> , 5 (6): 20-23.	-
37.	Duhan K, Gulati, R., Malik, A. and Singh, S. 2018. Loss estimation in oyster mushroom compost and fruiting bodies due to infestation of <i>Tyrophagus putrescentiae</i> (Acari: Acaridae). <i>Agriculture Research Journal</i> , 55 (1) : 175-178	
38.	Tehri, K., Gulati, R. and Geroh, M. 2016. Host plant responses to <i>Tetranychus urticae</i> Koch mediated biotic stress and management strategies. In: <i>Dynamics of Crop Protection and Climate Change</i> (eds. Chattopadyaya, C. and Prasad, D.), Studera Press, New Delhi: 93-114	

Annexure ZOO-V**Seminar/Conference/Symposium/Workshops/ Training attended by Students****M.Sc. Students**

1. Arvind, Anita and Asha presented poster at National Seminar on Sustainable Agriculture and Food Security: Challenges in Changing Climate (March 27-28, 2012), Directorate of Research, CCSHAU, Hisar
2. Arvind presented poster at International Conference on Industrial Biotechnology (ICIB-2012) (November 21-23, 2012), Patiala
3. Arvind presented posters at International Conference on Biotechnology: Emerging trends (ICB 2012), September 18-20, 2012, Sirsa
4. Asha, Sunita, Monika and Arvind presented posters at National Seminar on Reorientation of Agricultural Research to Ensure National Food Security, (January 6-7, 2014), CCSHAU, Hisar
5. Asha presented poster at National Conference on Biodiversity and Sustainable development (March 27, 2015), Chhaju Ram Memorial Jat College, Hisar
6. Arvind presented poster at Emerging trends in Basic and applied Sciences (May 1-2, 2015), Maharaja Agarsen University, Baddi
7. Anju presented poster at National Seminar on Animal Diseases: Impact on Human Health & Control Issues organized by MCM DAV College for women, Chandigarh on August 30- 31, 2016.
8. Anju, Neetu, Sonika presented posters at National conference on Genetic diversity and therapeutic potential of natural products, September 17, 2016, MDU, Rohtak
9. Rahul attended Author workshop conducted by MDU and Elsevier on November 18, 2016.
10. Monika Jangra, Sonika, Manoj, Hemlata, Sandeep, Urmila, Ritu presented posters at National Conference on Biotechnology: Emerging trends (February 11-12, 2016), Sirsa
11. Anju, Monika Jangra, Sonika presented posters at National Conference on Evolving New Horizons of Zoological Sciences in Human Welfare (November 23-24, 2016), Kurukshetra

12. Monika Jangra presented poster at National Seminar on Recent Advances in Emerging Technologies (February 23-24, 2016), Patiala
13. Ritu, Sandeep presented posters at International Conference on Emerging Areas on Environmental Science and Engineering (Feb 16- 18, 2017), GJU Hisar
14. Karuna presented poster at National Seminar on Climate Change and Food Security on January 25, 2018 at Maharishi Dayanand University, Rohtak.
15. Deepak and Sukhbir presented poster at 30th All India Congress of Zoology and National Seminar on 'Advances in Zoology for Sustainable Development, Kurukshetra University, Kurukshetra on February 15 to 17, 2018
16. Ajay, Anju, Deepak, Neetu, Sukhbir Singh presented poster at International Conference on Sustainable Agriculture, Energy, Environment and Technology (ICSAAET-2018) at Maharishi Dayanand University, Rohtak on February 24-25, 2018

Ph.D Students

1. Monika and Kanika presented poster at National Seminar on Sustainable Agriculture and Food Security: Challenges in Changing Climate, March 27-28, 2012, Directorate of Research, CCSHAU, Hisar.
2. Monika and Kanika presented posters at International Conference on Biotechnology: Emerging trends (ICB 2012), September 18-20, 2012, Sirsa
3. Anita, Monika Geroh, Kanika and Reema presented posters at National Seminar on Reorientation of Agricultural Research to Ensure National Food Security, CCSHAU, Hisar (January 6-7, 2014),
4. Jyoti Yadav presented poster at International Conference on Emerging Trends in Biotechnology held at JNU, New Delhi on Nov 2-9, 2014.
5. Jyoti Yadav presented poster at International Science Congress held at Pacific University, Udaipur, Rajasthan on 8-9 Dec, 2014.
6. Kanika presented posters at National Seminar on Science and Technology for human development, (March 25-27, 2015), Jammu
7. Kanika presented posters at 4th Congress on Insect Science "Entomology for Sustainable Agriculture (April 16-17, 2015), PAU, Ludhiana
8. Jyoti Yadav attended training on "Scientific bee keeping and Integrated Pest Management" organized by Department of Entomology, CCS Haryana Agricultural University from Feb 18, 2015 to March 5, 2015.
9. Arvind and Jyoti Yadav attended training course entitled "DNA based diagnostics and cell culture techniques" organized by Dept. of ABT, COVS, LUVAS from 7th - 27th July, 2015.
10. Parveen Gill presented poster at 4th Jammu & Kashmir Agricultural Sciences Congress organized by Chatha, Jammu on October 28-30, 2015.
11. Itisha, Komal, Reema presented posters at National Seminar on Emerging trends in Basic and applied Sciences, (May 1-2, 2015), Maharaja Agarsen University, Baddi.
12. Arvind, Monika, Sonika, Anita, Monika Geroh, Itisha, Komal, Manju Rani, Jyoti Yadav attended and presented poster at National Conference on Biotechnology: Emerging trends, CDLU, Sirsa (February 11-12, 2016).
13. Monika presented poster at National Conference in recent advances in emerging technologies at Shri Guru Granth Sahib World University, Fatehgarh on February 23-24, 2016
14. Monika presented poster at National Seminar on Recent Advances in Emerging Technologies, (February 23-24, 2016), Patiala.

15. Arvind and Komal presented poster at National Seminar in recent approaches to sustainable Research & Development of aromatic and medicinal plants on February 29, March, 1,2016 in CCSHAU, Hisar.
16. Monika presented poster at National Conference on Trends in Nanobiotechnology, (November 29 - 30, 2016), CCS HAU, Hisar
17. Monika, Komal attended and presented poster at National Conference on Genetic Diversity & Therapeutic Potential of Natural Products on September 17, 2016 at Maharishi Dayanand University, Rohtak
18. Monika and Sonika presented poster at National Conference Evolving New Horizons of Zoological Sciences in Human Welfare' on November 23-24, 2016 at KU Kurukshetra
19. Jyoti Yadav presented poster at International Science Congress organized by Rajgurunagar, Pune, Maharashtra, India on December 8-9, 2016.
20. Anita, Sonika, Jyoti presented poster at *International Conference on Emerging Areas of Environmental Science and Engineering (EAESE-2017)* on February 16-18, 2017 at Guru Jambheshwar university of Science and Technology, Hisar.
21. Monika presented poster at International Conference on Recent Advances for Quality Enhancement in Science and Technology (January 16-17, 2017), Jalandhar (Punjab) India,
22. Sonika and Anita presented poster at National Seminar on Climate Change and Food Security on January 25, 2018 at Maharishi Dayanand University, Rohtak.
23. Sonika and Sumti presented poster at 21st Punjab Science Congress, Scientific Advances For Inclusive Development and Environmental Protection, PAU, Ludhiana on February 7-9, 2018.
24. Anita, Sonika, and Vikram presented poster at 30th All India Congress of Zoology and National Seminar on 'Advances in Zoology for Sustainable Development, Kurukshetra University, Kurukshetra on February 15 to 17, 2018
25. Sonika presented poster at International Conference on Bio and Nano Technologies for Sustainable Agriculture, Food, Health, Energy and Industry (ICBN -2018), GJU, Hisar on February 21-23, 2018
26. Anita, Sumti and Sonika, presented poster at International Conference on Sustainable Agriculture, Energy, Environment and Technology (ICSAEET-2018) at Maharishi Dayanand University, Rohtak on February 24-25, 2018

Annexure ZOO VI

Student participation in Cultural fairs/exhibitions/ Sports activities

S. No.	Activity
1.	Jyoti Yadav, Member of mountaineering club (2015-2016)
2.	Itisha, Jyoti Yadav, Arvind acted as member of Cultural forum, COBS&H
3.	Jyoti Yadav was awarded "A" grade in Adventure Course held at NIM, Uttarkashi (28oct- 11 Nov, 2015), Won silver medal in lecturette competition at NIM, Uttarkashi and was the member of winning team in Cross Country Race, NIM, Uttarkashi.
4.	Itisha won 1 st prize in solo dance and choreography, solo dance folk in Inter College youth festival held at CCSHAU (2014)
5.	Itisha won 1 st prize in solo dance and 2 nd prize in group dance, debate in Inter zonal Youth festival, MDU, Rohtak

6.	Itisha won 1 st prize in National Quiz competition and organizing member of Teachers Day Function
7.	Jyoti Yadav won 2 nd prize in general group dance in Inter College youth festival held at CCSHAU (2014).
8.	Arvind won 3 rd prize in 13 th National Youth Parliament Competition held at CCSHAU on 11.9.2016
9.	Students participated in debate, declamation and group discussion in Inter College Youth Festival held at CCSHAU, Hisar (2016).
10.	Jyoti Yadav won 1 st prize for group discussion in Inter College Youth Festival (UTSAV- 2016) held at CCSHAU, Hisar (2016).
11.	Jyoti Yadav won consolation prize in speech competition (Hindi) held in COBS&H, CCSHAU, Hisar on “Matrabhasha Diwas”.
12.	Rahul and Ajay got appreciation certificate on Teacher’s Day based on their performance
13.	Sukhbir, Karuna, Sakshi, Poonam, Deepak, Akshay Kumar got awards in talent search programme, 2017
14.	Manoj acted as member, Anti ragging Committee in 2016-17
15.	Urmila acted as member, Anti ragging Committee in 2017-18
16.	Akshay Kumar, Member of mountaineering club (2017-2018)

Annexure ZOO VII

Placements record

Sr. No.	Name of Student(s)	Placements (duration 2012-2018)
1.	Dr Tejpal Dahiya	Assistant Professor, Zoology, DHE Tosham, Haryana
2.	Dr Aanand Kumar	Scientific Assistant, SFL, Madhuban, Deptt of Police, Haryana
3.	Dr Vijayanti Jakhar	PGT, AAROHI Model School, Haryana Assistant Professor Govt. PG College
4.	Dr Neeru Mehta	PGT, Directorate of School Education, Haryana
5.	Dr Monika Sangwan	PGT, Directorate of School Education, Haryana
6.	Dr. Sudesh	Assistant Professor, Zoology, MDU, Rohtak
7.	Dr Monika Geroh	PGT, Directorate of School Education, Haryana
8.	Dr Asha Poonia	PGT, Directorate of School Education, Haryana Assistant Professor Govt. PG College Sirsa
9.	Dr Ravi Kant	Assistant Professor, Zoology, CCSHAU, Hisar
10.	Dr Kavita Sharma	PDF Women Scientist, UGC Fellowship, GJU S&T, Hisar
11.	Dr Parvati Sharma	RA, NRCE Equines 2014
12.	Mr Dinesh Katyaal	Fisheries Officer, Deptt of Fisheries Haryana
13.	Dr Gajender Singh	Research Fellow, Haryana Farmers Commision
14.	Dr Sunita Godara	Assistant Professor Ad-Hoc Govt. PG College Hisar
15.	Dr Nidhi Wadhwa	Assistant Professor Ad-Hoc PPIMT Hisar

16.	Dr Sunita Rathi	Assistant Professor Ad-Hoc Govt. PG College Hisar
17.	Dr Manju	Assistant Professor Ad-Hoc Govt. PG College Hisar 2016 Junior Lecturer, Karnal 2017
18.	Dr. Kanika	RA, NRCE Equines 2015, Ad hoc faculty in PG College 2016
19.	Dr Nitish Bansal	RA, LUVAS
20.	Dr. Meenakshi Jindal	Assistant Professor Ad-Hoc DN college, Hisar
21.	Dr. Chhavi	Ad hoc faculty in PG College Faridabad 2017 Faculty at Miso Study, New Delhi 2018
22.	Ms. Monika	Assistant Professor Ad-Hoc JAT College Hisar, 2014
23.	Ms. Sonika	Assistant Professor Ad-Hoc FC College Hisar, 2015
24.	Ms. Hemlata	Assistant Professor Ad-Hoc Govt. PG College Hisar
25.	Ms. Urmila	Assistant Professor Ad-Hoc FC College Hisar 2016
26.	Dr. Itisha	Assistant Professor Ad-Hoc College Sonipat
27.	Dr. Reema	Assistant Professor Suraj Group of Education, Gurgaon
28.	Dr. Komal	Extension Lecturer, Govt. Post Graduate College, Jind
29.	Dr. Anita	Extension Lecturer, Govt.College, Ratia



Annexure COMP I**Training Programmes Organised:**

Three Refresher course on “Advances in Computer Application” in Collaboration with Academy of Agricultural Research and Education Management, DHRM and Computer Section, COBS&H in the year 2014, 2015 and 2016.

Two training organised on “Short Training on Statistical Analysis for Research Scholar” in collaboration with Directorate Student Welfare and Computer Section the year 2016-17

One training organised on “Advanced Excel Skills” for MBA Students in collaboration with Directorate Student Welfare and Computer Section the year 2017-18

One training organised on “Short Training on Statistical Analysis for Research Scholar” in collaboration with Directorate Student Welfare and Computer Section the year 2017-18

Short Training on Statistical Data Analysis for Research Scholar (3) & Advanced Excel Skills (1)

**Research Publications of Faculty:**

S. No.	Research Publication (2012-17)	NAAS Rating
1.	O.P. Sheoran, Lajpat Rai, R.N. Sheokand, Balbir Singh and R.C. Hasija (2012). Significance of Change in Sectoral Development in Haryana – An Inter-tehsil Temporal Analysis. Annals of Agri-Bio Research 17(1):67-74.	3.97
2.	O.P. Sheoran, Lajpat Rai, K.K. Saxena (2012). Structural Equation Modelling with latent variables for assessment of agricultural development of Haryana State. Int. J. of Agric. and Statistical Sciences 8(2):415-431.	5.13
3.	O.P. Sheoran, Lajpat Rai, Balbir Singh, Parminder Singh and R.C. Hasija (2013). Identification of Level of Regional Development in Haryana : An Inter-district Statistical Analysis. Annals of Biology 29(1): 93-99.	4.08
4.	Parvinder Sheoran, O.P. Sheoran and Virender Sardana (2013). Modeling Sunflower Productivity and Profitability in Relation to Adequate and Limited Sulphur Availability under Semi Irrigated Condition. International Journal of Agronomy. Vol. (2013) Article ID 738263m 4 pages.	*
5.	Pawan Kumar, Ramesh Kumar Yadava, Babita Gollen and O.P. Sheoran (2013). Gene effect for different traits of spike morphology in wheat (Triticum aestivum). Indian Journal of Agricultural Sciences 83(7):748-57.	6.17

6.	Singh, G., Singh, S. and Sheoran, O.P. (2013). Inheritance of Mungbean Yellow Mosaic Virus (MYMV) Resistance in Mungbean[Vigna radiate (L.) Wilczek]. Legume Res., 36(2):131-137.	6.15
7.	Parvender Sheoran, Virender Sardana, Sher Singh, O.P. Sheoran and Dev Raj (2013). Optimizing sulphur application in sunflower (Helianthus annuus) under irrigated semi-arid tropical condition. Indian Journal of Agronomy 58(3): 384-390.	5.46
8.	O.P. Sheoran, Rajpat Rai and K.K. Saxena (2015). Estimation of Structural Equation Models Through K-Means Cluster Approach – An Application for Assessing Socio-Economic Development in Haryana. International Research Journal of Mathematics, Engineering & IT. 2(2):11-24. (ISSN: 2349-0322); Impact Factor 5.489	5.489
9.	Krishan Yadav, O.P. Sheoran, Pardeep Kumar Chahal and R.S. Hudda (2015). Access, Awareness and Usage of Internet by Public Relations Professionals: Comparative Group Analysis of Haryana and Himachal Pradesh Governments. International Research Journal of Mathematics, Engineering & IT. 2(3):1-8. (ISSN: 2349-0322); Impact Factor 5.489	5.489
10.	Krishan Yadav, O.P. Sheoran, Pardeep Kumar Chahal and R.S. Hudda (2015). Impact of On-Line and Off-Line Public Relations Tools in Crisis Communication Management: A Comparative Study of Haryana and Himachal Pradesh Governments. GE-International Journal of Management Research. 3(3): 276-283. (ISSN: 2321-1709) Impact Factor 5.779	5.779
11.	Manoj Kumar, S. Bhatnagar, B. K. Singh and O. P. Sheoran (2016). Estimation of Population Mean using Median as Auxiliary Variable. Int. J. Agricult. Stat. Sci. 12(1). 83-87. NAAS Rating : 5.13	5.13
12.	Sheoran, S . Beniwal, B.S.; Dudi, O.P.; Sheoran, O.P. and Dalal, R.P.S. (2016). Effect of Nitrogen and Spacing on Flower Yield and Bulb Production of Tuberose cv. Prajwal. Annals of Agri-Bio Research 21(2) : 155-159. NAAS Rating : 4.08	4.08
13.	Rani, M.; Sheoran, O.P.; Sheoran, R.K.; and Chander, S. (2017) Genetic Variability, Character Association and Path Analysis for Agronomic Traits in Sunflower (Helianthus annuus L.). Annals of Agri Bio Research. 22(1): 31-35. NAAS Rating : 3.97	3.97
14.	Rani, M.; Sheoran, O.P.; Sheoran, R.K.; Jambholkar, S. and Chander, S. (2017) Studies on Genetic Variability and Interrelationship of Seed Yield and Quality Traits in Germplasm Collection of Sunflower (Helianthus annuus L.). Annals of Biology 33(1): 82-85, NAAS Rating : 4.08	4.08
15.	Sheoran O P, Lajpat Rai, Sheokand R N, Singh B and Hasija R C (2012) Significance of change in Sectoral development in Haryana _ An Inter-Tehsil Temporal Analysis; Annals of Agri-Bio Research 17(1), ISSN: 09719660 : 67-74, 2012.	3.97
16.	Ghanghas B S, Yadav Krishan, Hooda R S and Sheokand R N (2013) Information drawn from different communication sources by extension personnel and farmers, Annals of Agri-Bio Research 18(1); ISSN: 09719660; 106-109, 2013.	3.97

17.	Sheokand R N and Singh Surender (2013) Web based initiatives for Climate Resilient Farming; Journal of agrometeorology Vol. 15 (Special Issue – I);ISSN : 0972-1665 : 217-219 (March 2013)	6.36
18.	Khatak Sunita, Dhillon S, Yadav O P, Grewal Anita and Sheokand R N (2013) Agro-morphological and RAPD Marker based characterization of Genetic diversity in different genotypes of Withania Somnifera L Dunal; International Journal of Bio Technology and Research (IJBTR); ISSN 2249-6858; Vol 3, Issue 4, Oct.2013, 1-16.	3.80
19.	Kumar Y, Lamba R A S, Verma S R and Ram Niwas (2013) Genetic variability for yields and its components in Barley (Hordeum Vulgare L.); Forage Research, 39(2) : pp 67-70 (2013)	4.48
20.	Chaudhary Mahesh, Beniwal B S, Dalal R P S and Ram Niwas 2014. Path coefficient analysis studies in marigold (Tagets Species); Annals of Biology, ISSN : 0970-0153; 30 (2) : 375-375, 2014; NAAS Rating 2.98.	2.98
21.	Dhillon R S, Saharan R P, Jattan M and Sheokand R N 2014. Molecular Characterization of induced mutagenesis through gamma radiation using RAPD markers in Jatropha Curcas L, African Journal of Biotechnology, Vol 13(7), pp 806-813, 12 FEB, 2014, ISSN 1684-5315 ©2014 Academic Journals	*
22.	Dalal V, Dhillon R S and Sheokand R N 2014. Penology and breeding System of Jatropha Curcas; Environment & Ecology 32 (2); ISSN 0970-0420 : 444—449, April—June 2014; NAAS Rating 4.09;	4.09
23.	Sheokand R N and Vinay 2015. A Comparative Study of Content Management Systems : Joomla, Drupal and Wordpress; International Journal of Advance Research In Science And Engineering, IJARSE, Vol. No.4, Special Issue (01), April 2015 ISSN-2319-8354(E) : pp 176-18; Impact Factor 2.83	2.83
24.	Vinay and Sheokand R N (2015) Study of Content Management System :Joomla; International Journal of Advance Research In Science And Engineering, IJARSE, Vol. No.4, Special Issue (01), April 2015 ISSN-2319-8354(E) : pp 184-190; Impact Factor 2.83.	2.83
25.	Dhillon R S, Rani T., Beniwal R S, Bangarwa K S, Sheokand R N and Dalal V 2015. Molecular Evaluation of Poplar Clones using RAPD Markers; Environment & Ecology 34 (2) : 526—530, April—June 2015, ISSN 0970-420; NAAS Rating 4.09.	4.09
26.	Kumar Anil, Hooda Virender Singh, Vijya Rani, Mukesh S, Sheokand R N and Singh Ajit 2015. Evaluation of alternative tillage and crop establishment methods in rice (Oryza sativa) cultivation; Indian Journal of Agricultural Sciences; 85(8) : 1109-13; ISSN 0019-5022; <u>NAAS Rating</u> :6.18.	6.18
27.	Bhardwaj K K, Dhillon R S, Godara A S, Bangarwa K S, Sushil Kumari and Sheokand R N 2016. Effect of different Spacing of Poplar based Agroforestry System on Soil Chemical Properties and Nutrient Status in North-West India; Indian Journal of Ecology 43 (Special Issue-1) : 312-317; ; ISSN 0304-5250; <u>NAAS Rating</u> :4.47.	4.47
28.	Dhillon R S, Bhardwaj K K, Beniwal R S, Bangarwa K S, Sushil Kumari and Sheokand R N 2016. Performance of Wheat as Intercrop under different Spacing of Poplar Plantations in Semi-Arid Ecosystem of North India; ; Indian Journal of Ecology 43 (Special Issue-1) : 323-327; ISSN 0304-5250; <u>NAAS Rating</u> :4.47.	4.47

29.	Malik Urmila, Sunita, Ram Niwas and Bansal Indu 2016. Relationship between self concept of working and non working children with their temperament; Global Academic Research Journal; Vol-IV, Issue-II; 58-67; ISSN: 2347-3592; <u>Impact Factor:5.56.</u>	5.56
30.	Bhardwaj K K, Dhillon R S, Godara A S, Bangarwa K S, Sushil Kumari and Sheokand R N 2016. Nutrient Status and Soil Chemical Properties under Different Spacings of Eucalyptus Based Agroforestry Systems in Semi-arid Ecosystem of India; Indian Journal of Ecology 43 (Special Issue-II) : 756-760; Manuscript Number 2371; ISSN 0304-5250; <u>NAAS Rating :4.47.</u>	4.47
31.	Phougat Divya , Godara Anuradha, Sethi S K and Sheokand R N 2016. Genetic diversity and association studies for grain yield and its attributing traits in Tetraploid Wheat (T. Turgidumsubsp. Durum) The Bioscan – The International Quarterly Journal of Life Sciences 11(4): 3015-3019,2016; NAAS Rating : 5.26	5.26
32.	Deswal Sumit, Malik T P, Tehlan S K, Yadav Preeti and Sheokand R N 2017. Characterization and evaluation of fennel (Foeniculum vulgare L.) germplasm; Green Farming Int. Journal - International Journal of Applied Agricultural & Horticultural : Vol. 8 (3) : 753-755 ; May-June, 2017 ISSN 0974-0775; NAAS Rating : 4.38	4.38
33.	Dhillon R S, Bangarwa K S, Beniwal R S, Bhardwaj K K, Handa A K, Kumari Sushil, Chavan S B, Rizvi R H, Sirohi Chhavi and Sheokand R N 2017. Effect of spacing on crop yield and soil nutrient status under poplar based agroforestry systems in semi-arid ecosystem; Indian Journal of Agroforestry and likely to appear in next issue of Indian Journal of Agroforestry- Vol 19 (1).42-47, 2017;ISSN No. 0972-0715; NAAS Rating : 4.53	4.53

* Journals could not be assigned NAAS Score as they do not have impact factors for the last four consecutive years.

Teaching Programme (UG)

Course No.	Title	Cr. Hrs	Teacher(s)
Comp-21 (COA) Two Sections	Computer Technique- III	0+2	O P Sheoran
Comp-21 (COHS) Two Sections	Computer Technique- III	0+2	R N Sheokand
Comp-101 (COA) (1st year 4 year) RNT	Introductory Computer Application	1+1	R N Sheokand
Comp-22 (COA) Two Sections	Computer Techniques IV	0+3	O.P. Sheoran
Comp-22 (COHS) Two Sections	Computer Techniques IV	0+3	O.P. Sheoran
Comp 100 (Six Pr. Groups)	Computer Applications	0+2	R N Sheokand

Teaching Programme (PG)

Course No.	Title	Cr. Hrs	Teacher(s)
Comp 501	Computer Programming in Statistical Research	2+1	O P Sheoran
Comp 502	Computer Fundamental	1+2	R N Sheokand

Comp 503	Computer Programming through 'C'	2+1	O.P. Sheoran
Comp 504	Scientific Data Processing	1+2	R.N. Sheokand
Teaching Programme (UG)			
Course No.	Title	Cr. Hrs	Teacher(s)
Comp-21 (COA) Two Sections	Computer Technique- III	0+2	O P Sheoran
Comp-21 (COHS) Two Sections	Computer Technique- III	0+2	R N Sheokand
Comp-101 (COA) (1st year 4 year) RNT	Introductory Computer Application	1+1	R N Sheokand
Comp-22 (COA) Two Sections	Computer Techniques IV	0+3	O.P. Sheoran
Comp-22 (COHS) Two Sections	Computer Techniques IV	0+3	O.P. Sheoran
Comp 100 (Six Pr. Groups)	Computer Applications	0+2	R N Sheokand
Teaching Programme (PG)			
Course No.	Title	Cr. Hrs	Teacher(s)
Comp 501	Computer Programming in Statistical Research	2+1	O P Sheoran
Comp 502	Computer Fundamental	1+2	R N Sheokand
Comp 503	Computer Programming through 'C'	2+1	O.P. Sheoran
Comp 504	Scientific Data Processing	1+2	R.N. Sheokand



STEERING COMMITTEE

1.	Vice-Chancellor	Chairman
2.	OSD to Vice-Chancellor	Member
3.	Registrar	Member
4.	Dean, College of Agriculture	Member
5.	Dean, College of Agril. Engg. & Tech.	Member
6.	Dean, College of Basic Sci. & Hum.	Member
7.	Dean, IC College of Home Sciences	Member
8.	Dean, Postgraduate Studies	Member
9.	Director of Research	Member
10.	Director Extension Education	Member
11.	Director Students' Welfare	Member
12.	Comptroller	Member
13.	University Librarian	Member
14.	Estate Officer-cum-SE	Member
15.	Director Human Resource Management	Member-Secretary

CORE COMMITTEE

1.	Director, Human Resource Management	Chairman
2.	Dean, College of Agriculture	Member
3.	Registrar	Member
4.	Dean, College of Agril. Engg. & Tech.	Member
5.	Dean, College of Basic Sci. & Hum.	Member
6.	Dean, IC College of Home Sciences	Member
7.	Dean, Postgraduate Studies	Member
8.	Director of Research	Member
9.	Director Extension Education	Member
10.	Director Students' Welfare	Member
11.	Director CFST	Member
12.	Comptroller	Member
13.	University Librarian	Member
14.	Estate Officer-cum-SE	Member
15.	Dr. Aparna	Convener
16.	Dr. R. K. Grover	Co-Convener
17.	Dr. Satnam Kaur	Co-Convener

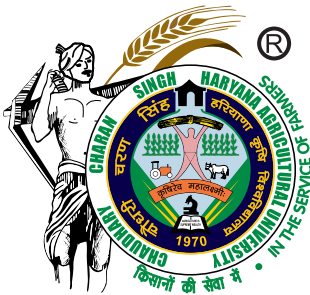
NODAL OFFICERS

College of Agriculture	Dr. A. K. Chhabra, HoS, Pulses
	Dr. Anil Kumar, HoD, PP
	Dr. Anil Kumar, Principal Scientist, Agronomy
	Dr. S. K. Thakral, Professor, Agronomy
College of Agril. Engg. & Tech.	Dr. V. K. Singh, Asst. Professor, PFE
College of Basic Sci. & Hum.	Dr. Neelam R. Yadav, Professor, MBBB
	Dr. Rachna Gulati, HoD, Zoology
IC College of Home Sciences	Dr. Shanti Balda, Professor, HDFS
	Dr. Neelam M. Rose, Professor, TAD
Postgraduate Studies	Dr. R. K. Sheoran, Assoc. Dean, PGS
Directorate of Research	Dr. Dharamvir Yadav, Project Director
Directorate Extn. Education	Dr. R. K. Godara, AD (Hort.)
	Dr. M. S. Grewal, Consultant Faculty
	Dr. K. K. Yadav, Joint Director (Extn.)
Directorate Students' Welfare	Dr. K. K. Verma, ADSW
University Library	Dr. Seema Parmar, Deputy Librarian
Registrar	Dr. Sudhir Kumar, Advisor Academic & Faculty Affairs
Comptroller	Sh. S. S. Sharma, Deputy Comptroller
EO-cum-SE	Sh. P. K. Juneja, SDE
Principal, COA, Kaul	Dr. O. P. Lathwal, Professor, Agronomy
	Dr. Gajraj Singh, Professor, G&PB
University Hospital	Dr. Surbhi Gupta, Medical Officer

COLLEGE COMMITTEE

1.	Dr. Rajvir Singh, Dean	Chairperson
2.	Dr. Neelam R. Yadav, Principal Scientist	Nodal officer
3.	Dr. Rachna Gulati, HoD, Zoology & Aquaculture	Member
4.	Dr. Veena Jain, HoD, Biochemistry	Member
5.	Dr. Rajesh Gera, HoD, Microbiology	Member
6.	Dr. Neeraj Kumar, Prof., Botany & Pl. Physiology	Member
7.	Sh. K. L. Nunia, Supdt./AAO, Dean's office	Member
8.	Mr. Sushil Gulati, Ph.D. Student	Member
9.	Mr. Sumit Jangra, Ph.D. Student	Member
10.	Dr. R. K. Jain, Alumnus	Member
11.	Dr. R. C. Yadav, Alumnus	Member





Inspiring Agripreneurs

1-800-1803001

www.hau.ernet.in | www.hau.ac.in