



Annual Progress Report

July 2017 to June 2018



College of Basic Sciences
CSK Himachal Pradesh Krishi Vishwavidyalaya
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CONTENTS

Sr. No.	Name Of Topic	Page Number
1	Director's Note	1
2	Executive Summary	2
3	Mandate	4
4	Academics, Students, Staff, Administration & Budget	5
5	Budget for Teaching Schemes	6
6	Representation to various University bodies from College	7
7	Educational Tour	8
8	Faculty and Academic Staff	8
9	Teaching Activities	10
10	Courses offered by Different Department/ Centre	11
11	Teaching Aid / Material Developed for UG & PG Students	21
12	Anti Ragging Monitoring Committee of College	21
13	Sports Activities During 2017-18	21
14	National Social Service Scheme (NSS) Activities	21
15	Research Activities	24
16	Project-Wise Brief Report of ongoing Projects	26
17	Research Publications	33
18	Other Research Related Publications (Research Reports /Book Chapters / Compendium Chapter etc	38
19	Extended Summary/Abstract published in Compendium	39
20	Technical Reports	40
21	Brain Storming /State Level Steering Committee Meetings/ Conclave/Specialized Meetings/Trainings Attended	40
22	International Event Participation by Faculty and Student	43
23	Extension Activities	44
24	Organized Summer Schools/Workshops/Seminars/Symposia/Extension Activity/One Day Awareness Programme etc	45
25	Miscellaneous/Other Responsibilities entrusted at various levels	47
26	Awards/Recognition	53
27	Operational MOUs/Collaboration with Foreign Institutions/Indian Institutions /Organization	53
28	Infrastructure Development during 2017-18	54
29	VIP/Other Visits to College	56
30	Glimpses of Events and Activities of COBS	58

Dean's Note

The College of Basic Sciences is pleased to release its Annual Report for the year 2017-2018 and I am delighted to share with you the highlights of our major activities, achievements, initiatives and future plans of Teaching, Research and Extension a trio mandate of the University. At the outset, it is a great pleasure and privilege for me to share that College of Basic Sciences is UGC accredited and its PG programme are also accredited by ICAR.

The College of Basic Sciences came into existence in May, 1991 to cater the needs of teaching and research in the disciplines of Basic Sciences in other three professional Colleges of the university. Today the college has four departments *viz.*, Biology and Environmental Sciences, Chemistry and Biochemistry, Physical Sciences and Languages, Microbiology and a Centre for Geo-informatics Research and Training. The working strength of the faculty has been reduced to 13(regular 11 and ad-hoc 02) against a sanctioned faculty strength of 29. However, there has been a significant improvement in the quality and quantity of our intakes, and their academic performance.

This college is running one undergraduate programme i.e. B.Sc. in Life Science and Physical Science, three M.Sc. programme i.e. in the discipline of Biochemistry, Microbiology and Environmental Science, and two Ph.D. programme i.e. in the discipline of Biochemistry and Microbiology. The college has successfully implemented the Choice Based Credit System (CBCS) under RUSA in the undergraduate programme from the academic year 2016-17.

The Agricultural University has been making impressive strides in Teaching, Research and extension endeavors. This university has been assessed by SWISO India Pvt. Ltd. for quality management system and found that the design, delivery and assessment of teaching, research, extension and consultancy services in the area of Agriculture, Veterinary & Animal Sciences, Home Science, Basic Sciences and allied sectors are in accordance with the requirement of quality of ISO 9001: 2008 standard. The College of Basic Sciences is also accredited both by the University Grant Commission (UGC) as well as by the ICAR, New Delhi. A foundation in Basic Science is essential for all research in the applied sciences and for long-term support. The research agenda of the College is to work on frontier R&D areas on Basic Sciences like Chemistry and Biochemistry, Biology and Environmental Sciences Geospatial Sciences and Microbiology which impact to the development of suitable decision support system for the benefit of noble end users.

I thankfully acknowledge the support extended to us by all the Departments of the College. I place on records my thanks to the Hon'ble Vice Chancellor, Directorate of Research, and Extension Education for their support to us.

I finally offer my best wishes to all the faculty members of this college for successful completion of all assignments timely and with full scientific ethics.

Dean

College of Basic Sciences

EXECUTIVE SUMMARY

Teaching Activities

1. Total 93 UG students admitted in college and 71 out of all passed (84.4 % passed in first division) and 277 students in NSS and 134 in NCC participated in two years. Total 17 UG and 8 PG students awarded Merit Fellowships in addition to 3 awarded Saurabh Kalia UG Scholarship
2. Dr. Ritu from Chemistry and Biochemistry appointed scientist in ARS-2017, Dr. Keshani and Dr. Sunita Devi from Microbiology appointed as Assistant Professor in YS Parmar UHF, Nauni, Solan (H.P.) and PAU, Ludhiana. Dr. Sakshi Sharma in Central Institute of Post Harvest Technology, ICAR, Ludhiana,, Dr. Ritika Walia in IARI, Regional Research Station, Shimla and Dr. Sohini Walia in IGMC, Shimla appointed as Research Associate / Scientific staff.
3. Total **1** PG students Surbhi got Inspire fellowships, **3** SRF Ms Reetranjan and Shivanshi from Chemistry and Biochemistry and Akansha Bhardwaj from Environmental Sciences qualified SRF, **2** students namely Ankur and Shipra (2017-18) qualified ICAR, NET, Ms. Reetranjan Kaur qualified CSIR NET in 2017-18 from Chemistry and Biochemistry, Ms. Reetranjan Kaur also got ICAR JRF for master programme
4. Total 162 lakhs through ad-hoc research projects (Continue) and 47.75 lakhs from new ad-hoc projects capitalized and **614.85 lakhs** and 6200 lakhs under NAHEP new ad-hoc projects submitted by faculty during past two years.
5. The totals of 54 research publications in national and international peer review journal were published by faculty in two years. 10 publications more than 6 NAAS rating, 6 publications more than 5 NAAS rating and 38 publications more than 4 NAAS rating were published in addition to 11 book chapter, 5 extension articles, 32 invited lecture in International National /State trainings and 10 in compendium. Total Four teaching manuals and two standalone software for (Attendance) were developed
6. COBS organized 20 farmers' trainings, Kisan Melas and trainings and one International event organized.
7. COBS signed Collaboration with IVRI, Palampur and IHBT-CSIR, Palampur and HIMCOSTE, DEST Shimla for teaching and research projects.
8. Total funds 105.69 lakhs under CDA) for infrastructure development and **2.40 lakhs** funds generated **from revolving scheme in addition to** 38 lakhs (Approximate) capitalized under SFS scheme

Research Highlights

Department of Biology & Environmental sciences

- Standardized method of propagation of seabuckthorn from softwood cuttings and method of propagation of seabuckthorn from micro cuttings.
- Standardized watergel method of plantation of seabuckthorn on dry site and evaluated growth of 10 Russian seabuckthorn varieties and over all, NX-6, NX-7 and NX-11 showed better growth parameters than others and Drilbu, a local selection.

Department of Chemistry and Biochemistry

- A study on expression analysis of Glyceraldehyde-3- phosphate dehydrogenase (GAPDH) in *Cucumis sativus* infected with Cucumber mosaic virus by yeast two hybrid system revealed that GAP C (GTPase activating proteins) is one of the host proteins which interacts with the movement protein of CMV thereby, one of the reason to be playing role in virus movement from one cell to another.
- HPLC analysis of soil and wheat grain samples collected from the clodinafop propargyl treated fields of eight farmers of Kangra district at the harvest of the crop revealed that its residues were below detectable limits in both soil and wheat grain samples (<0.03µg/g).

Department of Microbiology

- In the conservation agriculture system, the beneficial microflora (*Azotobacter* spp, Phosphate solubilising microorganisms and Actinomycetes) and other associated indicators of soil biology (Dehydrogenase activity, Basal Respiration, Microbial Biomass and Phosphates) were in general higher in treatments, where residues were retained and IWM schedule was followed in both maize and wheat when compared with other tillage and weed control treatments.

Center for Geo-informatics, Research and Training

- Dissemination of VIS Outputs is being done through WEB PORTAL OF CGRT on web link for VIS-HP as http://14.139.224.135:6090/cgrtgis/vis_hp/
- Web GIS Portal for Himachal Pradesh Crop Diversification Project (HPCDP) developed by CGRT, CSKHPKV-Palampur contains spatial and attribute information of the 1st phase spread over 5 districts namely Kangra, Mandi, Bilaspur, Una and Hamirpur of Himachal Pradesh. The web Portal link is <http://14.139.224.135:6090/myapp/cgrtjica/>
- Under GKMS, Project ,published The total 96*4=384 AAS bulletins were prepared in English and Hindi for Chamba, Una, Hamirpur and Kangra districts of H.P. and published in university website (www.hillagric.ac.in /kisanokeleye and www.imdagrimet.gov.in. Kisan Portal (www.farmers.gov.in; www.weathershimla.gov.in and mkisan.gov.in and www.cropweatheoutlook.com of CRIDA (ICAR) websites. 16 SMS to 2.79 lakhs registered farmers during Junly 17 to June 2018 as per quota were sent to farmers of Chamba, Una , Hamirpur and Kangra through MKisan Portal of MOA, GOI , New Delhi totalling about 29.63715 lakhs farmers and the total reads/hits of Agro-advisory bulletins for September, 2017 to June 15, 2018 are 169235 As per website report)
- The irrigation schedule based on Penman Monteith was found to be a suitable for saving one irrigation in potato under sub temperate climate without reducing the tuber yield.
- The genetic coefficients for InfoCrop and DSSAT models were developed from the fields experiments conducted during 2016-17 for maize and wheat. In wheat crop, range of values of Genetic Coefficient derived varied between P1V (0t0), P1D (5.36-5.40), G1 (1.85 to 1.9), (G210.1 to 10.2), (G3 3.6 to 4.0) and PHINT (75 to 78) for Palampur agro-climatic conditions for both varieties HPW-42 and HPW-155. Similarly, for maize crop , P1, P2 and P5 varied between 202 to 220, 1.20 to 2.05 and 635.4 to 680.40 respectively, whereas G2, G3 and PHINT values were 934 to 760, 8.55 to 8.78 and 38.4 to 39.8 respectively

- Data recorded from Eddy covariance system on carbon dioxide, water vapour, PAR, soil heat flux, soil moisture, soil temperature, Rh, precipitation, wind speed, wind direction and rainfall. The carbon dioxide concentration was higher in the morning and evening and lower in the afternoon. During day ambient temperature ranged from 13.3 °C-22.2 °C in the month of November, December (8.5-18.3 °C), January (5.4-13.1 °C), February (9.2-22.3 °C) and March (7.5-19.6 °C). Carbon dioxide at 7.00 am in the morning (688-715 ppm) and lower in the evening at 6.00 pm (675-686 ppm) in the month of December.

The College of Basic Sciences is one of the four constituent colleges of the Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya, Palampur. Initially conceived as the Department of Basic Sciences and Humanities the then College of Agriculture in 1978, it was elevated to the rank of College of Basic Sciences in May, 1991. It comprises of four departments, namely Biology and Environmental Sciences, Chemistry and Biochemistry, Physical Sciences and Languages and Microbiology, and a Centre for Geo-informatics Research and Training. The College has the following mandate:

MANDATE

1. To impart quality education to Under-graduate and Post-graduate students in Basic Sciences leading to B. Sc., M. Sc. and Ph.D. Degrees.
2. To provide support in teaching and basic research to other constituent colleges of the university.
3. To create trained manpower in different disciplines of Basic Sciences.
4. To carry out research work in relation to the state needs for the upliftment of rural masses of the State.

ACADEMICS, STUDENTS, STAFF, ADMINISTRATION & BUDGET

The faculty of the college was engaged in the teaching programmes of Under-graduate and Post-graduate studies:

Students Intake:

Total 93 numbers of students admitted to various undergraduate and postgraduate programmes during the Academic Session 2017-2018 are as below:

Students Admissions during 2017-18			
Programme	Boys	Girls	Total
B. Sc.	35	58	93
M. Sc. (Biochemistry)	Nil	2	2
M.Sc. (Biology)	NIL	NIL	NIL
M. Sc. (Environment)	1	2	3
M. Sc. (Microbiology)	NIL	NIL	NIL
Ph.D. (Biochemistry)	NIL	NIL	NIL
Ph.D. (Microbiology)	NIL	NIL	NIL

Total Student on Roll:

In total UG students and 20 PG students registered during the academic year

Programme	Boys	Girls	Total
Total Students on Roll UG (B. Sc.)	97	184	281
Total Students on Roll PG (M.Sc.) & Ph.D	4	16	20
M. Sc. (Biochemistry) & Ph.D. (Biochemistry)	3	11	14
M.Sc. (Biology)	NIL	NIL	NIL

M. Sc. (Environment)	1	5	6
M. Sc. (Microbiology)	NIL	NIL	NIL
Ph.D. (Microbiology)	NIL	NIL	NIL

At present teachers from other colleges are also associated for teaching in some of the disciplines.

Students Passed Out during 2017-18

The degrees were awarded to 71 UG and 5 PG students as given below

Programme	Boys	Girls	Total
B. Sc.	24	47	71
M. Sc.	1	4	5
Ph.D.	NIL	NIL	NIL

Scholarships Awarded

College Merit Scholarship and *Amar Shaheed Capt. Saurabh Kalia Scholarship* were awarded to the following Undergraduate students:

Sr. No.	Name of the student			
	B.Sc.Ist year	B.Sc.2 nd year	B.Sc.3 rd Year	Amar Saheed Capt. Sourbh Kalia memorial
1	Nikhilesh Sharma	Amanpreet Kaur	Hitakshi Kayestha	Akshita Thakur
2	Shruti Saklani	Abhishek Kumar	Aradhana Choudhary	Taniya Sharma
3	Shikha	Samridh Sood	Priyanka Sharma	Pragati Sharma
4	Komal Awasthi	Abhishek Rana	Bhartendu	
5	Aksheta	Shailja Kumari	Uday Laxmi	
6	Neha Thakur	Shivani Katoch	Sachin Rana	
7	Jasmine	Prakshi	Tanya	
8	Priya Thakur	Shayna	Anjali K. Bahman	
9	Akanksha Awasthi			

Post Graduate Students scholarships during 2017-18

Chemistry and Biochemistry:

Merit Scholarship Ph.D: Miss Shipra Singh, Ankur Tripathi.
M.Sc.: Apoorva and Sunidhi
Inspire fellowship: Surbhi Sood

Biology and Environment:

M.Sc.(Merit) : Miss Diksha

BUDGET FOR TEACHING SCHEMES:

The budget expenditure incurred during the year 2017-2018 is given below:

Sr. No.	Scheme No.	Sponsoring Agency	Total Amount (Rs)
College of Basic Sciences			
1.	APL-011-25 (Agri.) (i,ii,iii)	State Govt.	3,68,80,130/-
2.	APL-009-25 (Agri.)	-do-	59,63,684/-
3.	APL-06-25	-do-	7,64,847/-
4.	APL-19-25	-do-	11,55,670/-
5.	APL-011-27	-do-	20,60,000/-
		Total	4,68,24,331/-

REPRESENTATION TO VARIOUS UNIVERSITY BODIES FROM COLLEGE

Academic Council	
Dr. Manoj Bhargava	Dean
Dr. Anita Singh	Professor & Head, Dept. of Biology & Environmental Sciences till Feb.,2016
Dr. Sharda Singh	Professor (Mathematics) Centre For Geo-Informatics Research and Training
Research Council	
Dr. Manoj Bhargava	Dean
Dr. Anita Singh	Professor & Head, Dept. of Biology & Environmental Sciences till Feb.,2016
Extension Council	
Dr. Manoj Bhargava	Dean
Dr. R.C. Chauhan	Professor , Biology and Environmental Sciences

Educational and Resident Instructions Advisory Committee

Dr. Manoj Bhargava	Dean
Dr. Anita Singh	Professor & Head, Biology and Environmental Sciences

Constitution of the Board of Studies of College

Dr. Manoj Bhargava	Dean	
Dr. Anita Singh	HOD, Biology and Environmental Sciences	Secretary
Dr. Manoj Bhargava	HOD, Physical Sciences & Languages	Chairman
Dr. Manoj Bhargava	HOD, Microbiology	Member
Dr. Neelam Sharma	HOD, Chemistry & Biochemistry	Member
Dr. Sharda Singh	Programme Director, CGRT	Member
Dr. Raj Pal Sharma	Secretary, Board of Studies, COA	Member
Dr.(Mrs.) Anupam Sandal	Secretary, Board of Studies, COHS	Member

Dr. R. Kumar	Secretary, Board of Studies, COVAS	Member
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Sports, Games and Literary Activities (In-charges for various activities):

Sr. No.	The Activities	Incharge
1.	Over all Incharge sports & Games.	Dr. R.C. Chauhan, Prof., Biology & Environmental Sciences.
2.	Athletics	Dr. Nageshwar Singh, Chemistry & Biochemistry
3.	Football	Dr. R. C. Chauhan, Prof., Department of Biology & Environmental Sciences.
4.	Basketball	Dr. Anita Singh, Prof. & Head, Biology & Environmental Sciences.
5.	Cricket	Sh. Vaibhav Kalia. Assistant Professor, CGRT.
6.	Volleyball	Sh. Vaibhav Kalia. Assistant Professor, CGRT.
7.	Weight lifting, power lifting and best physique	Dr. K.P. Singh, Prof., Biology & Environmental Sciences.
8.	Badminton	Sh. Kapil Sharma, Assistant Professor, Computer, Physical Sciences & Languages.
9.	Table- Tennis	Sh. Kapil Sharma, Assistant Professor, Computer, Physical Sciences & Languages.
10	Chess	Dr. Sharda Singh, Prof. & Programme Director, CGRT
11	Mountaineering and hiking	Dr. Virender Singh, Prof. & Head, Physical Sciences & Languages.
12	Cultural Activities	Dr. Usha Rana, Associate Professor, Biology & Environmental Sciences
13	Literary Activities	Dr. Kamal Mohini, Associate Professor and Dr. Suman Sharma, Assistant Professor Chemistry & Biochemistry

EDUCATIONAL TOUR

An Educational Tour to North India for B.Sc. 2nd Year students of the college was conducted by Dr. Virender Singh (Tour In-charge), Dr. Suman and Dr. Nageswer Singh.

FACULTY AN ACADEMIC STAFF

Sr. No.	Name of the Faculty	Designation
Dr. Manoj Bhargava, Professor (Statistics) is holding the additional charge of Dean, COBS.		
DEPARTMENT OF BIOLOGY AND ENVIRONMENTAL SCIENCES		
1.	Dr. (Mrs.) Anita Singh	Professor and Head
2.	Dr. K.P.Singh	Professor (Retired. On 30.11.2017)
3.	Dr. R.C. Chauhan	Professor
4.	Dr. Virendra Singh	Principal Scientist
5.	Dr.(Mrs.) Usha Rana	Associate Professor

DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY		
1.	Dr. Neelam Sharma	Professor and Head
2.	Dr. Kamal Mohini	Associate Professor
3.	Dr. Suman Sharma	Assistant Professor
4.	Dr. Nageswer Singh	Assistant Scientist (Ad-hoc)
DEPARTMENT OF MICROBIOLOGY		
2.	Sh. Rajinder Kumar	Astt. Professor
DEPARTMENT OF PHYSICAL SCIENCES AND LANGUAGES		
1.	Dr Manoj Bhargava	Dean & Head
2.	Dr.(Mrs.) Sheela Thakur	Assistant Professor (Ad-hoc)
3.	Sh. Kapil Sharma	Computer Teacher
CENTRE FOR GEOINFORMATICS RESEARCH AND TRAINING		
1.	Dr. (Mrs.) Sharda Singh	Professor and Programme Director
2.	Dr. R.S. Rana	Sr. Scientist (Agronomy)
3.	Sh. Vaibhav Kalia	Assistant Professor

Office Staff

Sr.No	Name	Designation
DEAN OFFICE		
Ministerial Staff		
2.	Sh.Kalyan Chand	Supted. Promoted SO w.e.f. 5.5.2018
3.	Sh. Rajiv Kumar	Sr. Assistant
4.	Sh. Surjeet Kumar	Sr. Assistant (Retired on 31.5.2018)
5.	Sh. Vinod Kumar	Jr. Assistant
6.	Sh. Manohar Lal	Clerk
Class – IV		
1.	Sh. Hari Singh	Peon
2.	Sh. Sansar Chand	Beldar
3.	Smt. Kamlesh Kumari	Sweepress
LAND SCAPPING SECTION (COBS)		
Class-IV		
1.	Sh. Kuldeep Kumar	Beldar
BAMBOO SECTION (COBS)		
Class-IV		
1.	Sh. Bishamber Dass	Beldar
DEPARTMENT OF BIOLOGY AND ENVIRONMENTAL SCIENCES		
Ministerial Staff – Nil-		
Technical Staff		
2.	Sh. Prem Chand	Technical Asst. G-II (Retired on 31.1.2018)
Class-IV Staff		
1.	Sh. Subhash Chand	Peon
2.	Sh. Anup Singh	Beldar
DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY		
Ministerial Staff		
-Nil-		
Technical Staff		

1.	Sh. Shakti Chand	Jr. Technician
2.	Sh. Trilok Chand	Lab Attendant
DEPARTMENT OF MICROBIOLOGY		
Ministerial Staff		
1.	Sh. Tilak Raj, Jr. Asstt. (on half ay basis up to 31.3.2018)	
Technical Staff		
2.	Sh. Jai Raj	Jr. Technician
Class-IV Staff		
1.	Sh. Manohar Lal	Peon
DEPARTMENT OF PHYSICAL SCIENCES AND LANGUAGES		
Ministerial staff		
-Nil-		
Technical Staff		
	Sh. Surjeet Singh	Jr. Technician
Class-IV staff		
1.	Nil	
CENTRE FOR GEO-INFORMATICS RESEARCH AND TRAINING		
Ministerial staff		
-Nil-		

Academic Departments

- ❖ Department of Physical Sciences and Languages
- ❖ Department of Microbiology
- ❖ Department of Biology and Environmental Sciences
- ❖ Department of Chemistry and Biochemistry
- ❖ Centre for Geo-Informatics Research and Training

Current Degree Programmes:

- **Undergraduate Programme**
 - B.Sc. Physical Sciences (Three Years)
 - B.Sc. Life Sciences (Three Years)
- **Postgraduate Studies & Research (Masters Programmes)**
 - Master of Science in Biochemistry (Two years)
 - Master of Science in Environment Sciences (Two years)
 - Master of Science in Microbiology (Two years)
- **Doctorate Programmes**
 - Doctorate of Philosophy in Microbiology
 - Doctorate of Philosophy in Biochemistry (Three Years)

TEACHING ACTIVITIES

Teaching achievements:

1. Total students registered during 2017-18: Total 93 UG students admitted in college
2. Total passed out with first division: 71 passed out during 2017-18 (83.4 % passed in first division)
3. Total 94 students in NSS and 96 in NCC participated during 2017-18
4. Total 25 UG and 16 PG students awarded Merit Fellowships in addition to 3 awarded Saurabh Kalia UG Scholarship

COURSES OFFERED BY DIFFERENT DEPARTMENT/ CENTRE:

Following under graduate, Post Graduate courses and Post Graduate supporting courses were offered during the academic year 2017-18 by the College.

Department of Biology & Environmental sciences

II Semester of Academic Year 2017-18.

Sr.No.	Course No.	Course title	Credit hours	Name of the teacher(s)
UNDERGRADUATE COURSES				
Botany				
1.	Bot.111	Biodiversity (Microbes, Algae, Fungi and Archegoniate)	4+2	Drs. Usha Rana, Suman Kumar, Shivani Chauhan & Anita Singh
2.	Bot.111/ Micro.111(O)	Phycology & Microbiology	2+1	Dr. Shivani Chauhan
3.	Bot.112(O)	Bryophytes & Pteritophytes	2+1	Dr Anita Singh
4.	Bot.211	Plant Anatomy and Embryology	4+2	Dr Usha Rana
5.	Bot.211(O)	Gymnosperms	2+1	Dr. Anita Singh
6.	Bot.311	Plant Physiology	2+1	Dr. K. P. Singh
7.	Bot.312	Ecology	2+1	Dr. Virendra Singh
8.	Bot.313	Biotechnology	1+1	Dr. R. K. Chahota
Zoology				
9.	Zoo.111	Animal Diversity	4+2	Drs. Meenakshi Sharma & Anupam Sharma
10.	Zoo.211	Physiology and Biochemistry	4+2	Dr. Madhuri Mehta & Biochemistry
11.	Zoo.311	Mammalian Physiology-I	2+1	Dr. Madhu Sharma
12.	Zoo.312	Applied Zoology	2+1	Dr. Madhuri Mehta
13.	Bio.111(COA)	Introductory Biology	1+1	Dr. Madhu Sharma
14.	Zoo.211(O)	Chordata-I	3+1	Dr. Anupam Sharma
15.	Zoo.111(O)	Invertebrates-I	3+1	Dr. Meenakshi Sharma
Environmental Sciences				
16.	Env.311(COB S)	Introduction to Environmental Sciences	2+0	Dr. R. C. Chauhan

17.	Env.311(COHS)	Introduction to Environmental Sciences	2+0	Dr.R. C. Chauhan
18.	ENV.111 (B.Sc. Hons. Community Science)	Environmental Studies & Disaster Management	2+1	Dr. V. Singh
Postgraduate Courses				
19.	PP.502/Biotech-552	Plant Developmental Biology- Physiological and Molecular basis	2+0	Dr. Usha Rana
20.	PP.591	Master's Seminar	1+0	Dr. Anita Singh
21.	Env.501	Definitions and Concepts in Environmental Sciences	2+0	Dr.R. C.Chauhan
22.	Env.503	Environmental Pollution	2+1	Dr.R. C.Chauhan
23.	Env.504	Environmental Impact Assessment	2+1	Dr.R. C.Chauhan/Sh V.Kalia
24.	Env.506	Global Climate Change	2+0	Dr. V. Singh
25.	ENV.507	Stress Physiology	2+1	Drs. K. P. Singh & Anita Singh
26.	ENV.591	Master's Seminar	1+0	Dr. V. Singh
27.	Env.600	Master's Research	1+20	Respective Advisors

II Semester of Academic Year 2017-18.

Sr. No.	Course No.	Course title	Credit hours	Name of the Teacher(s)
Undergraduate courses				
1.	Bot. 121 (CBCS)	Plant Ecology & Taxonomy	4+2	Drs.V Singh and Usha Rana
2.	Bot.221 (CBCS)	Plant Physiology and Metabolism	4+2	Dr. Usha Rana
3.	Bot.321/ PBG.321	Genetics	2+1	Drs. Daisy Basandrai & Gopal Katna
4.	Bot.322	Utilization of Plants	2+1	Dr. Anita Singh
5.	Bot. 121	Mycology, Plant Pathology and Lichens	2+1	Dr. Anita Singh
6.	Bot.221	Morphology and Anatomy of flowering plants	2+1	Dr. Usha Rana
7.	Bot.112	Bryophytes & Pteridophytes	2+1	Dr. Anita Singh
8.	Bot.222	Reproductive Biology	2+1	Dr. Usha Rana
9.	Bot .313	Biotechnology	1+1	Dr. R K Chahota
10.	Zoo.121 (CBCS)	Comparative Anatomy & Developmental Biology of Vertebrates	4+2	Drs. Meenakshi Sharma & Anupam Sharma
11.	Zoo.221 (CBCS)	Genetics and Evolutionary Biology	4+2	Drs. R K Mittal ,Swaran Lata & Madhuri Mehta
12.	Zoo.321	Mammalian Physiology-II	2+1	Dr. Madhu Sharma

13.	Zoo.322	Evolution	2+1	Dr. Madhuri Mehta
14.	Zoo.111 (H.Sc.)	Human Physiology & Hygiene	2+1	Dr. Madhuri Mehta
15.	Zoo.111*	Invertebrates-I	3+1	Dr. Anupam Sharma
16.	Zoo.112*	Cell Biology	1+1	Dr. Madhuri Mehta
17.	Zoo. 121	Invertebrates-II	3+1	Dr. Meenakshi Sharma
18.	Zoo.211*	Chordata-I	3+1	Dr. Meenakshi Sharma
19.	Zoo.221	Chordata-II	3+1	Dr. Madhu Sharma
20.	Zoo.222	Environmental Biology	2+1	Dr. Anupam Sharma
21.	Env.121 (CBCS)	Environmental Studies	3+0	Dr. Virendra Singh
22.	Env.311(B Tech)	Introduction to Environmental Sciences	2+0(NC)	Dr. Virendra Singh
23.	ENV.311 (B Sc HHA)	Introduction to Environmental Sciences	2+0	Dr. Virendra Singh
24.	Env. 321 (COVAS)	Introduction to Environmental Sciences	2+0(NC)	Dr. R.C. Chauhan
25.	ENV.361 (COA)	Environmental Sciences	1+1	Dr. Rajesh Uppal
26.	ENV.311 (B Sc)	Introduction to Environmental Sciences	2+0(NC)	Dr. Virendra Singh
Postgraduate Courses				
27.	ENV.505	Environmental Chemistry	2+1	Dr. R.C. Chauhan
28.	ENV.509	Pesticide and Environment	2+1	Dr. R.C. Chauhan
29.	ENV.510	Environmental Conservation	2+0	Dr. Virendra Singh
30.	ENV.512	Biodiversity/Wildlife Conservation and Himalayan Eco systems	2+0	Dr. R.C. Chauhan
31.	ENV.591	Master's Seminar	1+0	Dr. R.C. Chauhan
32.	ENV. 599	Master's Research	1-20	Resp Advisors

Department of Chemistry and Biochemistry

Semester I			
Course No	Course Title	Cr. Hrs.	Instructor's name
Under Graduate Courses			
Chem-111(CBCS)	Conceptual Organic Chemistry	4+2	Dr. Suman Sharma (2+0) Dr. Mayanka (2+2)
Chem-112(CBCS)	Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons	4+2	Mrs. Shashi Kiran Angiras

Chem-211(CBCS)	Chemical Bonding ,Transition Metal & Coordination Chemistry	4+2	Mrs. Sashi Kiran Angiras
Chem-212(CBCS)	Solutions, Phase, Equilibrium, Conductance, Electrochemistry and Functional group Organic Chemistry -II	4+2	Dr.Suman Sharma (2+1) Dr. Mayanka (2+1)
Chem-311	Solutions & Colligative Properties	2+1	Dr. Mayanka
Chem-313	Natural Products, Synthetic Polymers and Dyes	3+0	Mrs. Sashi Kiran Angiras
Chem-111 (O)	States of Matter, Colloids and Chemical Kinetics	3+0	Dr. Suman Sharma
Chem-212(O)	Transition, Inner Transition Elements, Coordination Chemistry and Non Aqueous Solvents	3+0	Dr. Mayanka
Chem-213(O)	Chemistry of Functional Groups	2+1	Dr. Suman Sharma
*Chem-221(O)	Quantum Mechanics and Photochemistry	3+0	Dr. Neelam Sharma
*Chem-323(O)	Hetrocyclics, Polynuclear Hydrocarbons and Spectroscopy	2+1	Dr. Suman Sharma
Biochem-212	Biochemistry	2+1	Dr. Nageswer Singh
	College of Agriculture B.Sc. (Ag.)		
Biochem-351	Biochemistry	2+1	Dr. R.Katoch (T) Dr.N. Singh (Pract.)
	College of Homes Sciences		
Biochem-111	Biochemistry	2+1	Dr. Nageswer Singh
FST-111	Biochemistry	2+1	Dr. Kamal Mohini
	Post Graduate Courses		
Biochem-501	Basic Biochemistry	3+1	Dr.Kamal Mohini
Biochem-503	Human Biochemistry	3+0	Dr..Rajan Katoch
Biochem-511	Carbon and Nitrogen Metabolism	2+1	Dr. Nageswer Singh
Biochem-521	Food & Nutritional Biochemistry	2+1	Dr. Kamal Mohini
Biochem-541	Immunochemistry	2+0	Dr. Kamal Mohini
Biochem-551	Techniques in Biochemistry	1+3	Dr. Nageswer Singh/ Dr. Neelam Sharma
Biochem-591	Seminar	1+0	Dr. Kamal Mohini
Biochem-602	Advanced Molecular Biology	3+0	Dr. Manoj Kumar Acharya
Biochem-603	Biomembrane	2+0	Dr. Kamal Mohini
Biochem-604	Advanced Enzymology	2+0	Dr. Nageswer Singh
Biochem-621	Genomics, Proteomics and Metabolomics	2+0	Dr. Manoj Kumar Acharya
Biochem-691	Doctoral Seminar	1+0	Dr. Kamal Mohini
Biochem-692	Special Problem in Ph.D.	0+1	Respective Advisor

2nd Semester			
Course No	Course Title	Cr. Hrs.	Instructor's name
Undergraduate Courses			
B.Sc. 1 st & 2 nd year (under CBCS)			
Chem-121	Molecules of Life	4+2	Mrs. Shashi K. Angiras
Chem-122	Chemical Energetics, Equilibria & Functional Organic Chemistry-I	4+2	Dr.(Mrs.) Suman Sharma
Chem-221	Physical Chemistry for the Biosciences	4+2	Dr. Mayanka
Chem-223	Transition Metal & Coordination Chemistry, States of Matter & Chemical Kinetics	4+2	Dr. Mayanka/ Mrs. Shashi K. Angiras
Old Syllabus			
Chem-121	Thermodynamics, Electrochemistry and Equilibrium	3+1	Dr. Mayanka
Chem-123	Physical Organic Chemistry, Hydrocarbons and Organic Halides	3+0	Dr.(Mrs.) Suman Sharma
Chem-221	Quantum Mechanics and Photochemistry	3+0	Dr.(Mrs.) Suman Sharma
Chem-222	Advanced Inorganic Chemistry	2+1	Dr.(Mrs.) Neelam Sharma
Chem-322	Advanced Inorganic Chemistry –II	3+0	Mrs. Shashi Kiran Angiras
Chem-323	Hetrocyclics, Polynuclear Hydrocarbons and Spectroscopy	2+1	Mrs. Shashi Kiran Angiras
Odd Semester courses			
Chem-111	States of Matter, Colloids and Chemical Kinetics	3+0	Dr. Mayanka
Chem-313	Natural Products, Synthetic, Polymers and Dyes	3+0	Dr. Suman Sharma
College of Agriculture (for B.Sc.(Ag.) 1st year) (Hons.) Agriculture			
PB-121	Plant Biochemistry	1+1	Dr. Kamal Mohini
College of Home Sciences			
Biochem-121	Principles of Biochemistry	2+1	Dr. Nageswer Singh
Postgraduate Courses			
Chem-512	Analytical Chemistry	2+1	Dr.(Mrs.) Neelam Sharma
Biochem-501	Basic Biochemistry (Odd Semester course)	3+1	Dr. Rajan Katoch
Biochem-502	Plant Biochemistry	3+0	Dr. Kamal Mohini
Biochem-504	Enzymology	2+1	Dr. Nageswer Singh
Biochem-505	Intermediary Metabolism	3+0	Dr. Kamal Mohini
Biochem-521	Food & Nutritional Biochemistry	2+1	Dr. Nageswer Singh
Biochem-591	M.Sc. Seminar	1+0	Dr. Nageswer Singh
Biochem-599	Master's Research	0+20	Respective Advisor
Biochem-602	Advanced Molecular Biology	3+0	Dr. Rajan Katoch
Biochem-604	Advanced Enzymology	2+0	Dr. Kamal Mohini
Biochem-611	Advanced Techniques in Biochemistry	0+2	Dr.N. Singh/ Dr.(Mrs.) Suman Sharma
Biochem-692	Special Problem in Ph.D.	0+1	Respective Advisor

Biochem-699	Doctoral Research	0+45	Respective Advisor
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Department of Physical Sciences and Languages

Semester – I				
S. No.	Course title	Course No.	Cr Hr	Name of Instructor
PG Programme				
1.	Introduction to Statistics	Stat 491	1+1	Dr. Kamlesh Singh
2.	Statistical Methods for Applied Sciences	Stat 511	3+1	Dr. Kamlesh Singh
3.	Sampling Techniques	Stat 513	2+1	Dr. Manoj Bhargava
4.	Computer Fundamental and Programming	Comp 501	2+1	Sh. Kapil Sharma
UG Programme				
B.Sc. 1st year (CBCS)				
1.	Mechanics	Phys 111	4+2	Dr. Sheela Thakur/Dr Suveda Arya
2.	Differential Calculus	Math 111	5+1*	Dr. (Mrs) Sharda Singh
3.	English Communication	Eng 111	2+0	Ms. Sunita Sud
	Old syllabus			
1.	Mechanics and Theory of Relativity	Phys 111	4+0	Dr. (Mrs) Sheela Thakur
2.	Algebra and Trigonometry	Math 111	3+0	Dr. (Mrs) Sharda Singh
3.	Calculus	Math 112	3+0	Dr. (Mrs) Sharda Singh
4.	Communicative and Functional English	Eng 111	2+0	Ms. Sunita Sud
B.Sc. 2nd year (CBCS)				
1.	Thermal Physics and Statistical Mechanics	Phys 211	4+2	Dr. Sheela Thakur/Ms Surekha Padwad
2.	Real Analysis	Math 211	5+1*	Sh V P Sood
3.	Computer Application	Comp 211	2+1	Sh Vaibhav Kalia/ Sh Kapil Sharma
	Old syllabus			
1.	Optics and Lasers	Phys 211	4+0	Dr (Mrs) Sheela Thakur
2.	Oscillation and Waves	Phys 212	2+1	Dr (Mrs) Sheela Thakur
3.	Advanced Calculus	Math 211	3+0	Sh V P Sood
4.	Mechanics	Math 212	4+0	Sh V P Sood
B.Sc. 3rd year				
1.	Nuclear Physics	Phys 311	3+0	Dr (Mrs) Suveda Aarya
2.	Electronics-I	Phys 312	2+1	Dr (Mrs) Sheela Thakur
3.	Analysis	Math 311	3+0	Ms Anjali Sharma
4.	Abstract Algebra	Math 312	3+0	Ms Anjali Sharma
B.Sc. (Hons.) Agriculture				
1.	Comprehension and Communication Skills in English	Eng 111	1+1	To be notified later

2.	Elementary Mathematics	Math 111	2+0	Sh V P Sood
3.	Statistical Methods	Stat 231	1+1	Dr Manoj Bhargava
4.	Statistics	Stat 351	1+1	Dr Manoj Bhargava
B.Sc. Home Science				
1.	Elementary Statistics	Stat 231	1+1	Dr Kamlesh Singh
B.Sc. (Hons.) Community Science				
1.	General English	Eng-111	1+1	Ms Sunita Sud
B.Tech. (Food Technology)				
1.	English Language	FT-111	1+1	Ms Sunita Sud
B.Sc. (Hospitality and Hotel Management)				
1.	Application of Computers	Comp 115	2+2	Sh Kapil Sharma
Odd semester courses				
B.Sc. 1st year				
1.	Ordinary Differential Equations and Vector Analysis	Math 121	3+0	Dr (Mrs) Sharda Singh
2.	Geometry	Math 122	3+0	Sh V P Sood
3.	Principles of Computers-II	Comp 121	1+1	Sh Vaibhav Kalia
4.	Statistical Physics and Thermodynamics	Phys 121	3+0	Dr (Mrs) Sheela Thakur
B.Sc. 2nd year				
1.	Partial Differential Equations	Math 221	3+0	Ms Anjali Sharma
2.	Calculus of variation and Laplace Transform	Math 222	3+0	Dr (Mrs) Sharda Singh
3.	Quantum Mechanics and Spectroscopy	Phys 221	3+0	Ms Surekha Padwad
4.	Electrodynamics	Phys 222	2+1	Dr (Mrs) Sheela Thakur
5.	Computer Programming in C (Non-Medical)	Comp 221	2+1	Sh Kapil Sharma
B.Sc. 3rd year				
1.	Metric and Inner Product Spaces	Math 321	3+0	Ms Radhika Thakur
2.	Introduction to Statistics	Stat 321	2+1	Dr Manoj Bhargava

Semester – II				
S. No.	Course title	Course No.	Cr Hr	Name of Instructor
PG Programme				
1.	Statistical Methods for Applied Sciences	Stat 511	3+1	Dr Kamlesh Singh
2.	Sampling Techniques	Stat 513	2+1	Dr Manoj Bhargava
3.	Mathematical Statistics	Stat 541	3+0	Dr Manoj Bhargava
4.	Computer Fundamental and Programming	Comp 501	2+1	Sh Kapil Sharma
B.Sc. 1st year (under CBCS)				
1.	Electricity and Magnetism	Phys 121	4+2	Dr Sheela Thakur/ Mrs Surekha Padwad
2.	Differential Equations	Math 121	5+1*	Dr Sharda Singh/ Sh V P Sood
	Old syllabus			

1.	Statistical Physics and Thermodynamics	Phys 121	3+0	Dr Sheela Thakur
2.	Ordinary Differential Equations and Vector Analysis	Math 121	3+0	Dr Sharda Singh
3.	Geometry	Math 122	3+0	Dr Sharda Singh
4.	Principles of Computers-II	Comp 121	1+1	Sh Vaibhav Kalia
B.Sc. 2nd year (under CBCS)				
1.	Waves and Optics	Phys.221	4+2	Mrs Surekha Padwad
2.	Algebra	Math.221	5+1*	Sh V P Sood/ Ms Anjali Sharma
3.	Elements of Statistics	Stat.221	2+1	Dr Manoj Bhargava
4.	Databases with MS Access	Comp.221	2+1	Sh Kapil Sharma
5.	Computer Programming using C Language	Comp.222	2+1	Sh Vaibhav Kalia
Old syllabus				
1.	Quantum Mechanics and Spectroscopy	Phys 221	3+0	Dr Suveda Aarya
2.	Electrodynamics	Phys 222	2+1	Dr Sheela Thakur
3.	Partial Differential Equations	Math 221	3+0	Ms Anjali Sharma
4.	Calculus of variation and Laplace Transform	Math 222	3+0	Sh V P Sood
5.	Computer Programming in C (Non-Medical)	Comp 221	2+1	Sh Kapil Sharma
6.	Applications in FoxPro and Programming in BASIC (Medical)	Comp 222	2+1	Sh Kapil Sharma/ Poonam Devi
B.Sc. 3rd year				
1.	Solid State Physics	Phys 321	3+0	Dr Suveda Aarya
2.	Electronics-II	Phys 322	2+1	Dr Sheela Thakur
3.	Metric and Inner Product Spaces	Math 321	3+0	Ms Anjali Sharma
4.	Numerical Analysis	Math 322	3+1	Dr Sharda Singh/ Sh Vaibhav Kalia
5.	Introduction to Statistics	Stat 321	2+1	Dr Kamlesh Singh
Odd semester courses				
B.Sc. 1st year				
1.	Calculus	Math 112	3+0	Sh V P Sood
2.	Current Electricity and Magnetism-I	Phys 112	2+1	Dr Sheela Thakur
B.Sc. (Hons.) Community Science				
1.	Agricultural Informatics	Comp 121	1+2	Sh Kapil Sharma/ Ms.Poonam Devi
B.Tech. (Food Technology)				
1.	Computer Programming & Data Structure	FT-124	2+1	Sh Vaibhav Kalia/ Sh Kapil Sharma/ Ms. Poonam Devi
B.Sc. (Hons.) Agriculture				
1.	Statistics	Stat 351	1+1	Dr Manoj Bhargava

Department of Microbiology

Semester-I				
S. No.	Course No.	Course Title	Credit Hour	Name of Instructor
UG Courses				
1.	FT-112	General Microbiology	2+1	Dr. Richa
2.	FST-118	Fundamentals of Microbiology	2+1	Sh. Rajinder Kumar
3.	FST-232	Fermentation and Industrial Microbiology	2+1	Dr. Richa
4.	FST-353	Food Biotechnology	2+1	Dr. Shivani Chauhan
5.	FST-358	Food Safety and Microbial Standards	2+1	Sh. Rajinder Kumar
PG Courses				
6.	Micro-541	Industrial Microbiology	2+1	Dr. M.K. Gupta
7.	Micro-622	Advances in Food Microbiology	2+1	Dr. M.K. Gupta
8.	Micro- 691	Ph.D. Seminar	1+0	Dr. S.S. Kanwar

Semester- II				
Sr. No.	Course No.	Course Title	Credit Hours	Name of Instructor
Under Graduate				
1.	Micro-121	Basic Microbiology	1+1	Dr. S.S. Kanwar
2.	Ag. Micro-121	Agricultural Microbiology	1+1	Dr. Shivani Chauhan
3.	FT-122	Food Microbiology	2+1	Sh. Rajinder Kumar
4.	FST 123	Food Microbiology	2+1	Sh. Rajinder Kumar
5.	FST 232	Fermentation and Industrial Microbiology	2+1	Dr. S.S. Kanwar
Post Graduate				
6.	Micro-501	Principles of Microbiology	2+1	Dr. S.S. Kanwar / Sh. Rajinder Kumar
7.	Micro-532	Dairy Microbiology	2+1	Dr. Shivani Chauhan
8.	Micro-541	Industrial Microbiology	2+1	Dr. S.S. Kanwar

CGRT:

Courses offered by Centre for Geo-informatics

Sr. No.	Course No.	Course Title	Credit Hours	Name of teacher
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Undergraduate Courses & Postgraduate Courses				
Semester I				
1.	GIS-501	Geographic Information System and its Applications	2+1	Ranbir Singh Rana/ Vaibhav Kalia
Semester II				
1	GIS-501	Geographic Information System and its Applications	2+1	Ranbir Singh Rana/ Vaibhav Kalia

Member of the Students' Advisory Committee

Dr. Sharda Singh:	M.Sc./Ph.D.	Three/one
Dr. Ranbir Singh Rana	M.Sc./Ph.D	2/1
Mr. Vaibhav Kalia	M.Sc.	Two

Thesis Completed

- Mr. Sanjeev Kumar, M.Sc. Agronomy *Completed on April 27, 2018.*

New M.Sc./Ph.D students allotted during 2017-18

Ranbir Singh Rana:

M.Sc. (Agronomy): Nil

Ph.D. (Agronomy): One (Mr. Bheem Pareek, Ph.D student allotted vide letter no QSD.4-49/Agron/Acad/2017/136-49 dated 19.1.2018)

Student Thesis Evaluation/ External Examinerships

Dr. Neelam Sharma

- Acted as External practical examiner M.Sc. Chemistry, HPU, Shimla
- Prepared Model question papers of UG courses, UG (1),SKAUST, Jammu M.Sc., HP University, Shimla.

Dr. Anita Singh

- Evaluated PhD thesis of CS Azad University of Agri & Tech. Kanpur.

Dr. R C Chauhan

- Paper setting for UHF, P.G. entrance test and HPU, P.G. , Environmental Sciences

Dr. Manoj Bhargava evaluated the thesis at Masters Level of a student of Dr.Y. S. Parmar University of Horticulture and Forestry, Nauni, Solan.

Sh. Kapil Sharma conducted final practical examinations of B.C.A. (II year) as external examiner of K.L.B. D.A.V. College for Girls.

Dr. Ranbir Singh Rana

- Thesis evaluation entitled "Evaluation of CROPGRO-Cotton model under varied plant densities and nitrogen levels for delineation of potential productions zones by using GIS techniques in Telengana State" by T. Nagender (ID No.RAD/2014-04), Ph.D.

Agronomy, Post Graduate Studies, Professor JayashankarTelangana State Agricultural University, Rajendra Nagar, Hyderabad-500030 submitted for the award of Doctor of Philosophy in Agriculture (Agronomy)

- Rice Yield prediction using satellite based observations, crop simulation model and land based observations Submitted by Ajith K .ID No. 2014801001 Agro climate Research Centre, Directorate of Crop Management. Agricultural College and Research Institute. TNAU, Coimbatore, -641003 TN

TEACHING AID / MATERIAL DEVELOPED FOR UG & PG STUDENTS

Practical Manual:

- Practical Manual for Botany course of B. Sc. Ist year under CBCS System by Anita Singh
- Practical Manuals by Dr. Neelam Sharma
- Practical Manual by Dr. Suman Sharma as first author

Educational Trip-2017-18: Conducted Education trip of South India by Dr Virender Singh As Incharge , Dr. Nageshwar Singh and Dr. Suman Sharma

ANTI RAGGING MONITORING COMMITTEE OF COLLEGE:

The following anti ragging committee was formed to monitor anti ragging measures around the college and also ensure timely conduct of classes of first year students. (No.QSD.3-40/2018-CSKHPKV (COBS-Acad)/-Dated, Palampur

Squad No.	Name and Designation			Contact No.
Squad No. 1	1	Dr. Anita Singh	Convener	94180-45229
	2.	Dr. Nageshwar Singh	Member	94184-31716
	3.	Dr. Sheela Thakur	Member	94594-76735
Squad No. 2	1.	Dr. Neelam Sharma	Convener	93188-47457
	2.	Dr. Virendra Singh	Member	94180-45229
	3.	Dr. R.S. Rana	Member	94181-06167
Squad No. 3	1.	Dr. R.C. Chauhan	Convener	9418064454
	2.	Dr. Kamal Mohini	Member	98161-85713
	3.	Dr. Usha Rana	Member	941884-14393

Students were also apprised by Dean COBS with regard to anti-ragging measures

All the registered students in first year were registered online to have the declaration by students and his/her parents with regard to Anti Ragging measures etc (www.amanmovement.org.)

SPORTS ACTIVITIES DURING 2017-18

- Sports Incharge of COBS : Dr R. C. Chauhan

- During the year COBS fetched 2nd position in Basket ball (Women) and Football (Men)
- Vivek Jaswal of College was adjudged 1st in 1500 meters, Harsh Kapil in 5000 meters and
- Aditya Balouria in 10000 meters races during Inter College Athletics.
- Suruti Saklani was declared 1st in Shot put (Women).
- Vishal Bhardwaj and Suruti Saklani of COBS were also adjudged 1st in Discus Throws among men and women participants.
- During 2017-18, 06 students of the college participated in North Zone Inter University and 03 students in All India Agricultural Sports and Games Meet held Bengaluru.

NATIONAL SOCIAL SERVICE SCHEME (NSS) ACTIVITIES:

One hundred two girl students of B.Sc. 1st and 2nd year of College of Basic Sciences got themselves registered for academic year 2017-18 as NSS volunteers.

Following activities were carried out under the NSS programme during 2017-18.

- Celebrated various days associated with NSS viz. Martyrs' Day, International Women's Day, Anti-terrorism Day, World No-Tobacco Day, Environment Day, Sadbhawna Day, International Literacy Day, NSS Day, Communal Harmony Day, National Integration Day, Anti-Corruption Day, White-cane day, Constitution Day, World AIDS Day.
- Organization of special camp of seven days from June 10th to June 16th 2018 at village Ghuggar, Tehsil Palampur Distt. Kangra. 54 NSS volunteers participated in the camp.
- Organized rallies of NSS volunteers to make people aware against **drug abuse** and to **avoid the use of plastic**.
- Poster competition was organized among NSS volunteers of College of Basic Sciences on the topic "**Beti Bachao , Beti Padaho**".



NSS activities 2017-18, COBS, Palampur

RESEARCH ACTIVITIES

Ongoing Research Projects

Sr. No.	Title of the Project	PI /Co-PI	Funding source	Budget (Lakhs)	Year of Start and duration
Department of Biology & Environmental Sciences					
1.	Characterization and Consolidation of Hippophae Genetic Resources and Propagation of Elite Genotypes for Varietal Evaluation.	Dr. Virender Singh	DBT, New Delhi	Rs.34.90 lakhs	2014-2018
2.	Introduction and Evaluation of Improved Russian Seabuckthorn Varieties in Lahaul-Spiti, Cold deserts of Himachal Pradesh. (Dr. Virender Singh	DBT, New Delhi	Rs.38.00 lakhs	2014-2018
Department of Chemistry and Biochemistry					
3.	Bio-efficacy and Phytotoxicity analysis of `WCPL29 and OAH 56 ` on tea crop against target weeds.	PI: Dr. Neelam Sharma	Willowood Chemicals Pvt Ltd, Mumbai	8.10 Lakhs	2016-18
4.	All India Coordinated Research Programme on underutilized crops: Evaluaton of nutritionally important biochemical constitutes of promising B., chenopodium and Ad juki bean genotypes	Dr. Nageswar Singh	AICRIP, ICAR	0.80	2017-18
5.	Efficacy evaluation of ethalfluralin 36% against weeds in soyabean.	Dr. Neelam Sharma	Sarswati Agro Chemicals India Pvt Ltd	5.00 Lakhs	2017-18
6.	Bio-efficacy and Phytotoxicity analysis of `GPH 315 ` on tea crop against target weeds.	Dr. Neelam Sharma	UPL, Limited, Mumbai	5.80 Lakhs	2017-18
7.	Studies on bioefficacy and phytotoxicity of Godrej Bounte (Homobrassinoloide 0.04%EC w/w) in Tea.	Dr. Neelam Sharma	M/s Godrej Agrovet Ltd, Mumbai	4.10 Lakhs	2017-18
8.	Bio-efficacy of Glufosinate Ammonium 13.5% SL against major weeds and its phytotoxicity on Tea.	Dr. Neelam Sharma	Dhanuka agritech Limited	4.05 Lakhs	2017-18

Center for Geo-informatics, Research and Training					
9.	Development of the framework for Networking Programme on Village Information System (VIS) under NRDMS [Adhoc GOI – 5020-34]	Dr. Sharda Singh, Dr Sanjay Sharma Dr. R.S. Rana, Mr. Vaibhav Kalia	NRDMS- DST, New Delhi	31.61	2016-2019
10	Establishment of GIS & MIS and Monitoring System –HP Crop Diversification Project, JICA, ODA [Adhoc 2083-34]	Dr. Sharda Singh, Dr. R.S. Rana, Mr. Vaibhav Kalia	JICA- HPCDP	66.20	June2012- March2019
11	Forecasting Agricultural Output using Space, Agro meteorology and Land based observations (FASAL) [Adhoc 475-34]	Dr. R.S. Rana, Dr. Suresh K Sharma Dr. B.S. Mankotia	IMD, New Delhi	30.00	2012-2018
12	Climate Change Impact on Productivity of Food grain and Plantation crops [Adhoc.Misc.5009-34]	Dr. R.S. Rana, Dr. Sharda Singh Mr. VaibhavKalia	IIRS, Dehradun	39.00	June 2014 - March 2018
13	GRAMIN KRISHI MAUSAM SEWA (Agro meteorological Advisory Service) at Palampur in H.P	Dr. R.S. Rana,	IMD	22.00	Continuing
14	Networking Project on Revival of Village Ponds through scientific Interventions	Co-PI: Dr. Sharda Singh Dr. R.S. Rana Dr Sanjay Sharma	NRDMS - DST , New Delhi	16.91	March 2017- March 2019
Department of Microbiology					
15	DST- Ad-hoc. Project in Microbiology	Dr. Rajinder Kumar	DST	17.87 lakhs	2017-18

1) Research Projects Completed:

1.	Impact of Geodatabase Model for Assessment And Implementation of Disaster Management Action Plan Adhoc2166-34	Sh. VaibhavKalia Dr. Sharda Singh, Dr. R.S. Rana	District Administr ation, Hamirpur	2.00	2016- 2018
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Research Projects Submitted

Sr No	Title of the Project(s)	Name of the funding organization
1.	Categorization of Soil Secondary and Micronutrients under Vegetables Land Use System in Kangra District of Himachal Using Analytical & Geospatial Techniques.	HIMCOST, Shimla

2.	Extension of Project submitted: Development of framework for Networking Programme on Village Information System (VIS) under NRDMS.	NRDMS, DST, New Delhi approved with additional funding for 18-19
3.	Project proposal on “Institutional Development Plan (IDP) of CSKHPKV, Palampur HP”.	Funding under NAHEP, ICAR, New Delhi. As Nodal Officer Budget Rs. 3782.9 Lakhs
4	Project proposal on “Centre for Advanced Agricultural Science and Technology (CAAST) on Development of pedagogical and research excellence on hill organic agriculture and livestock sector for CSKHPKV, Palampur, and Himachal Pradesh	Funding under NAHEP, ICAR, New Delhi. As Nodal Officer Budget Rs. 2491.2 Lakhs
5	Mass propagation and cultivation of high yielding seabuckthorn cultivars for livelihood improvement in tribal areas of Himachal Pradesh Dr. Virendra Singh	DST (Rs.97 lakhs).

New Research Project Sanctioned during 2017-18

- Characterization and Performance Trials of Russian Seabuckthorn varieties in Cold desert Himalayas Rs.9.88 lakhs/- DIHAR (DRDO), Leh, Dr. Virendra Singh

PROJECT-WISE BRIEF REPORT OF ONGOING PROJECTS

Department of Biology & Environmental Sciences

Significant research achievements/technology

- Standardized method of propagation of seabuckthorn from softwood cuttings.
- Standardized method of propagation of seabuckthorn from micro cuttings.
- Standardized watergel method of plantation of seabuckthorn on dry site
- Evaluated growth of 10 Russian seabuckthorn varieties and over all, NX-6, NX-7 and NX-11 showed better growth parameters than others and Drilbu, a local selection.

Department of Chemistry and Biochemistry

- Interaction and expression analysis of Glyceraldehyde-3- phosphate dehydrogenase (GAPDH) in *Cucumis sativus* infected with Cucumber mosaic virus:
 - A study on expression analysis of Glyceraldehyde-3- phosphate dehydrogenase (GAPDH) in *Cucumis sativus* infected with Cucumber mosaic virus by yeast two hybrid system revealed that GAP C (GTPase activating proteins) is one of the host proteins which interacts with the movement protein of CMV thereby, one of the reason to be playing role in virus movement from one cell to another.
- Persistence of herbicides tested in the farmer’s field (soil and crop produce):
 - HPLC analysis of soil and wheat grain samples collected from the clodinafop propargyl treated fields of eight farmers of Kangra district at the harvest of the crop revealed that its residues were below detectable limits in both soil and wheat grain samples (<0.03µg/g).

Department of Microbiology

Research Achievements

- In the conservation agriculture system, the beneficial microflora (Azotobacter spp, Phosphate solubilising microorganisms and Actinomycetes) and other associated indicators of soil biology (Dehydrogenase activity, Basal Respiration, Microbial Biomass and Phosphates) were in general higher in treatments where residues were retained and IWM schedule was followed in both maize and wheat when compared with other tillage and weed control treatments.



Phosphate solubilising microorganism



Dehydrogenase activity



Azotobacter spp.



Basal soil Respiration

Centre for Geo-informatics, Research and Training

Project : Development of the framework for Networking Programme on Village Information System (VIS) under NRDMS

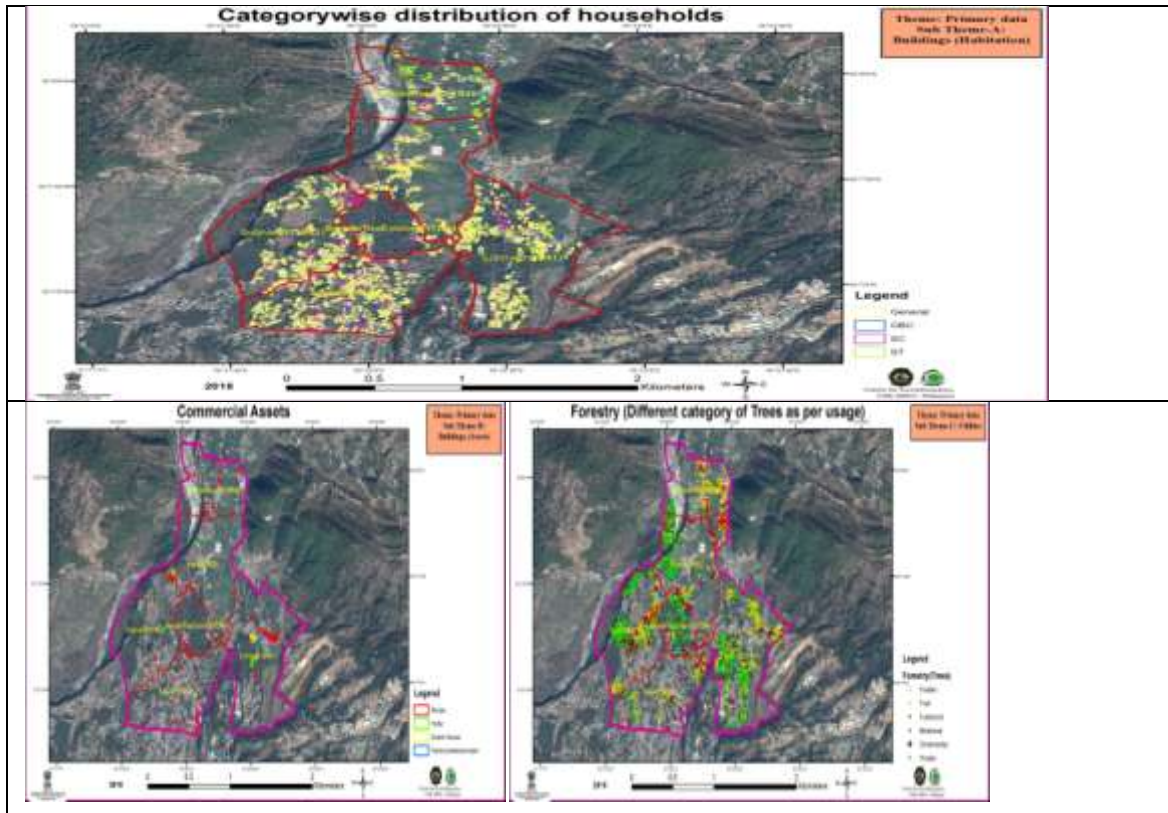
Study Team: Dr. Sharda Singh, Dr. Sanjay Sharma, Dr. R.S. Rana & Mr. Vaibhav Kalia

Research Staff: Ms. Tanu Kumari, Mr. Sandeep Kumar

Key Outputs:

The Village Information System (VIS) evolved as a network programme under the aegis of NRDMS, Department of Science & Technology, Government of India has taken up the task to prepare digital base maps at village level utilizing cadastral maps, Survey of India toposheets and high resolution remote sensing products adopting a synergic approach. This model work initiated by DST would be of immense help for replicating the technology/methodology in other villages of the state and in this process the concept of good governance would be realized. Subsequently, State Govt. will be benefitted with this programme in better management of resources at village level and lead to quick decision making when available at a click away anywhere anytime by the highest administrator to

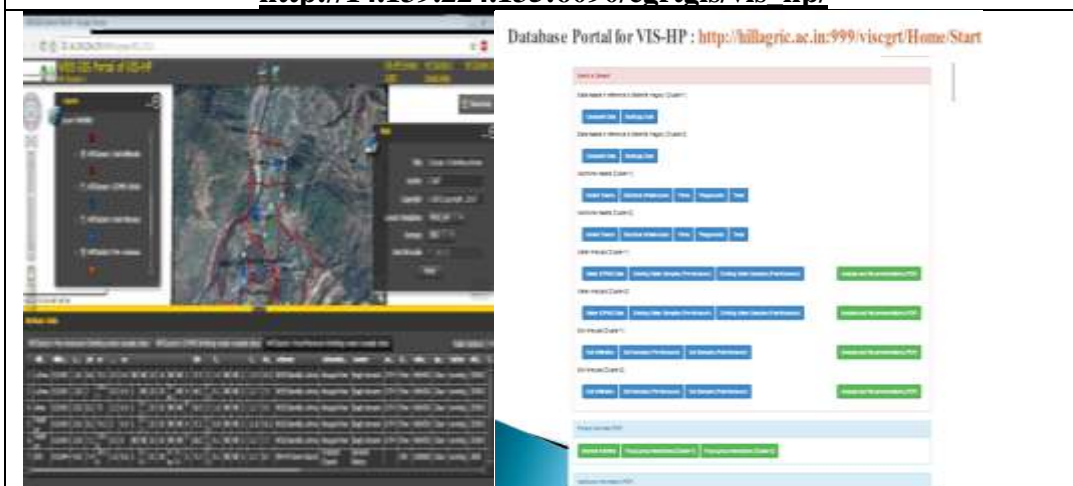
village Pradhan/ Secretary/ local people (aamadami). Dissemination of VIS Outputs is being done through WEB PORTAL OF CGRT on web link for VIS-HP as http://14.139.224.135:6090/cgrtgis/vis_hp/



Mapping of Household level data mapped on high resolution satellite imagery

Dissemination of VIS Outputs through WEBGIS/DATA PORTAL OF VIS-HP

http://14.139.224.135:6090/cgrtgis/vis_hp/

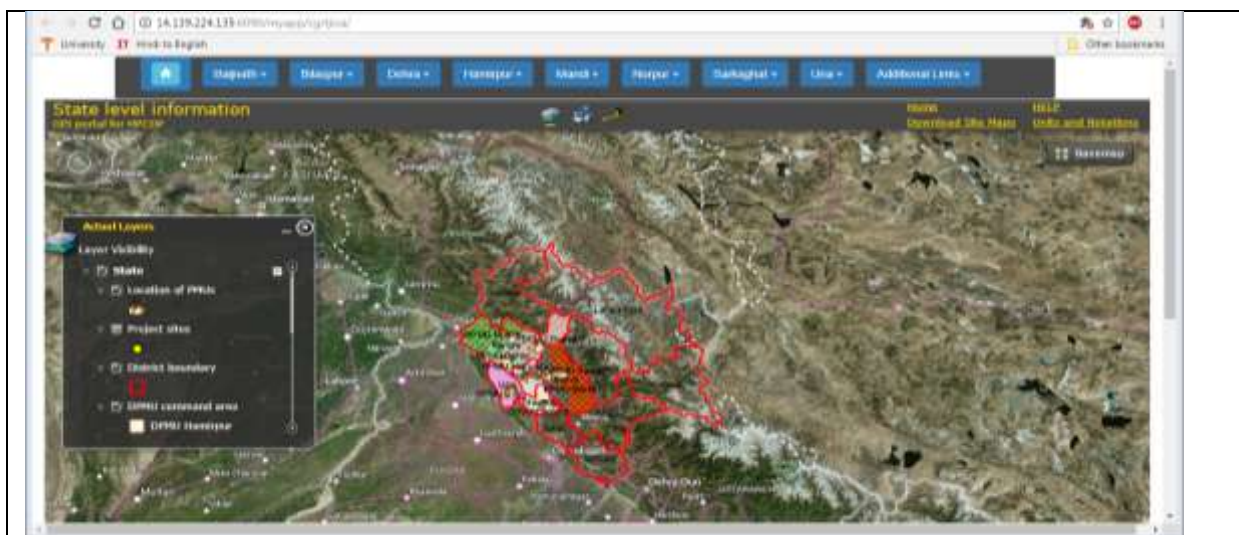


Project : Establishment of GIS& MIS and Monitoring System

Study Team: Dr. Sharda Singh, Dr. R.S. Rana, Mr. Vaibhav Kalia

Research Staff:Mr. KunalSood, Mr.Arun Kumar, Mr. Rajan Kumar

Key Outputs:Web GIS Portal for Himachal Pradesh Crop Diversification Project (HPCDP) developed by CGRT, CSKHPKV-Palampur contains spatial and attribute information of the 1st phase spread over 5 districts namely Kangra, Mandi, Bilaspur, Una and Hamirpur of Himachal Pradesh. Geo-referenced layers namely Project Site boundary, Chak boundary, Khasra boundary, Contours, Source (Nala/River), Check Dam, Power House, Main Channel, Distribution Network, Outlets etc are being generated and uploaded on web portal regularly. The actual implemented datasets for the project sites whose work has been carried out on the ground are now being uploaded on the server. This along with the proposed assets plan can be viewed simultaneously. This provides the user to identify the change in the plan from proposed to actual implemented activity on the project site. All drawings of the assets to be created and actually created, action plan maps, salient attributes of project sites, khasra-wise details of project sites along with attribute data of all the layers are also available on the portal for the DPRs being provided by HPCDP, ODA, Hamirpur (HP). All these layers can be interactively explored along with their attribute data on the click of the ‘i’ tool. These layers can be labeled for different parameters like Name, Cost, Ownership etc as the case may be. Helpfile for HPCDP Website Portal provides whole interactive walkthrough the portal. The web Portal link is <http://14.139.224.135:6090/myapp/cgrtjica/>All the proposed project sub-sites (210 in number) have been uploaded on the portal. Now the work on Actual project sub-sites has been started.



Home Page with STATE Level Information:The page will open with State Info as default page having District Boundaries of Himachal Pradesh and project sites of HPCDP



PROJECT SITE INFO (Asset wise Layers): To go to a particular project site, In the NAVIGATION pane, first of all select respective BPMU and then respective Project sub-site and then open proposed/actual sites



Attribute data: By clicking on the assets the attribute information alongwith the asset geotagged image can be viewed easily.



On the Fly Area and Distance: Calculate area and Distance on the fly tool developed to measure the dimensions of proposed assets over internet

On the Fly Print: The user can create custom map in pdf,jpg,png,svg formats with ready to use templates that can be printed at client side at any time.

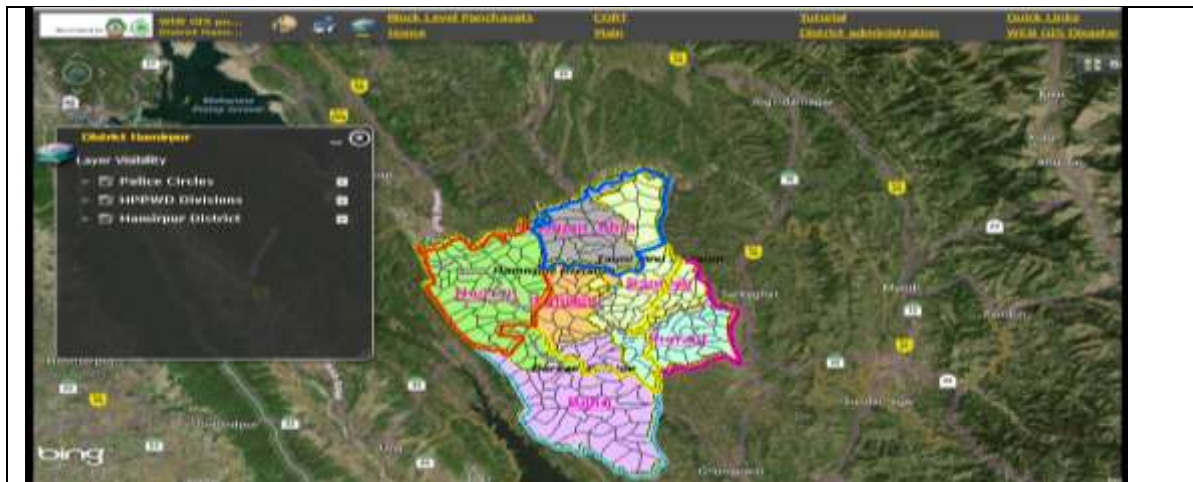
Project:Impact of Geodatabase Model for Assessment and Implementation of Disaster Management Action Plan

Study Team: Mr. Vaibhav Kalia, Dr. Sharda Singh, Dr. R.S. Rana

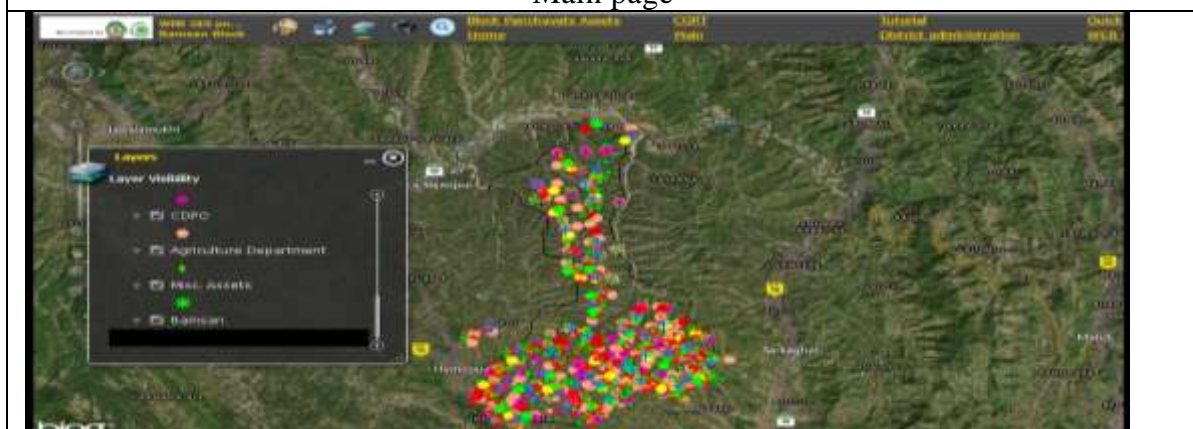
Research Staff :Mr. Sandeep Kumar

Key Outputs:

WebGIS portal for the project is http://14.139.224.135:6090/cgrtgis/hmr_dst/ was developed.



Main page



Layer-wise Assets of Bamsan Block

Project : Forecasting Agricultural Output Using Space, Agro Meteorology and Land Based Observations (FASAL)

Study Team: Dr. Ranbir Singh Rana ,Dr Suresh Kumar Sharma and Dr B.S. Mankotia

Research Staff:

Wheat& Maize

- The genetic coefficients for InfoCrop and DSSAT models were developed from the fields experiments conducted during 2016-17 for maize and wheat. In wheat crop, range of values of Genetic Coefficient derived varied between P1V (0t0), P1D (5.36-5.40), G1 (1.85 to 1.9), G2 (10.1 to 10.2), G3 (3.6 to 4.0) and PHINT (75 to 78) for Palampur agro-climatic conditions for both varieties HPW-42 and HPW-155. Similarly, for maize crop, P1, P2 and P5 Varied between 202 to 220, 1.20 to 2.05 and 635.4 to 680.40 respectively, whereas G2, G3 and PHINT values were 934 to 760, 8.55 to 8.78 and 38.4 to 39.8 respectively

Project : Climate Change Impact on Productivity of Food grain and Plantation crops within the umbrella project of “Mountain Ecosystem Processes and Services in North Western Himalaya”

Study Team: Dr. Ranbir Singh Rana, Dr. Sharda Singh, Mr. Vaibhav Kalia

Research Staff: Mr. Munish Kaundal, Mr. Shashi Kumar

Key Outputs:

- Data recorded from Eddy covariance system on carbon dioxide, water vapour, PAR, soil heat flux, soil moisture, soil temperature, Rh, precipitation, wind speed, wind direction and rainfall. The carbon dioxide concentration was higher in the morning and evening and lower in the afternoon. During day ambient temperature ranged from 13.3 °C-22.2 °C in the month of November, December (8.5-18.3 °C), January (5.4-13.1 °C), February (9.2-22.3 °C) and March (7.5-19.6 °C). Carbon dioxide at 7.00 am in the morning (688-715 ppm) and lower in the evening at 6.00 pm (675-686 ppm) in the month of December.
- The Leaf areas of Maize and Wheat of different sites periodically were collected. The maize crop DSSAT database was generated and Model was run for Palampur region. The crop experiment on maize completed and data generated for crop models.
- The Second year field experiment on rice crop has been planted at RWRC, Malan to validate the Rice crop model for assessing the Carbon fluxes. The Eddy Covariance techniques equipment has been installed to study the carbon source and sink for Rice-Wheat cropping systems. The data recorded from Eddy covariance system was carbon dioxide, water vapor, PAR, soil heat flux, soil moisture, soil temperature, RH, precipitation, wind speed, wind direction and rainfall. The carbon dioxide concentration was higher in the morning and evening and lower in the afternoon. The observation recorded by Eddy Covariance would be used as inputs for fine tuning of the crop simulation models.

Project : Gramin Krishi Mausam Sewa (Agro meteorological Advisory Service) at Palampur in H.P

Study Team: Dr. Ranbir Singh Rana

Research Staff: NIL

Key Outputs:

- The five days forecasts on different weather parameters viz. rainfall, temperature, cloud cover, relative humidity and weekly cumulative rainfall for our study districts (Chamba, Kangra, Hamirpur and Una) were validated and weather based agro-advisory prepared.
- **Published** The total 96*4=384 AAS bulletins during July 1, 2017 to June 30th, 2018 were prepared in English and Hindi for Chamba, Una, Hamirpur and Kangra districts of H.P. and published in university website (www.hillagric.ac.in /kisanokeleye and www.imdagrimet.gov.in. Kisan Portal (www.farmers.gov.in; www.weathershimla.gov.in and mkisan.gov.in and www.cropweatheroutlook.com of CRIDA (ICAR) websites 16 SMS to 2.79 lakhs registered farmers during July 2017 to June 2018 as per quota were sent to farmers of Chamba, Una, Hamirpur and Kangra through MKisan Portal of MOA, GOI, New Delhi totaling about 29.63715 lakhs farmers and the total reads/hits of Agro-advisory bulletins for September, 2017 to June 15, 2018 are 169235 As per website report)

Department of Statistics, Mathematics and Physics: NIL

RESEARCH PUBLICATIONS (published/ accepted) in the referred journals along with letter of acceptance in case of accepted papers):

Biology and Environment

1. Singh, V. and Singh, B. 2018. 2018. Fodder values of seabuckthorn (*HippophaeL.*)-A multipurpose agroforestry tree of cold desert Himalayas. *Indian J. Agroforestry* **20** (1): 41-45. (>4 NAAS)
2. Vatsa, D.K and Singh, V. 2017. Design, Development and evaluation of manually operated seabuckthorn fruit harvesting tools. *Agricultural Mechanization in Asia, Africa, and Latin America* **48** (3) 20-24. (>6 NAAS).
3. Kachru S, Kumar P, Sharma P, Rana U and Upadhyay SK. 2017. Effect of indole butyric acid (IBA), cow urine and growing media on root formation in tomato stem cuttings. *Himachal Journal of Agricultural Research* **43**(1):40-43. **NAAS rating:3.91**
4. Kachru S, Kumar P, Sharma P, Rana, U Upadhyay SK and vats B. 2017. Effect of rooting hormones (IBA and NAA), cow urine and growing media on growth, yield and quality of tomato plants propagated through stem cuttings. *Indian Horticulture Journal* **7**(3/4) 193-195. **NAAS rating:2.86**
5. Verma K, Bindra AD Singh J, Negi SC, Datt N, Rana U and Manuja S. 2018. Effect of integrated nutrient Management on growth, yield attributes and yield of Maize and

wheat in Maize wheat cropping system in Mid hills of Himachal Pradesh. International Journal of Pure and applied Biosciences. **6 (3):282-301. NAAS rating:4.74**

Chemistry and Biochemistry

6. Reetu, **Sharma Neelam** and Maharishi Tomar 2018 Effect of pretilachlor on chlorophyll and sugar content in rice leaves and its relation to grain sugar. Pesticide Research Journal **30 (1): 102-105 (2018) doi: 10.5958/2249-524X.2018.00017.1(NAAS Score:5.90)**
7. **Sharma Neelam**, N T Yaduraju and S S Rana. 2018. Herbicides *vis-a-vis* other pesticides: An overview on use and potential hazards. Indian Journal of Weed Science (*Accepted*) (**NAAS Score: 5.17**)
8. Thakur Nitasha, **Sharma Neelam** and Singh Yeshwant 2018 Studies on effect of metsulfuron methyl on chlorophyll, sugar content in wheat leaves and its relationship with grain sugar content. International Journal of Current Microbiology and Applied Sciences **7 (5): 2052-2060 (NAAS Score: 5.38)**
9. Kumar Ankush, Rana M.C., **Sharma Neelam** and Rana, S.S. 2017. Effect of Post-Emergence Herbicide -Tembotrione on Yield, Soil Dehydrogenase Activity and Its Phytotoxicity on Maize (*Zea mays* L.) under Mid Hill Conditions of Himachal Pradesh. International Journal of Current Microbiology and Applied Sciences **6 (8): 2297-2303. (NAAS Score:5.38)**
10. Sharma, V.K., Singh, P. and **Sharma, Suman**. 2017. Effect of sowing dates and initial cutting time on forage yield and quality of oat in mid hills of North- West Himalayas. International Journal of Science, Environment and Technology **6(3): 2030-2035. (NAAS Score 3.98)**
11. Sharma, V.K., Kumar, K. and **Sharma, Suman**. 2018. Effect of different varieties and nitrogen on yield and quality of oat (*Avena sativa* L.). International Journal of Science, Environment and Technology (**Accepted**). (**NAAS Score 3.98**)
12. Rana Anita, **Singh Nageswer**, Meena, Shweta. 2017. Study of Analysis of Induced Biochemical Changes in infected *Calotropis gigantea* plants. Bulletin of Environment, Pharmacology and Life Sciences **6 [9]: 28-37 (NAAS Score 4.90)**

Centre for Geo-informatics Research and Training (CGRT)

13. Sood Kunal, Singh, Sharda, Kaushal Arun, Kalia, Vaibhav, Rana, R S and Kumari, Tanu. Promotion of Crop Diversification in Mountainous Areas using Geospatial Technologies, Indian Journal of Ecology (2017) 44(4): 832-836
14. Sood Kunal, Kumari Tanu, Singh Sharda, Sharma Sanjay, Rana Ranbir Singh, Kalia Vaibhav & Kaushal Arun. Use of geospatial technologies for village level vulnerability assessment of water scarcity in Himachal Pradesh. International Journal of Current Advanced Research ISSN: O: 2319-6475, ISSN: P: 2319-6505, Available

Online at www.journalijcar.org Volume 7; Issue 4(K); April 2018; Page No. 12073-12078 DOI: <http://dx.doi.org/10.24327/ijcar.2018.12078.2115>

15. Rana Ranbir Singh, Kalia Vaibhav, Bhagat RM and Singh Sharda. Extreme snowfall event analysis and its impacts on agriculture and horticultural crops in western Himalaya, India. *MAUSAM*, 68 , 3 (July 2017), 543 -550
16. Rana Ranbir Singh, Pathania Ranu, Ramesh, Sharma Sanjay and Thakur Shivani. Impact of elevated carbon dioxide and temperature on wheat production under sub temperate climate in North Western Himalayas, India. *Journal of Applied and Natural Science* 9 (4): 1905 -1909 (2017), (NAAS Rating-4.84_2017).
17. Rana Ranbir Singh, Singh Manmohan, Pathania Ranu, Upadhyay SK and KaliaVaibhav.2017.Impact of changes in climatic conditions on temperate fruit production of Himachal Pradesh. *MAUSAM*, 68 , 4 (October 2017), 655 -662 (NAAS Rating-6.31_2017)
18. Verma Karan, Rana Ranbir Singh, Thakur Shivani and Kumar Sahil. 2017 “Comparison of simulated and statistical model prediction of wheat at district scale yield under sub-temperate climate of North Western Himalayas. *International Journal of Pure and Applied Biosciences*. 5(4) : pp 1035-1050 (2017) NAAS rating-4.74_2017
19. Verma Karan, Rana Ranbir S. and Chopra Pankaj .2017. Agro Meteorological Indices as Influenced by varying sowing environment and Varieties of Wheat under Sub-Temperate Climate of Himachal Pradesh. Accepted in *Plant Archives,International Journal of Plant Research*.Vol. 17 No. 2, 2017 pp. 1439-1443(NAAS rating-4.41_2017)
20. Verma Karan, Rana, Ranbir S., Thakur Shivani and Chopra P. 2017.Agronomic efficiency and economic viability of wheat crop under varied sowing environments in North Western Himalaya Advance research Journal f crop Improvement Vol. 8 No. 2 , December 2017 (NAAS rating-3.86_2017)
21. Kumar R, Paliyal SS, Sharma Sanjay K and Rana Ranbir Singh. Spatial Variability Maps of Available Micronutrients and Heavy Metal of Cold Arid Soils of Spiti Valley In Himachal Pradesh. *Journal of Environment and Bio-sciences* 2017: Vol. 31 (1):161-162 (NAAS Rating: 4.43_2017).
22. Kumar, R, Paliyal SS, Sharma, Sanjay K and Rana, Ranbir Singh.2017. Status and distribution of available macronutrients in relation to physicochemical properties under different land uses of cold arid soils of Spiti valley in Himachal Pradesh. *Environment Conservation Journal* 18(3) 79-86, 2017 ISSN 0972-3099 (Print) 2278-5124 (Online). (Naas Rating : 4.52_2017

Department of Microbiology

23. Sharma S, Kanwar SS. Effect of prebiotics on growth behavior of *Lactobacillus plantarum* and their impact on adherence of strict anaerobic pathogens to intestinal cell lines. *Journal of Food Safety* 2017;e12384. <https://doi.org/10.1111/jfs.12384>
24. Sharma S, Kanwar SS. Adherence potential of indigenous lactic acid bacterial isolates obtained from fermented foods of Western Himalayas to intestinal epithelial Caco-2

- and HT-29 cell lines. *Journal of Food Science and Technology*. 2017 DOI: 10.1007/s13197-017-2807-1
25. Keshani, Sharma S and Kanwar SS. Comparative Evaluation of Commercial and Indigenous Bacterial Isolates for Antigenotoxic Potential. *Food Sci Nutr Technol* 2017, 2(2): 000121
 26. Ritika Kapoor, M.K. Gupta, Naveen Kumar, S.S. Kanwar. (2017). Analysis of nhaA gene from salt tolerant and plant growth promoting *Enterobacter ludwigii*. *Rhizosphere*, (4) :62-69.
 27. SS Rana*, Dinesh Badiyala, Neelam Sharma, Rajinder Kumar and Pawan Pathania (2017). Impact of Tembotrione on Weed Growth, Yield and Economics of Maize (*Zea mays* L.) under Mid Hill Conditions of Himachal Pradesh. *Pesticide Research Journal* Vol. 29(1): 27-34.
 28. Rana S.S., Neelam Sharma, D. Badiyala and Rajinder Kumar. 2017. Weed management in turmeric. *Indian Journal of Weed Science* 49(1): 51-57. (DOI: 10.5958/0974-8164.2017.00013.2)
 29. Sharma Shivam Anand, **Kumar Rajinder**, Rana SS, Guleria Gunjanj and Negi SC (2017).Effect of Long-Term Integrated Plant Nutrition System (IPNS) in Rice-Wheat sequence on soil Biological Health. *International Journal of Advances in Agricultural Science and Technology*, 3(7):21-34.
 30. **Kumar Rajinder** , Rana Ankit, Rana S.S., Rana M.C., Sharma Neelam and Sharma G.D. (2018). Influence of Pyrazosulfuron-Ethyl on Soil Microflora, Weed Count and Yield of Transplanted Rice (*Oryza sativa* L.). *International Journal of Current Microbiology and Applied Sciences* Volume 7(2) :1757-64.
 31. **Kumar Rajinder** *, Rana Surender Singh, Sharma Neelam, Sharma GD, Chopra Pankaj and Pathania Pawan. **2018**. “Impact of Tillage and Weed Management applications on Azotobacter spp. population in Maize-Wheat System”. Conference on “Doubling the Farmers’ Income: Challenges and Strategies” CSK HP Agricultural University, Palampur during. 23-24, April, p357

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1. Singh, V., Thakur, P. and Kusum 2017. Potential of Seabuckthorn (*Hippophae* L.) - A Multipurpose Underutilized Crop of Dry Temperate Himalayas. In: Regional Expert Consultation on Underutilized Crops for Food and Nutritional Security in Asia and the Pacific, Bangkok, November 13-15, 2017.
2. Sindhu K K, Kumar Suresh, Rana S S, **Sharma Neelam** and Kumar Sachin. 2018. Economic evaluation of conservation tillage and weed management practices in maize-wheat cropping systems. Conference on doubling farmers’ income: challenges and strategies, csk Himachal Pradesh Krishi Vishvavidyalaya, Palampur, April 23-24, 2018, CD 31.
3. Kumar Rajinder, Rana SS, **Sharma Neelam**, Sharma GD, Chopra Pankaj and Pathania Pawan. 2018. Impact of tillage and weed management applications on azotobacter population in maize-wheat system. Conference on doubling farmers’

- income: challenges and strategies, csk Himachal Pradesh Krishi Vishvavidyalaya, Palampur, April 23-24, 2018, CD 46.
4. Rana Ankit, Rana MC, Rana SS, **Sharma Neelam**, Kumar Suresh and Kumar Sachin. 2018. Influence of pyrazosulfuron-ethyl on weed dry weight, yield attributes, yield and economics of transplanted rice. Conference on doubling farmers' income: challenges and strategies, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur, April 23-24, 2018, CD 94.
 5. Ankit, Bindra AD, Rana SS, **Sharma Neelam**, Kumar Suresh and Datt Naveen. 2018. Enhancing income from turmeric through integrated weed management tactics in mid hill conditions of Himachal Pradesh. Conference on doubling farmers' income: challenges and strategies, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur, 'Geo-informatics & Mathematics' Abstract of Plenary Lecture published in Souvenir of International Conference on Frontiers in Industrial and Applied Mathematics
 6. Sood Kunal, Kumari Tanu, Singh Sharda, Sharma Sanjay, Rana Ranbir S, Kalia Vaibhav & Kaushal Arun "Use of geospatial technologies for village level vulnerability assessment of water scarcity in Himachal Pradesh' Abstract published and poster presented in conference on Doubling the Farmers' Income: Challenges and strategies w.e.f. 23-24th April, 2018 organized by Agri-vision- Himachal Pradesh in collaboration with CSKHPKV, Palampur at CSKHPKV, Palampur
 7. Kumari Tanu, Singh Sharda, Sharma Sanjay, Kalia Vaibhav, Kaushal Arun & Rana Ranbir Singh 'Climate Smart Agriculture: A new agriculture paradigm for mountain regions of Himachal Pradesh' Abstract published and poster presented in conference on Doubling the Farmers' Income: Challenges and strategies w.e.f. 23-24th April, 2018 organized by Agri-vision- Himachal Pradesh in collaboration with CSKHPKV, Palampur at CSKHPKV, Palampur
 8. Rana Ranbir Singh, Ramesh, Pathania Ranu, Kalia Vaibhav, Singh Sharda and Katoch Anup, 2017. Paper entitled "Climate Vulnerability Assessment of Agriculture-Horticulture and Livestock sectors at block scale in North Western Indian Himalaya, presented in National Seminar on Agrometeorology for Sustainable Development with special emphasis on Agrometeorological Practices for Climate Resilient Farming and Food Security to be held on 12-14th October, 2017 organized by Association of Agro meteorologist and HAU, Hissar (Abstract ; page 3 ST-LI)
 9. Kalia Vaibhav, Rana Ranbir Singh, Singh Sharda, Kaundal Munish & Pathania Ranu. 2017 Paper entitled "Mapping and revisiting use of bio-resources with traditional knowledge for enhancing climate resilience in North Western Himalayan Agriculture. presented in National Seminar on Agrometeorology for Sustainable Development with special emphasis on Agrometeorological Practices for Climate Resilient Farming and Food Security to be held on 12-14th October, 2017 organized by Association of Agro meteorologist and HAU, Hissar (Abstract ; page 148 ST-VIII.1)
 10. Salaria Sahil, Rana Ranbir Singh, Kumar Sanjeev, Parekh Bheem and Sandal Sanjeev Kumar. Abstract paper entitled " Modeling Present And Future Crop Water Requirement Of Wheat Using Weather Model Under Sub Temperate Condition Of North Western Himalaya" presented in conference on Doubling the Farmers' Income: Challenges and strategies w.e.f. 23-24th April, 2018 organized by

Agrivision- Himachal Pradesh in collaboration with CSKHPKV, Palampur at CSKHPKV, Palampur (Abstract ,CD: 52 pp 37-38)

11. Kumar Sanjeev, Rana Ranbir Singh, Kalia Vaibhav, Salaria Sahil and Parekh Bheem Abstract paper entitled “Modeling crop water requirement of potato using ET based irrigation scheduling under sub temperate condition of western Himalaya”. presented in conference on Doubling the Farmers’ Income: Challenges and strategies w.e.f. 23-24th April, 2018 organized by Agri-vision- Himachal Pradesh in collaboration with CSKHPKV, Palampur at CSKHPKV, Palampur (Abstract ,CD: 56 pp 40-41)

Other research related publications (Research Reports /Book Chapters / Compendium Chapter etc.)

1. Jain, S., A. Singh, M. Chaudhary, V. Singh and S.N. Raina 2018. Intrataxon Variation in the Internal Transcribed Spacer Sequences of Nuclear Ribosomal DNA in the *Hippophae* L. In: *Seabuckthorn-A Multipurpose Wonder Plant. Vol. V. Advanced Technologies for Cultivation, Processing, health Protection and Environmental Conservation*, Daya Pub. House, New Delhi, pp.41-46.
2. Chinchu Bose, Virendra Singh, Walter Schrenk and Asoke Banerji 2018. Molecular Characterizations and Bioactivities of Isolated Seabuckthorn Constituents. In: *Seabuckthorn-A Multipurpose Wonder Plant. Vol. V. Advanced Technologies for Cultivation, Processing, health Protection and Environmental Conservation*, Daya Pub. House, New Delhi, pp.135-142.
3. Mishra, J., Rakhee, P. Sharma, R. Tulswani, V. Singh and K. Misra 2018. HPTLC Characterization of Phytoconstituents in Seabuckthorn Leaves: A Comparative Study of Different Species. In: *Seabuckthorn-A Multipurpose Wonder Plant. Vol. V. Advanced Technologies for Cultivation, Processing, health Protection and Environmental Conservation*, Daya Pub. House, New Delhi, pp.219-226.
4. Kumar, A., S.P. Tyagi, P. Shastri, R. Dogra, A. Kumar and V. Singh 2018. Synergistic Efficacy of the Combination of Seabuckthorn Seed Oil and Famotidine or Lansoprazole for Treatment of Gastric Ulcerations and Erosions in Dogs. In: *Seabuckthorn-A Multipurpose Wonder Plant. Vol. V. Advanced Technologies for Cultivation, Processing, health Protection and Environmental Conservation*, Daya Pub. House, New Delhi, pp.229-234.
5. Thakur, D., S.P. Tyagi, A. Kumar, S. Gupta and V. Singh 2018. The Comparative Therapeutic Efficacy of the Combination of Seabuckthorn Seed Oil and Misoprostol or Sucralfate in Gastric Ulcers and Erosions in Dogs. In: *Seabuckthorn-A Multipurpose Wonder Plant. Vol. V. Advanced Technologies for Cultivation, Processing, health Protection and Environmental Conservation*, Daya Pub. House, New Delhi, pp.359-366.
6. Verma, R., S. Sharma, Y.S. Dhaliwal and V. Singh 2018. *Formulation and Quality Evaluation of Seabuckthorn Blended Sand Pear Squash*. In: *Seabuckthorn-A Multipurpose Wonder Plant. Vol. V. Advanced Technologies for Cultivation,*

Processing, health Protection and Environmental Conservation, Daya Pub. House, New Delhi, pp. 439-446.

7. Dhaliwal, Y.S., Verma, R., S. Anand and V. Singh 2018. Nutritional quality and acceptability of food products prepared from seabuckthorn berries (*H. salciifolia*) grown in Lahaul valley of Himachal Pradesh. In:*Seabuckthorn-A Multipurpose Wonder Plant. Vol. V. Advanced Technologies for Cultivation, Processing, health Protection and Environmental Conservation*, Daya Pub. House, New Delhi, pp. 465-472.
8. Sharma, A., Virendra Singh, SP Dixit and Kanika Baghla. 2018. *Role OfSeabuckthorn In Improvement Of Soil Fertility In Cold Desert Of Himalayas*. In:*Seabuckthorn-A Multipurpose Wonder Plant. Vol. V. Advanced Technologies for Cultivation, Processing, health Protection and Environmental Conservation*, Daya Pub. House, New Delhi, pp. 475-484.
9. *Sharma, V.K., S. Shama, D. Rani, A. Parmar and V. Singh 2018. To Increase the Poultry Broiler Production by Probiotics Addition in the Seabuckthorn Cake Based Ration. In: Seabuckthorn-A Multipurpose Wonder Plant. Vol. V. Advanced Technologies for Cultivation, Processing, health Protection and Environmental Conservation, Daya Pub. House, New Delhi, pp. 527-533.*
10. Kalia Vaibhav, Rana Ranbir Singh and Singh Sharda 2017. “Geospatial technology for livestock Management in the scenario of climate: change”. Chapter In Short Training Course on “Sustaining Agricultural and Livestock Productivity, In The Scenario of Climate Change organised by Directorate Of Research, Sher-E-Kashmir University of Agricultural Sciences & Technology of Jammu (August 29 - September 04, 2017)” pp 184-189.
11. Rana Ranbir Singh, Pathania Ranu & Sharma Anand and Kalia Vaibhav. 2017. “*Climate Change Implications in North Western Himalayan Region Current Status and Adaptations Strategies*”. Chapter In Short Training Course On “Sustaining Agricultural and Livestock Productivity in the Scenario of Climate Change organised by Directorate Of Research, Sher-E-Kashmir University of Agricultural Sciences & Technology of Jammu (August 29 - September 04, 2017)” pp 171-183.

Extended Summary/Abstract Published in Compendium:

- Rana Ranbir Singh, Kalia Vaibhav, Sood Kunal, Kaushal Arun, Singh Sharda and Bhagat R.M., 2018. Land Cover Classification and Digital Elevation Model for Crop Planning and Management in Himachal Pradesh, Indian. Abstract published in Souvenir of National conference on “Role of Geospatial Technologies to bridge Rural and Urban Divide”, organized by Indian Society of Geomatics- Ludhiana Chapter & Punjab remote Sensing Centre Ludhiana w.e.f. February 22-23, 2018. Page 13.
- Kalia Vaibhav, Rana Ranbir Singh, Bhagat R.M., Sood Kunal, Kaushal Arun, and Singh Sharda, 2018. Geospatial Mapping and Estimation of District Wise Surface Area for Sustainable Land Management in Himachal Pradesh, Abstract published in Souvenir of National conference on “Role of Geospatial Technologies to bridge Rural

and Urban Divide”, organized by Indian Society of Geomatics- Ludhiana Chapter & Punjab Remote Sensing Centre Ludhiana w.e.f. February 22-23, 2018. Page 15.

- Shankhyan N.K., Rana Ranbir Singh, Kalia Vaibhav, Sharma Sanjay Kumar, Kumar Pradeep, Sood Kunal, Kaushal Arun, 2018. Mapping Spatial Variability of Soil Health Under Agricultural Production System of Himachal Pradesh. Abstract published in Souvenir & abstract of National conference on “Role of Geospatial Technologies to bridge Rural and Urban Divide” , organized by Indian Society of Geomatics- Ludhiana Chapter & Punjab remote Sensing Centre Ludhiana w.e.f. February 22-23, 2018. Page 14.
- Salaria Sahil, Rana Ranbir Singh, Kumar Sanjeev, Parekh Bheem and Sandal Sanjeev Kumar. Abstract paper entitled “ Modeling Present And Future Crop Water Requirement Of Wheat Using Weather Model Under Sub Temperate Condition Of North Western Himalaya” presented in conference on Doubling the Farmers’ Income: Challenges and strategies w.e.f. 23-24th April, 2018 organized by Agrivision- Himachal Pradesh in collaboration with CSKHPKV, Palampur at CSKHPKV, Palampur (Abstract ,CD: 52 pp 37-38)
- Kumar Sanjeev, Rana Ranbir Singh, Kalia Vaibhav, Salaria Sahil and Parekh Bheem Abstract paper entitled “Modeling crop water requirement of potato using ET based irrigation scheduling under sub temperate condition of western Himalaya”. presented in conference on Doubling the Farmers’ Income: Challenges and strategies w.e.f. 23-24th April, 2018 organized by Agri-vision- Himachal Pradesh in collaboration with CSKHPKV, Palampur at CSKHPKV, Palampur (Abstract ,CD: 56 pp 40-41)

Technical Reports:

1. Online publishing of Projects’ outputs on Web GIS Portal
<http://14.139.224.135/myapp/cgrtportal/index.html>
2. Sharda Singh 2017. Quarterly Technical Reports of the Project “Development of framework for Networking Programme on Village Information System (VIS) under NRDMS” in Review Meetings
3. Ranbir Singh Rana 2017. Presented the annual report of Forecasting Agricultural Output using space, Agro meteorology and land based observations (FASAL) project during 8th ARM of FASAL on 17 (AN)-18 (afternoon) November, 2017. As PI
4. Ranbir Singh Rana, 2016-17 Annual progress report of project entitled “Seventh Annual Review Meeting of Integrated Agromet Advisory Services project held at 15th to 17th (Forenoon) November, 2017 at IGKV Raipur (C.G) As PI
5. Ranbir Singh Rana, 2016-17 Annual progress report of project entitled “Climate Change Impact on productivity of Food grain and Plantation crops. Submitted to IIRS Dehradun.

Brain Storming /State level Steering Committee Meetings/ Conclave/Specialized Meetings/Trainings attended:

1. **Dr. Neelam Sharma** participated in Agricultural Officers workshop on *Rabi* crops-2017 organized by Directorate of Extension Education, CSKHPKV, Palampur, Oct. 21, 2017.
2. **Dr. Neelam Sharma** participated in an orientation workshop for newly appointed HODs CSK Himachal Pradesh, Palampur, March 5-6, 2018.
3. **Dr. Neelam Sharma** participated in Agricultural Officers Workshop on kharif crops, organized by Directorate of Extension Education, CSKHPKV Palampur, May 9, 2018.
4. **Dr. Neelam Sharma** participated in XXV Annual Review Meet of AICRP-Weed Management at GB Pant University of Agricultural Sciences and Technology, Pant Nagar, June 7-8, 2018 *Attended Training course on stress management from 27-12-17 to 29-12-17 at CSKHPKV, Palampur.*

Dr. Anita Singh

5. Attended awareness workshop on TDS/TCS provisions for Government Tax Deductors on 6th October 2017 conducted by the Income Tax Department.
6. Attended National workshop on Scenario of Medicinal Plants in Himalayan Region-cultivation, processing and marketing on 10-11 October 2017 at CSIR-IHBT, Palampur.
7. Attended workshop on Intellectual Property Rights-Issues & Challenges on 18th March, 2017 at CSKHPKV, Palampur.

Dr. Virendra Singh

8. National Conference on Seabuckthorn at Leh on Sept. 22-24, 2017

Dr. Sharda Singh

9. International Conference on Frontiers in Industrial and Applied Mathematics (FIAM-2018, <http://www.fiam2018.org>) on 26-27 April 2018 in association with ISIAM-The Indian Society of Industrial and Applied Mathematics
10. Conference on ‘Doubling Farmers’ Income: Challenges and strategies’ on 23-24 April, 2018 organized by Agri-vision- Himachal Pradesh in collaboration with CSKHPKV, Palampur at CSKHPKV, Palampur
11. Represented University in a Conference ‘Artificial Intelligence: Potential Applications in Himachal Pradesh’ on 14.05.18, deputed by Hon’ble Vice-Chancellor, organized by State Council for Science, Technology & Env. at Secretariat, Shimla
12. Attended Training on EAT (Expenditure, Advances and Transfer) under PFMS organized by Comptroller, CSKHPKV-Palampur
13. Attended Training on “Stress Managements” for Statutory Officers & Heads of Departments organized by CSKHPKV from 27th Dec 27 to 29th Dec 17 vide letter No. QSD.8-52/CSKHPKV(GA)/67858-922 dated 21st Dec 2017 conducted by Dr MS Vignesh

Dr. Ranbir Singh Rana

14. Attended the National Agricultural Higher Education Project workshop on 23.8.2017 at NASC, Complex, New Delhi
15. Attended 11th Annual Review Meeting (ARM) of Gramin Krishi Mausam Sewa (GKMS) to be held during 15th to 17th (Forenoon) November, 2017 and attended 8th ARM of FASAL on 17 (AN)-18 (afternoon) November, 2017 at IGKV Raipur (C.G)
16. Attended National Seminar on *Agrometeorology for Sustainable Development with special emphasis on Agrometeorological Practices for Climate Resilient Farming and Food Security* to be held on 12-14th October, 2017 at HAU Hissar organized by Association of Agro meteorologist and HAU, Hissar.
17. Attended the 5th meeting of district level expert appraisal committee (DEAC) on 23.9.2017 at meeting hall o/o Deputy Commissioner Dharamshalla and cleared five cases.
18. Attended 6th meeting of district level expert appraisal committee (DEAC) rescheduled on 18.5.2018 as an expert
19. Invited as an expert panelist in Brain Storming Meeting on “Climate Change impacts on Mountain Ecosystem vis-a-vis crafting adaptations and mitigation strategies for sustainable livelihood in HP as at YSPUHF-Solan on 7.5.2018 as Expert and delivered lecture on “Impacts of climate change on field crops.”
20. Invited as an expert panelist in Brainstorming meeting on “Future strategies for the need and scope of EFRS products for robust agriculture adversaries at IIT-Bhubneshwar during 9-10th May, 2018 as an expert panelist and delivered lecture on “Application of Extended Range forecast system for crop planning and operations under sub-humid and temperate wet conditions of H.P.”
21. Invited as an expert panelist in One day Brain storming meeting as expert on 04 May 2018 at IMD, New Delhi On “Prepare the road map for successful implementation of block level advisory services in India as an expert panelist.”
22. Nodal Officer for National Agricultural Higher Education Project (NAHEP) vide letter no QSD.8-10/2014-CSKHPKV(GA)-44018-33 dated 21.8.2017
23. Expert Member for: formation of knowledge Networks among the existing knowledge institutions engaged in research and developments relating to Climate change Science and facilitate data generations, sharing and exchange through a suitable policy framework and institutional support for State centre for climate change DEST Shimla (Vide letter no QSD.2-32017/CSKHPKV/(GA)-51069-71 dated 7th September, 2017
24. Nominated as expert for working on Artificial Intelligence in Agriculture vide letter no QSD.8-51/2017-CSKHPKV (GA)Vol.IV/-15716-18 dated March 28, 2018
25. Entrusted to present Entire Himalayan regions GKMS Work at ARM, Raipur.
26. Observer in NEET-2018 at Hamirpur on 5 & 6th May, 2018 by CBSE
27. Member of ISO, COBS vide letter no ISO/06-CSKHPKV (COBS-Estt.)/1730-33 dated 12.7.2017
28. Member of ragging squads in COBS vide letter no. QSD.3-40/2016-CSKHPKV (COBS)-Acad)-2015-35 dated 21/7/2017
29. Member of Formulation and screening Committee of COBS, vide letter no. 2288 dated 5.8.2017

30. Member of Task force of SSA-2018 COBS CSKHPKV, ET-18 UG as supervisor at DAV Public School Hamirpur on 8-9 June, 2018
31. Working committee member for Group I on Preparation and Quality of Agromet Advisories
32. Working Group Member on FASAL project also.
33. Acted as Co-chairman of technical session sub-Theme-1 in National Seminar on *Agro meteorology for Sustainable Development with special emphasis on Agrometeorological Practices for Climate Resilient Farming and Food Security* to be held on 12-14th October, 2017 at HAU Hissar organized by Association of Agro meteorologist and HAU, Hissar

Dr. Sanjay Sharma

34. Attended 5th Evaluation Meeting of VIS Programme under VIS Project at Nainital, w.e.f. July 13-4, 2018
35. Attended 6th Evaluation Meeting of VIS Programme under VIS Project at Andhra University, Visakhapatnam w.e.f. April 27-28, 2018

Conference/Workshop/ Annual Review Meeting/Training Organized

Dr. Sharda Singh

- Convener for Poster Presentations in conference on Doubling the Farmers' Income: Challenges and strategies organized by Agri-vision- Himachal Pradesh in collaboration with CSKHPKV, Palampur at CSKHPKV, Palampur on 23-24th April, 2018

Dr. Ranbir Singh Rana

- Organized International WORKSHOP UNESCO, IMS and IMD SOUTH ASIAN on STRENGTHENING EARLY WARNING FOR DISASTER RISK REDUCTION IN HIMALAYAN AGRICULTURE w.e.f 25-26th October, 2017 As national Convener and Organizing Secretary 52 International and national Experts from Nepal , Srilanka, Bhutan participated

Mr. Vaibhav Kalia

- Organized 'National Workshop on Popularization of Remote Sensing based maps and Geo-spatial Information' on 11th of August, 2017 in collaboration with Indian Institute of Remote Sensing, Dehradun through online mode at CGRT, COBS.

Dr. Sanjay Sharma

- Organized two days Conference under the major theme "Doubling the Farm Income: Challenges and Strategies" in collaboration with Agricultural Scientist Forum, and Chaudhary Sarwan Kumar Himachal Pradesh Agricultural University w.e.f. April 23-24, 2018 at Palampur

International Event Participation by Faculty and Student:

Dr. Virendra Singh Attended

- Regional Expert Consultation on Underutilized Crops for Food and Nutritional Security in Asia and the Pacific on November 13-15, 2017, Bangkok, Thailand.
- Attended the Regional Workshop on Seabuckthorn, Feb. 4-7, 17-21, 2018 at Taiyuan, China.

Journal Referee

- Dr. Sharda Singh
 - Journal “Advances in Applied Research
- Dr. Ranbir Singh Rana
 - Journal of Agrometeorology for year 2017-18.

Interview Conducted:

Dr. Sharda Singh

- Subject Expert for CAS Interview at Central University of Himachal Pradesh (CUHP), Dharamshala on 23.03.18

Dr. Ranbir Singh Rana

- Nominated as member of assessment of Technical group-III under revised MANAS vide confidential no. IHBT-2-7/402/2016 dated 6.10.2017
- Empanelled for ASRB experts-2017.

Mr. Vaibhav Kalia

- Member of Assessment Committee for Technical Staff Group-III at IHBT.

EXTENSION ACTIVITIES

- 16 SMS to 2.79 lakhs registered farmers during July 17 to June 2018 as per quota were sent to farmers of Chamba, Una, Hamirpur and Kangra through MKisan Portal of MOA, GOI, New Delhi totaling about 29.63715 lakhs farmers and the total reads/hits of Agro-advisory bulletins for September, 2017 to June 15, 2018 are 169235 (As per website report)
- Published The total 96*4=384 AAS bulletins during July 1, 2017 to June 30th, 2018 were prepared in English and Hindi for Chamba, Una, Hamirpur and Kangra districts of H.P. and published in university website (www.hillagric.ac.in /kisanokeleye and www.imdagrimet.gov.in. Kisan Portal (www.farmers.gov.in; www.weathershimla.gov.in and mkisan.gov.in and www.cropweatheoutlook.com of CRIDA (ICAR) websites

Popular/ Extension articles

1. Popular articles:

रणबीर सिंह राना*, रानू पठानिया*, सुदेश रंडोंत्रा**, वैभव कालिया* एवं शारदा सिंह*. 2018. हिमाचल प्रदेश की पर्वतीय कृषि में जलवायु परिवर्तन अनुकूलन और शमन विकल्पों की

समीक्षाविज्ञानं गरिमा सिंधु त्रमसिक विज्ञानं पत्रिका कृषि विज्ञानं विशेषांक, मार्च 104, pp 57-64. VIGYAN GRAIMA SINDHU, MHRD (Higher Education Department) GOI New Delhi Magazine Vol. 104 Jan-March, 2018 pp 57-64

Department of Microbiology

Extension activities

Parthenium Awareness Week Observed w.e.f. 17th August, 2017-22nd August, 2017

Name of the programme and	Period	Lecture	Participants	Scientists
Govt Senior Secondary School, Rajpur	17.08.2017	1	211	Dr. Neelam Sharma, Dr. SS Rana, Dr. GD Sharma and Rajinder Kumar,
College of Agriculture, CSKHPKV, Palampur	17.08.2017	1	81	-do-
NSS Volunteers, CSKHPKV, Palampur	18.08.2017	1	106	-do-
NCC cadets, CSKHPKV, Palampur	19.08.2017	1	186	-do-
Farmers Kullu and Kangra, DEE	21.08.2017	1	72	-do-
Govt Senior Secondary School, Ghar	22.08.2017	1	202	-do-

Organized Summer Schools/workshops/seminars/symposia/Extension Activity/One day Awareness programme etc.

Chemistry and Biochemistry

- *Parthenium* Awareness week Aug 16-22, 2018. (Dr. Neelam Sharma, As Course Director)
- Exhibition, lecture and practical demonstration on uprooting of *Parthenium* were organized for farmers. Farmers Village Dharer, students and staff. Govt. Sr. Secondary School Rajpur, the students and staff. College of Agriculture, CSKHPKV, Palampur, NSS volunteers of COBS. NSS Volunteers, NCC Cadets. NCC cadets, to farmers of Kullu and Kangra and at Govt. Sr. Secondary School Ghar

As Resource Person (Dr. Neelam Sharma):

Extension Lecture Delivered 10 (Dr. Neelam Sharma)

1. Training programme on Weed Management to the Project staff of JICA Mandi.
2. Training programme on Weed Management to the Project Staff of JICA Una

2. Training Programme on Prospectus of Linseed/Flax cultivation in H.P. for Officers of Agriculture Deptt

CGRT

1. Organized Focus Group Interaction Meetings (Self Help Groups/Anganwari Workers) at Aima, Bandla and Lohna Panchayat Palampur under Cluster I under NRDMS-DST VIS Project on 12th, 14th and 25th September, 2017
2. Organized Focus Group Interaction Meetings (Self Help Groups/Anganwari Workers) at Cluster II of Jankaur Panchayat Una under VIS Project under NRDMS-DST VIS Project 20th November, 2017

Invited/ Technical Lectures

Dr. Sharda Singh:

- Invited Plenary Lecture ‘Geo-informatics & Mathematics’ in International Conference on Frontiers in Industrial and Applied Mathematics (FIAM-2018) on 26-27 April 2018 at NIT Hamirpur, HP
- Invited Lecture ‘Application of Geo-informatics and Remote Sensing in Agriculture’ on 02.01.18 in IASRI, New Delhi
- Invited Lecture ‘Remote Sensing, its concepts, need, merits and applications’ on 11.07.17 in DEE, CSKHPKV-Palampur

Dr. Ranbir Singh Rana

- Invited Lecture on पहाड़ी कृषि में जलवायु परिवर्तन के सम्बन्ध में अनुकूलन एवंअल्पीकरण विकल्पों का आंकलन (Climate change vis-a-vis adaptations and mitigations strategies in mountain agriculture) भारतीय कृषि आर्थिकी शोध संस्थान भारतीय किसान संघ का प्रकल्पद्वाराअखिलभारतीयकार्यकारणीबैठक, चौंसकुंकृषिविंविंपालमपुर 4-5, अक्टूबर 2017.
- Invited Lecture on “Estimation of crop water requirements using the weather models under varied climate” in National training on Recent Advances in micro Irrigation and fertigation for enhancing water and crop Productivity under open and protected Environment (4.10.2017) 7th to 16th October, 2017, organized by Department of Soil Science CSKHPKV ,Palampur
- Invited Lecture on “Impacts of climate change on field crops.” as an expert panelist at YSPUHF-Solan on 7.5.2018 in Brain Storming Meeting on “ Climate Change impacts on Mountain Ecosystem vis-a-vis crafting adaptations and mitigation strategies for sustainable livelihood in HP
- Invited Lecture on “Application of Extended Range forecast system for crop planning and operations under sub-humid and temperate wet conditions of H.P.” in Brainstorming meeting on “Future strategies for the need and scope of EFRS products for robust agriculture adversaries at IIT- Bhubneshwar during 9-10th May, 2018 as an expert panelist.

- Special presentation of Completed work of AMFUs of Himalayan Region (Himachal Pradesh, Jammu & Kashmir, Uttarakhand) work in 11th Annual Review Meeting at IGKV Raipur (C.G) on 15.11.2017
- Invited special Lecture on “Potential of Organic Farming in Changing Climatic Conditions to RAWE Students on May 12, 2018, Organized by RAWE Team, 2018
- Invited as senior thematic experts lecture on the “Impact of Climate Change on Agriculture and Livestock” on 29th June 2018 organized jointly by the Centre for Media Studies (CMS), New Delhi, in partnership with the Ministry of Environment, Forests and Climate Change (MoEFCC) and Germany Technical Collaborator (GIZ) Embassy of Germany, New Delhi, on 29th June, 2018 at Dharamshalla.

Miscellaneous/Other responsibilities entrusted at various levels

(Department/College/University)

Department of Physical Sciences and Languages

- Some of the faculty members were assigned duties by the Dean, COBS for counseling and registration for admission to first year of B.Sc. programme.
- Dr. Sheela Thakur has been the member of Anti-Ragging Committee at College level.
- Dr. Sheela Thakur has been entrusted with the duty of Warden, Girls Hostel.
- Dr. Sheela Thakur is advisor to 20 undergraduate students of the College.
- Dr. Sheela Thakur is member of Cultural Committee of the College.
- Dr. Sheela Thakur is Store Incharge of the department of Physical Sciences and Languages.
- Sh. Kapil Sharma is managing e-Resources in the University Library.
- Sh. Kapil Sharma has been looking after the work of University Network System in the absence of Mr. R.K. Chandel.
- Sh. Kapil Sharma has been entrusted with the responsibility of handling Online Application System for Admission to Entrance Test Based Admissions to the University.
- Sh. Kapil Sharma has been Database Administrator for post-examination processing of result of Entrance Examination-2018 for admission to Entrance test based admission for various programmes of the University.
- Sh. Kapil Sharma has been a member of Task Force for Preparation of Self Study Report of the College
- Sh. Kapil Sharma has been in-charge of College Badminton and Table-Tennis team.
- Sh. Kapil Sharma is a member of Editorial Board for up-loading e-Newsletter of the University. Wherein he is responsible for HTML/CSS based designing the eNewsletter.
- Sh. Kapil Sharma is entrusted with the duties of being the Editor (Technical Section) of the College Magazine “VigyanPunj”.

- Sh. Kapil Sharma has been entrusted with the duty of updating the database to keep record of personal Information of students admitted in the College of Basic Sciences and to generate their Identity cards.
- Sh. Kapil Sharma has re-designed VBA based semester reports under the new3 VCI guidelines for the students of B.V.Sc. & A.H.
- Sh. Kapil Sharma has re-generated VBA based semester reports for the students of College of Basic Sciences newly admitted under CBCS.
- Sh. Kapil Sharma has been responsible for generating QR codes for degrees awarded during the 14th convocation of the University.
- Sh. Kapil Sharma has performed duty as Centre Supervisor at Anuradha Public School, Maranda, Palampur for the conduct of Entrance Test (ET-2018) for undergraduate courses of CSKHPKV, Palampur
- Sh. Kapil Sharma has performed duty as Invigilator at College of Basic Sciences for the conduct of Entrance Test (ET-2018) for postgraduate courses of CSKHPKV, Palampur
- Sh. Kapil Sharma has been College Coordinator, Student Counseling & Placement.
- Sh. Kapil Sharma has been a member of Financial Management cum Refreshment Committee for the conduct of 25th Annual Inter College Matches held during 22-09-2018 to 27-09-2018 in Khel Parisar of S.W.O., CSKHPKV, Palampur.
- Sh. Kapil Sharma has been a member of Selection Committee, for the post of R.A. in the directorate of Extension Education.
- Sh. Kapil Sharma has been a member of Screening Committee for scrutinizes the applications for the post of Junior Office Assisatnt (IT).
- Sh. Kapil Sharma has been a member of Anti Ragging Committee of College
- Sh. Kapil Sharma has been a member of Canteen Management Committee of the College.
- Sh. Kapil Sharma is advisor to 17 undergraduate students of the College.
- Sh. Kapil Sharma has been a member of the Committee formed for the Assistance of College Admission Committee during counseling for admission to the UG programme of the College for the Academic Year 2017-18.
- Sh. Kapil Sharma has been a member of Media and Publicity Committee for the organization of Agricultural Education Day on 3-12-2018.
- Sh. Kapil Sharma has been a co-member of the Committee for the Sale and Purchase of HP Computers and Printers for Administration Block of CSKHPKV, Palampur.

Department of Biology and Environment:

Dr. Usha Rana

- Incharge of cultural activities of the college
- Prepared annual report of the college for the year 2017-18.
- Member in the committee constituted for checking and scrutinizing the original document & rendering help to the admission committee
- Incharge of web page update of the department. Incharge of store of the department

till November,2017 and after that became UG laboratory incharge and in report writing committee (Annual, monthly and any other) of the Department along with HOD.

- As member in the patkas/stoles/scarves/sashes procurement/distribution committee for the 14th convocation at University level.
- Warden of the Parvati Girl's Hostel of the university till October.
- As registration committee member for the organization of Agricultural Education day on 3.12.2017.
- As discipline committee member for the smooth conduct of cultural night.
- As committee member for the sale purchase and inspection committee for the purchase of store articles of the college.
- As committee member to verify the case of unfair means

CGRT Faculty

- Re-designed syllabus for Geo-informatics courses for UG, COA as per Dean, COA , CSK HPKV-Palampur
- Collaborations with IIRS for EDUSAT based Seminar/trainings in Geo-informatics in the University
- Conducted VIP visits in CGRT (List in VIP Visits Section)

Dr. Sharda Singh:

- Programme Director, Centre for Geo-informatics , Research and Training
- Member, Academic Council, CSKHPKV-Palampur
- Academic Incharge, College of Basic Sciences
- Member, Board of Studies, College of Basic Sciences
- Member Screening Committee for hiring teachers, College of Basic Sciences. Attended meetings on 29.09.17, 22.07.2017, 12.03.18.
- Member of Enquiry Committee constituted regarding 'marking absent of students of Biology and Env. Sciences in Credit Seminar ENV591'
- Member College Merit Scholarship & Amar Shaheed Captain SauravKalia Memorial Scholarship (Got prepared list of students of all the years of B.Scprogramme for their preference of scholarship by convening number of meetings with the students)
- Attended Academic Council Meetings 170th (28.08.17), 171st (22.01.18) & 172nd (05.04.16) of CSKHPKV Palampur
- Attended Brain Storming Session to discuss road map for National Agricultural Higher Education Project on 26.08.17 convened by Director of Research under the Chairmanship of Hon'ble Vice-Chancellor, CSKHPKV-Palampur
- Attended various Meeting relating to Feedback form, Steering Committee/Task Force, CDA Grants, Unfair Means meetings convened by Dean, COBS

- Attended Meeting of 47th emergent meeting of Board of Studies, COBS, CSKHPKV, Palampur
- Attended Inauguration of RFID system in CSKHPKV, Palampur on 24.02.18
- Member of Discipline Committee for 'Athletic Meet' May 5-6th, 2018
- Member of Judges for Poster making Competition conducted under NSS 17-18
- Prepared/compiled information for 113th meeting of Board of Management, Jan 18.
- Information to Hon'ble Vice Chancellor through Dean, COBS in respect of letter No. 2819 dated 26th Dec 17 regarding EOAPAR, projects more than Rs 50.0 Lakh
- Screened Mathematics portion of the ET-2017 conducted by CSKHPKV-Palampur
- Table Evaluation of Mathematics Course Papers of B.Sc. Agriculture vide letter No QSD/3-58 (Acad)/COA 8962-91 dated 21st of Dec 2017
- Attended thesis viva-voce examination of student Admission No. S-2015-30-001 on 21.12.17
- Attended Synopsis Seminar of student Admission No. A-2017-30-001 on 6.01.2018
- Prepared Information for HP State Innovation Award in respect of COBS
- Prepared Information Persons with disabilities Act for COBS
- Got procured/Installed Projector, White Board, digital podium for Lecture Theatres in COBS
- Processed for purchase & got Installed Curtains, Display Boards at College level and for all the Departments of COBS
- Chairman for opening Quotations of accessories for washroom, purchase of curtains in COBS

Dr. Ranbir Singh Rana

- Appointed as member of National Organising committee for National Seminar: Agrometeorology for sustainable development with special emphasis on Agrometeorological Practices for Climate resilient Farming and Food security to be organised by Association of Agro-meteorologist and CCS Haryana Agricultural University, Hissar India 12-14 October, 2017
- Appointed as member of National Organising committee for International Seminar on Advances in Agrometeorological for Managing Climatic risks of Farmers (INAGMET-2018) to be held w.e.f. November, 25-28, 2018 New Delhi Organized jointly by Association of agro meteorologist (AAM) , India Meteorological Department , ICAR-Indian agricultural Research Institute (IARI).
- Working committee member for Group I on Preparation and Quality of Agromet Advisories
- Working Group Member on FASAL project also.
- Acted as Co-chairman of technical session sub-Theme-1 in National Seminar on *Agrometeorology for Sustainable Development with special emphasis on Agrometeorological Practices for Climate Resilient Farming and Food Security* to be held on 12-14th October, 2017 at HAU Hissar organized by Association of Agro meteorologist and HAU, Hissar.

Mr. Vaibhav Kalia

- Member of admission committee of COBS.
- Prepared time table and date sheet and seating plans for Ist and 2nd Semester of Academic Year 2017-18.
- Member of COBS Anti-ragging Squad.
- Game in-charge of Cricket and Volleyball for COBS.
- Assisted the Members of admission committee for counseling and Walk In interview of COBS, and prepared the admission selection and waiting lists.
- Member of COBS Canteen Management Committee.
- Member of inspection committee for UTM firewall installed in UNS.
- Assisted the Members of admission committee for second Walk In interview of COBS.
- Member of committee for Organizing Agriculture Education Day on 03.12.2017.
- Performed Election Duty for 19-AC Palampur on Election Day and then in the Compilation section to prepare Election Commission Reports.
- Member of Assessment Committee for Technical Staff Group-III at IHBT.
- Member of track events committee for 25th Annual Athletic meet of University during 5-6 May 2018.
- Member of University level team for PMAT, and additionally worked for uploading data into PMAT software portal.
- RKVY Data Entry on RKVY MIS National Portal (<http://rkvymis.dacnet.nic.in/>).
- Web manager COBS website.
- NKN Security Officer for University Internet & COBS LAN Segment In-charge.
- NISAGNET (COBS) nodal officer.
- Uploaded data of various scholars of the University on UGC Scholarships Portal.

Software Development:

[Web-Application] Web based academic Student System for COBS

The objective of the website is to collect process and generate student courses registration and attendance information, as per requirements of the Academic Regulation 4.1.1. This website generates various other secondary reports for Course Instructors and Academic Assistant of the College, which are helpful in the conduct of examinations in the college.

[Utility] Internet connectivity checking for GIS Server

This utility was made to check the network and internet connectivity to conclude a possibility of power failure in COBS. Once it detects a power failure, under a stipulated time period set in the application, the server is gracefully shut down by the application. This application is useful after office hours.

[Web-Utility] Student Information collection for generating USID

In reference to Registrar's Letter No. QSD.17-16/Acad/CSKHPKV/17/52616-21 dated 18.09.2017 information was required to be collected from all students of the

College, which was to be submitted in digital format to ICAR for generating Unique Student ID (USID) for the students. This web-utility captured Admission No., Name, Aadhar No., Email, Mobile, Category (General, SC, ST, OBC) (and Phy. Handicap status, if any) submitted by the students of COBS. The mobile friendly view of this utility enabled student to directly provide information from their mobile phones.

VIS-Data Portal

This portal is designed to provide display, query and exporting the data collected in the VIS project. Various themes like cadastral data, buildings data, mobile towers, electrical infrastructure, parks, playgrounds, trees, water ICPMS data, drinking water samples(pre and post monsoon), soil infiltration, soil samples (pre and post monsoon) etc. are listed on the portal. The portal display the image of the asset, and also shows its location on google maps for quick location reference. The data can be exported to Excel (CSV) format.

[Utility] CSKHPKV-Entrance Test Data Backup Application

This utility was designed and installed in COBS Academics server. The data backup folders of ET Server were mapped in COBS server (M: N: O: drives). With a timer was set in the application, after specific time period elapsed the utility copied the database file along with all photographs and signatures to COBS Academics server. The utility also sent an email, after data was copied enabling the ET Server Admin to monitor the progress of the entire task.

CSKHPKV ET-2018 (maintenance only)

As per the orders received vide order No. QSD.7(2)Prospectus-CSKHPKV(Acad)/5611-28 dated 30.01.2018, worked for ET-2018 Admissions Web application developed by Sr. System Analyst from February 2018. Performed the following tasks:

1. Installation of server software and setting of application and database in multiple machines for practice.
2. Code walk-through for the system, to understand the system flow, and making minor changes as per the requests.
3. Setup a parallel working replica of server for multiple iterations for practice the end to end process flow in the system.
4. Creating a backup application, to extract data from server and post
5. Making SQL queries on the database for providing information as and when required by ET coordinator.
6. Worked as invigilator for PG-Entrance Exam 2018.
7. Worked for Post Exam Result Processing for both UG-ET-2018 and PG ET-2018.

Specialized work by Research Staff

- Mr.Kunal Sood and Mr. Arun Kaushal prepared Election constituencies maps of district Kangra as per the instructions of District Election Officer (DEO) Kangra.
- Mr. Kunal Sood, member in Poster management committee during organization committee of conference on “Doubling farmers’ income : Challenges and Strategies” on 23rd -24th April,2018, at CSK HP Agriculture University Palampur.
- Mr. Arun Kaushal, member in Poster management committee during organization committee of conference on “Doubling farmers’ income : Challenges and Strategies” on 23rd -24th April,2018, at CSK HP Agriculture University Palampur.
- Ms. Tanu Kumari, member in Registration committee during organization committee of Conference on “Doubling farmers’ income : Challenges and Strategies” on 23rd - 24th April 2018, at CSK HP Agriculture University Palampur.

AWARDS/RECOGNITION:

- **Dr R C Chauhan nominated as** *Member Extension Council of University and Member University Publication Committee.*
- Vaibhav Kalia, Kunal Sood, Sharda Singh, Ranbir Singh Rana and Arun Kaushal ‘Appreciation Certificate/Award for GIS based Web Portal for District Disaster Management Plan for the district Hamirpur’. Work was appreciated in ‘UN-SENDAI framework Conclave’ of disaster management under the Chairmanship of Hon’ble Chief Minister of Himachal Pradesh vide Certificate/letter No DCH/Relief/117 dated 27.09.17.
- Dr. Sharda Singh and Dr. Ranbir Singh Rana were invitees in Felicitating Meeting by Hon’ble Vice-Chancellor for having Research Project for more than 50.00 Lakh and Extra ordinary APAR respectively on 01.01.2018.
- Member of National Organizing committee for National Seminar: Agrometeorology for sustainable development with special emphasis on Agrometeorological Practices for Climate resilient Farming and Food security to be organised by Association of Agro-meteorologist and CCS Haryana Agricultural University, Hissar India 12-14 October, 2017
- Member of National Organizing committee for International Seminar on Advances in Agrometeorological for Managing Climatic risks of Farmers (INAGMET-2018) to be held w.e.f. January, 25-28, 2019 New Delhi Organized jointly by Association of agro meteorologist (AAM) , India Meteorological Department , ICAR-Indian agricultural Research Institute (IARI).

OPERATIONAL MOUS/COLLABORATION WITH FOREIGN INSTITUTIONS/ INDIAN INSTITUTIONS /ORGANIZATION

Chemistry and Bio Chemistry

- Collaboration for Teaching , Research & Extension Endeavors between CSKHPKV, Palampur and IVRI, Palampur and IHBT-CSIR, Palampur

Biology and Environment

- Collaboration on seabuckthorn with Ganshu Agricultural University, Lanzhou, China

CGRT

- Collaboration for Research & Extension Endeavors between CSKHPKV, Palampur and State Centre on Climate Change, HP Council for Science, Technology & Environment (HIMCOSTE), Vigyan Bhawan, Near Udhog Bhawan Bamloe, Shimla-1 As a focus person during **2017-18**.

INFRASTRUCTURE DEVELOPMENT DURING 2017-18:

- Display Boards:
- Curtains: for COBS LT-I , LT-II, Chemistry Lab, Biochem Smart Class room, Girls' Common room
- Printer: for UG/PG teaching
- Inverter Battery
- Arc Server Upgrade/Cloud: for Arc Server/Lab Licence upgrade for UG teaching of GIS & RS Courses

Map/Chart Cabinet: for storing maps/toposheets being used for UG/PG teaching

FINANCIAL CONTRIBUTIONS TO UNIVERSITY BY DEPARTMENTS

Department	Funds Generated Rs (Lakhs)
Department of Biology & Environmental Sciences	140000
Department of Chemistry and Biochemistry	Nil
Department of Microbiology	Nil
Department of Physical Sciences and Languages	Rs.1500/
Centre for Geo-informatics	Rs. 1,00,584/
Total	Rs. 2 42084

Funds generated through Self financing Scheme by the college during 2017-18: **17.0 Lakhs**

VIP/OTHER VISITS TO COLLEGE

Visits conducted in CGRT:		
Following Visits were conducted in the Centre (July 17 to June 18):		
1	16.12.17	Dr. Ramesh Hooda, Chief Scientist Haryana Space Application Centre , Hisar
2	08.03.18	DR. V.A.V Raman, Dept. of Geography Shaheed Bhagat Singh College University of Delhi visited CGRT along with 39 Geography students (with permission from Director of Research)
3	07.04.18	Dr. A. Senthil Kumar, CSSTEAP, IIRS Campus, Dehradun.
4	22.05.18	Visit of Dr. R.K. Pannu , ICAR, Emeritus Professor and former Dean, Agriculture, CCSHAU, Hissar
NB	<i>Presented latest GIS and RS Activities and Achievements to dignitaries/students visiting Centre for Geo-informatics by the faculty</i>	

v. GLIMPSES OF EVENTS AND ACTIVITIES OF COBS



Educational tour (Dec 25, 2017-January 6, 2018)



Registrar, CSK HPKV-Palampur visited CGRT



Conducting practical in the Biology Lab of M.Sc. Botany & Zoology students from Central University-HP



Conductng Exhibition by Faculty of Cheistry and Biochemistry



Inaugural session of the conference 'Doubling the Farm Income: Challenges and Strategies'. The Chief Guest during the inaugural session of the conference was Dr. Ram Lal Markanda, Agriculture, Tribal Development and Information & Technology Minister, Govt. of Himachal Pradesh. Prof. Ashok Kumar Sarial, Vice-Chancellor, CSK HPAU, Palampur Presided over the Function



Focus Group Interaction Meetings (Self Help Groups/Anganwari Workers) at Cluster II of Jankaur Panchayat Una under VIS Project on 20th November, 2017

VIP Visits:



16.12.17 Dr. Ramesh, Chief, Sci. Space Application Centre Hissar visited CGRT



7.04.18 Director IIRS and 24.5.2018 Dean Hissar University visited CGRT



28.08.17 Project Director LalriJICA Hamirpur



8.3.18 Delhi University Student visit.

GLIMPSES OF ACTIVITIES DONE BY COBS, CSKHPKV, PALAMPUR



REPORT PERIOD: JULY 2017-JUNE 2018

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