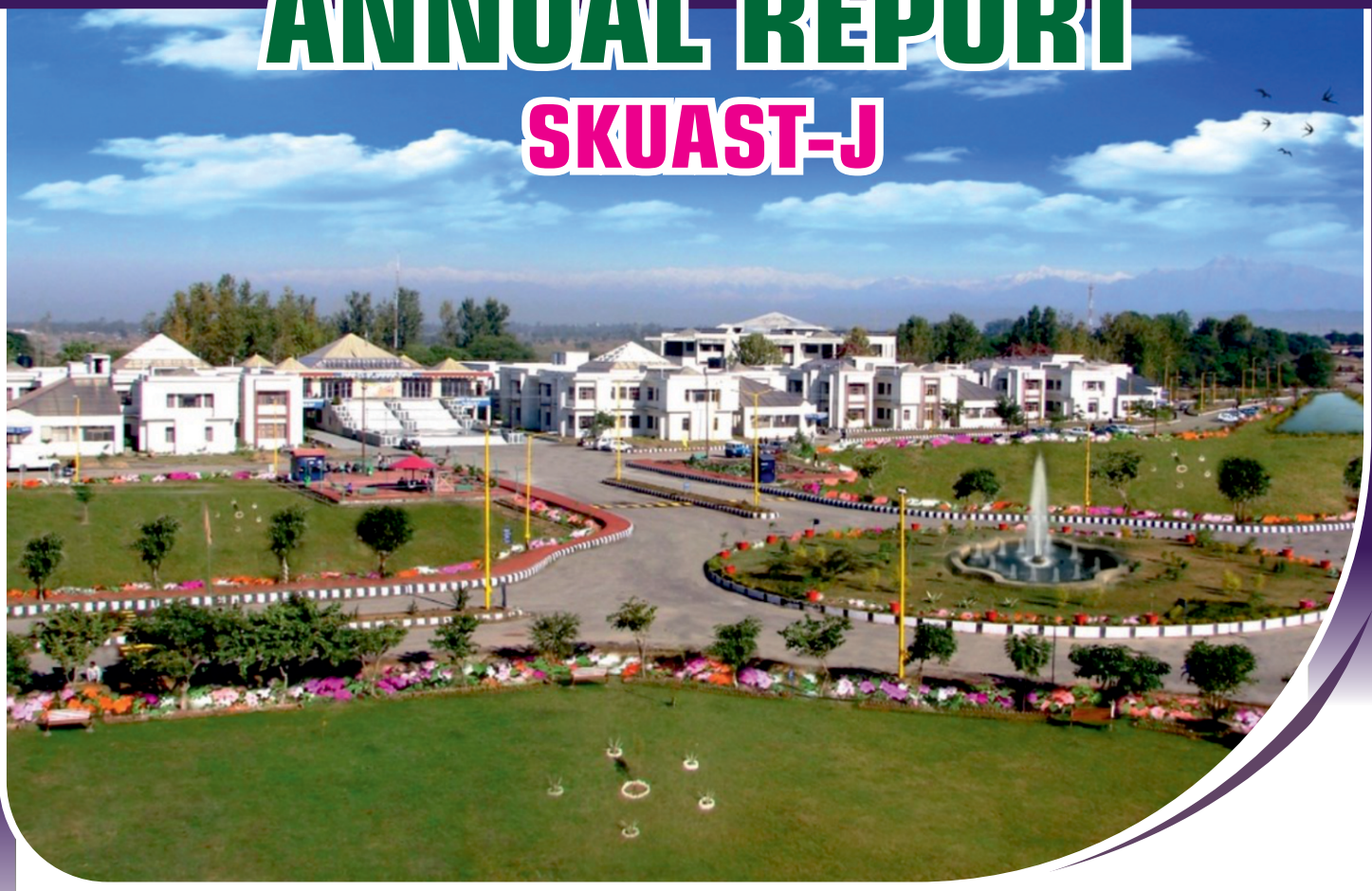
20TH ANNUAL REPORT

SKUAST-J



2019-20

Sher-E-Kashmir
University of Agricultural
Sciences & Technology of Jammu (J&K)

20TH ANNUAL REPORT

SKUAST-J

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University of Agricultural
Sciences & Technology of Jammu (J&K)

"An Agricultural institution for sustainable food and nutritional security"

Credit Line

Credit Line

Correct Citation	:	Annual Report 2019-20 Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu, Main Campus Chatha, Jammu - 180 009, India
Contributors	:	Officers of the University/ HOD's/ Incharge/ Stations/Sub-Stations/Centres / Programme Coordinators KVK
Compiled, Edited and Executed by	:	**Prof. Deepak Kher** Director Planning & Monitoring, SKAUST-Jammu
Type Setting	:	Sh. Neeraj Gupta Sr. Stenographer, DPM
Cover Photograph	:	Academic Blocks, Faculty of Agricutlure Chatha, Jammu
Published by	:	**Prof. J.P. Sharma** Vice Chancellor, SKUAST-Jammu Email: vc@skaust.org Fax: 0191-2262073

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Preface

It gives me immense pleasure to present the 20th Annual Report of Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu (SKUAST-J) reflecting salient achievements of the University during the year 2019-20. The University continues to fulfill its mandated responsibilities of HRD, basic, strategic and applied research issues and dissemination of innovations to farming community. The University during the period, has satisfactorily fulfilled its objectives of teaching, research & extension, and has remained front-runner for the cause of Agriculture and allied sectors.

Development of skilled human resource through class room teaching and on-farm trainings remains the prime focus of SKUAST-J. The University is offering Undergraduate Programmes viz., B.Sc.(Hons.) Agriculture, B.Tech. (Biotechnology), B.V.Sc & A.H. and Programmes at Master and Doctorate level in 36 and 32 disciplines, respectively, in two academic campuses. The admission to Under Graduate and Master Programmes were made through Common Entrance Test (CET) conducted by University itself. During the year under reference, 203 students were admitted to various UG programmes and 160 to PG programmes. Besides, extracurricular activities, including sports and cultural activities, are also being encouraged.

Research in the fields of field crops, horticulture, animal husbandry and basic sciences is a significant activity of the University. Crop improvement programmes focuses on developing new varieties / hybrids of cereals, pulses, oilseed and commercial crops. To further augment the seed replacement rate and to enhance productivity in the State, the University produced 83.28 quintals of breeder seed, 482.86 quintals of foundation seed and 81.67 quintals of certified seeds of oilseeds, pulses and cereals during the year under report. Research activities on many location specific problems are being intensified with the funds received from Indian Council of Agricultural research (ICAR), State Government and other funding agencies.

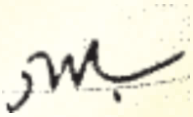
SKUAST-J has a strong and effective network of extension services with a Directorate of Extension and seven Krishi Vigyan Kendras (KVKs), disseminating latest technology and relevant skills to the farmers and extension functionaries. These units perform important tasks of assessment and refinement of technologies, organizing training programmes for farmers, extension personnel and NGOs; undertaking diagnostic field visits, veterinary clinical camps

and information also disseminated through technology demonstrations; group discussions and organizing field days and kissan melas, popular articles, information bulletins, press notes, radio and TV programmes to enlighten the farming community on agricultural developments.

The University has been able to make strides mainly because of patronage and guidance received from the Chancellor of SKUAST-J, The Lieutenant Governor of UT of Jammu & Kashmir, Sh. G.C. Murmu, during the year under report as well as for their whole hearted financial and technical support to the university. Special thanks are due to Sh. Arun Mehta, IAS, Financial Commissioner, Finance Department, Sh. Rohit Kansal, IAS, Principal Secretary to Govt., Planning & Development Deptt., and Sh. Manzoor Ahmad Lone, IAS, Secretary, Agriculture Production Department, J&K Govt. for their cooperation and personal efforts for the betterment of the University. My thanks are due to the Statutory Officers and staff members of the University for their Cooperation in sincere efforts made for the progress of SKUAST-J.

I hope this publication will be useful to teachers, scientists, students, administrators and planners. We always look forward to their valuable support and suggestions in accomplishing our mission.

Jammu



(**J.P. Sharma**)

Vice Chancellor

CONTENTS

S.No.	Title	Page No.
	SKUAST-J: AN INTRODUCTION	vii
1.	**Executive Summary**	1
2.	**Education**	5
	2.1 Academic Programmes Run by the University	5
	2.2 Details of P.G. Programme	6
	2.3 Faculty Spectrum	6
	2.4 Student Strengths	6
	2.5 Under Graduate Programme	6
	2.6 Post Graduate Programme	6
	2.7 Faculty Wise Admission	7
	2.8 Number of Students Who Completed Degree Programmes	8
	2.9 Thesis Accepted	8
	2.10 Students Welfare	16
	2.11 Students' Placement and Counseling Cell	17
	2.12 Hostels and Hostel Facilities	17
	2.13 Health Care Facilities	17
	2.14 Scholarship	18
	2.15 RAWE Programme	18
	2.16 Internship Programme	18
	2.17 Library	19
3.	**Research**	21
	3.1 Faculty of Agriculture	21
	3.2 Faculty of Veterinary Sciences & Animal Husbandry	38
	3.3 Faculty of Basic Sciences	50
	3.4 Research Stations / Sub Station /Centres	53
4.	**Extension Education**	70
	4.1 Meetings	72
	4.2 Officers Monthly Workshops	73
	4.3 Trainings Organised by Directorate of Extension under Technological Backstopping of KVKs	74
	4.4 Training Programmes conducted under SAMETI-Jammu	76
	4.5 Technology transferred and assessed	80
	4.6 Front Line Demonstrations	88
	4.7 Farm Advisory Services	90
	4.8 Farmers Educative Events	92

S.No.	Title	Page No.
5.	**Infrastructure Development**	**93**
	5.1 Works Completed During 2019-20	93
	5.2 Works In Progress During 2019-20	94
	5.3 New Works Proposed During 2020-21	95
6.	**Awards and Recognitions**	**97**
7.	**Organization of National /International Seminars/Symposia/Conference/ Short Courses/ Trainings/Workshops/Summer and Winter Schools**	**102**
8.	**Participation of Scientists In National/International Seminars/ Symposia/ Conferences/ Short Courses/Training/Workshops /Summer and Winter Schools**	**104**
9.	**Externally Funded Adhoc Research Projects**	**115**
10.	**Research Publications in National / International Journals**	**123**
11.	**Linkages and Collaboration**	**135**
12.	**Statutory Meetings**	**136**
13.	**Visits of Important Dignitaries**	**137**
14.	**Resources and Financial Estimates**	**138**
15.	**Staff Position**	**139**
16.	**Appointments, Promotions and Superannuations**	**140**
17.	**Personnel**	**141**

SKAUST- J: AN INTRODUCTION

Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu (SKUAST-Jammu) was established in 1999 to meet the aspirations and needs of farmers of Jammu division for the region specific advances in agricultural education, research and extension. The mandate of the University is to address the basic, strategic and applied research to enhance the production and productivity in agriculture and its allied sectors, improve livestock health and develop value added quality based products. SKUAST-Jammu is striving hard to achieve high standards of excellence in education, research and extension for bettering the lot of farming community of the region.

SKUAST-Jammu comprises of Faculty of Agriculture and Faculty of Basic Sciences at Chatha and Faculty of Veterinary Sciences and Animal Husbandry at R. S. Pura. Apart from these faculties, there are eight research stations and seven KVKs spread throughout the Jammu division, carrying out research and serving extension needs of the region, respectively. The administrative unit of the University is also located at Chatha. The University has grown at rapid pace in terms of infrastructure and human resource, right from its inception. The campus at Chatha comprises of Administrative block, Faculty buildings of Agriculutre & Basic Sciences, School of Biotechnology, Examination halls, Seed processing unit, Seed stores and Farm machinery centre, Sports complex, Students' center and Health Centre, Research & Instructional farms, Controller of Examinations, Seed Research Center, besides, state of art University Auditorium and International Guest House. The campus also has residential facilities for teaching and non-teaching staff, hostel for girl students and farmers. Campuses of the University are connected through LAN and WAN set up.

The University has modern library system, with on-line facilities, providing accessibility to about 35,574 text and reference books, around 2923 e-journals and 625 e-books in the field of Agriculture and allied sciences. The Internet services are being provided to the scholars, students and the faculty through National Knowledge Network.

The Faculty of Veterinary Sciences and Animal Husbandry located at R.S. Pura, has a full-fledged academic block, a classroom cum examination complex fitted with audio visual aid, CCTVs and modern facility for conducting online examination of ARS/NET. The campus has also a separate library catering to the needs of the students pursuing various degree programmes in the field of Veterinary and Animal Sciences. The Veterinary Referral Hospital and Teaching Complex of the faculty has ultra-modern gadgetry for diagnosis and treatment of animals belonging to the farmers of the region, private owners, State and Central Forces. The teaching veterinary clinical complex is also routinely organizing clinical camps besides rendering treatment to referred cases in outpatient department (OPD). Additional infrastructure in the shape of new double storey building has been constructed to accommodate the divisions of Animal Breeding and Genetics (AGB) and Veterinary & Animal Husbandry Extension Education (VAHEE). Instructional cattle and poultry farms have been commissioned and strengthened with induction of additional high yielding cattle and poultry. New infrastructure in the form of post-mortem complex has also been developed. Faculty administration has adopted the concept of paper less administration, wherein all communications/correspondences are made electronically.

Under -graduate programmes in agriculture, biotechnology, veterinary and animal husbandry are offered by the University. Post graduate programmes are also offered in various sub-disciplines of agriculture, veterinary and basic sciences, as well as in Agri-Business Management. The University has adopted a semester based academic programme and conducts its own entrance examination for admissions to under-graduate and post-graduate programmes. External examination system has been adopted by the University for Under-graduate Courses in accordance to the guidelines of Indian Council of Agricultural Research (ICAR) for Agricultural Sciences and Veterinary Council of India (VCI) for Veterinary Sciences.

Several activities were taken up by the “Student Counseling and Placement Cell” during the last one year. Some agriculture graduates were selected by various companies through the initiatives of the placement cell. The cell also facilitated the placement of MBA (ABM) students in corporate sector for summer internship. The “Student Counseling and Placement Cell” has also taken different initiatives for soft skill development of the students. In this

behalf, a series of expert lectures for the students were organized from the experts in different fields.

Research activities form one of the broad mandates of the University and numerous adhoc projects, central and state schemes are being undertaken in various disciplines of agriculture, veterinary and basic sciences. There are more than 118 adhoc/network projects funded by different agencies like DBT, DST, IMD, NHB, ICMR, RKVY, etc. amounting to more than Rs. 42.50 crores running at different constituent units of the University. Among the eight research stations, two have been upgraded to Advanced Centers of Research namely "Advanced Center for Horticulture Research" (ACHR) at Udheywalla and "Advanced Center for Rainfed Agriculture" (ACRA) at Dhiansar. The University is working on the project development of pecan nut in Rajouri and Poonch region with the help of Ratan Tata Memorial Trust. An active research group on Basmati has been working to address the issues like enhancing its aroma and other quality parameters. In view of the concerns on quality and safety of food items for consumers the University has taken an initiative to set up an organic farm that would serve as a technology development and demonstration unit.

Achieving higher levels of productivity through scientific interventions is the major goal of the University. The University is pursuing a systematic and planned plant breeding programme and has developed and released various crop varieties with improved agronomical traits including resistance to diseases and insect pests and such varieties of rice, wheat, oilseeds and pulses have been released. Efforts have been made to improve the production of world famous basmati rice through the development of new varieties like Basamati 118, which matures 20-25 days earlier to Basmati, without compromising on the quality. Other important varieties notified by the University in the recent past include wheat variety JAUW-584, moderately resistant to all the three rusts; maize variety PHM 12 suitable for cultivation in mid hills of Jammu and rapeseed variety RSPN 25 with an oil content of 40%. These varieties stand notified by central sub-committee on crop standards, notification of varieties for agriculture crops. Apart from developing new varieties, the University is playing an active role in screening and selection of existing cultivars of fruit crops, flowers and agro-forestry-based plant species with a view to reduce disease and pest incidence and enhance the quantity and quality of the product. A number of vegetable varieties, like Cherry tomato (SJCT-01), white radish (SJWR-01), red radish (SJRR-01) and garlic (SJG-12-02) etc. are being bred and are nominated for evaluation under AICRP (VC).

Intellectual property rights (IPR) cell under Directorate of Research has been constituted involving core scientists that will frame policy, regulation and guidelines for the state. University has taken many steps for enhancing production of quality nucleus and breeder seed to meet the requirements indented by the State Department of Agriculture. The University is contributing significantly towards the seed replacement in the State by producing quality certified seed of cereal crops, pulses and oilseeds, through a modern seed processing and packaging facility created with financial assistance from the ICAR. The University is also engaged in providing quality planting material with respect to horticultural crops. Hi-tech poly houses, mist chamber and hardening units have been pressed into service for generating quality planting material of vegetables, ornamentals, fruits and medicinal plants.

With majority of the farmers being marginal and having small holdings in the region, emphasis on diversification in farming is being laid down for assured returns. In this regard, one hectare Integrated Farming System (IFS) model has been developed under the Farming Systems Research programme. The developed IFS model comprises of multiple components Crop, Horticulture (fruit, vegetable, flower), Animal, Fish cum Poultry, Vermi compost / Recycling of Farm Waste, Mushroom, Apiary, Bio-gas with Boundary Plantation. The model has been designed for a farmer family comprising of five members and generates round the year total employment of 730 days/year with main salient achievement of generate income on monthly basis. The model generates 220 kg N, 75 kg P O and 45 kg $_{2}$ $_{5}$ K O/year through recycling / vermi $_{2}$ composting and generate profit of Rs. 3.06 lacs per year. The bio-gas unit of 2 cubic meter capacity generates bio-gas equivalent to 17 LPG gas cylinder of 14.5 kg capacity. This sustainable and economically sound model is developed in such a way that the waste output of one enterprise is used as an input in another unit, fetching up to three times the returns over a traditional agricultural system. It is commonly observed that some of the resources are over utilized and some under-utilized which provides a scope for the rational allocation of resources for enhancing returns for every rupee spent. Production function analysis and Marginal Value Productivity techniques are used to examine input-output relationship and productivity of different inputs used in production process. Studies have revealed that with one per cent increase on expenditure of labour and fertilization, there is an increase in returns to the extent of 0.45 per cent and 0.67 per cent, respectively in

case of fruit crops.

Research in veterinary sciences is being pursued on identified flagship areas like nutritional enhancement of livestock feed, bio-prospecting of medicinal plants for different therapeutic activities, diseases monitoring and surveillance, disease diagnosis, value addition of animal products and skill development. Locally available feed resources in various district of the region have been identified and are currently supplemented with Urea Molasses Multinutrient Block (UMMB) to address the macro and micro-nutrient imbalance in cattle, buffaloes, sheep and goat. The University is a nodal centre for veterinary pathogens under Veterinary Type Culture Collection (VTCC) and outreach programme of zoonotic diseases of ICAR, New Delhi. Research on exploration of respiratory metagenome of small ruminants which includes mining of unique genes and establishment of diagnostic facilities for important infectious diseases is under progress. The research focus is also on pharmacological validation of local medicinal plants for different therapeutic effects and also on genetic characterization of Indigenous Bakharwali goat and Poonchi sheep for conservation and propagation of local germplasm. District wise pattern of various important diseases of livestock and their preventive schedule is being evolved. Skill development and training in veterinary critical care is being imparted through experiential learning modules. University has also excelled in various assigned extramural social projects for empowerment of rural women like backyard poultry farming, development of value added animal products, adaptation of breeding and management strategies in dairy animals, creation and capacity building of Women Self Help Group members of UMEED as Community Parvets (Pashusakhi).

The University understands that the climate change is real and a potential threat to sustainability of agricultural systems. A number of initiatives in this regard have been carried out through awareness programmes and crop-weather relation studies under NICRA (National Initiative on Climate Resilient Agriculture) and other schemes. The Agromet Field Unit (AMFU) Jammu at present is issuing regularly Agromet advisory bulletins for the farmers of sub-tropical areas of Jammu region in order to apprise them about the various crop related field activities to be undertaken in accordance with the weather forecast. Soils are being understood to have a major role in mitigation of climate change threat through carbon sequestration. Studies on soil carbon levels under different land use/land covers and identifying agricultural practices that sequester carbon in the soils while simultaneously enhancing their health are being undertaken. Geographical Information System (GIS), modelling etc. are being extensively used in different fields. The University is in the process of digital mapping of soil properties for the entire Jammu division. Pre-season yield estimation through remote sensing has gained importance in recent times due to its advantages over traditional systems. The University is presently handling the FASAL project for pre-season estimation of maize and wheat yields.

The University is also involved in extension activities for the benefit of the farming community. The Directorate of Extension popularly known as the “Field Extension Wing” through its Krishi Vigyan Kendras (KVKs) in different districts of the Jammu division as well as Faculties at Chatha and RS Pura is taking care of farm advisory services in several villages. Regular trainings, field visits, clinical camps, Kisan ghostis, demonstrations, etc., are being conducted to raise awareness among the farmers regarding improved practices in agriculture, horticulture, animal husbandry and other allied sectors laying main emphasis on diversified sustainability and integrated farming system. Directorate of Extension through its KVKs is also engaged in imparting skill oriented and need based trainings to rural youth for entrepreneurship development. The skill up-gradation of the field functionaries of agriculture and allied departments is carried out by regular in service trainings being conducted by KVKs at district level and Directorate of Extension and State Agriculture Management & Training Institute (SAMETI) at the divisional level.

The KVKs are also engaged in the assessment and refinement of generated technologies through On Farm Testing (OFTs) for location specificity of the technologies. The proven technologies are being demonstrated to the farmers through frontline demonstrations (FLDs) in a participatory mode with the farmers. The scientists posted in these KVKs are in direct contact with the farmers of their jurisdiction and render necessary advices about crop and livestock production and protection; soil and water management; family and farm resource management etc., at their doorsteps. The University extension wing has been well oriented to face new challenges on day to day basis in view of weather/climate changes so that the farmers and field functionaries are given advisories and strategic plans

as per situations prevalent. The University is also offering diploma courses viz. Basic Agriculture Training (BAT) and Basic Horticultural Training (BHT) at the district level at its KVKs. The organization of Kissan Melacum- Exhibitions at the head quarter of the University as well as at its KVKs is a regular feature. A mega divisional level two-day Kisan Mela in collaboration with all the allied departments and J&K State Advisory Board for Development of Kissan at main campus, Chatha. The district level Kisan Mela were also organized by 7 KVKs located in various districts during the Kharif as well as Rabi seasons 2019-20. Technical information is disseminated to the farmers, field functionaries and agrientrepreneurs through printed pamphlets, bulletins, etc. Updated package of practices for field crops, fruit crops, vegetables and floriculture are made available to all stake holders. All necessary efforts are made with the goal of agricultural technology led economic development of farmers and enhance production and productivity of various crops as well as animal production in the region working hand in glove with the state line departments. The feedback from farmers and field functionaries are collected for refinement of available technologies for making them area specific and need based. The University also provides consultancy services to various line departments, Indian Army and Non-Government Organizations (NGOs).

The University maintains an atmosphere of sharing and interaction among the scientific community at both national and international level. In this regard, a number of scientists of the University have been deputed to various countries for higher training to enhance their research skills. Scientists are al so encouraged and deputed to participate in national and international conferences, symposiums, workshop, trainings and short courses. The University has also organized such events from time to time, where delegates from national and international institutes are invited.

OUR MISSION

- Ensuring food and household security of Jammu and Kashmir by enhancing the productivity and profiatability on an ecologically and economically sustainable basis.

MANDATE

- Advancement of education in agriculture, Animal Husbandry, Veterinary Sciences and other allied branches.
- Conduct basic, strategic and applied research in agriculture and allied sectors.
- Dissimination of knowledge and technology to the farming community.
- Collobaorate with National and International Organizations for enhancing the knowledge, expertise and excellence for the well being of the people of Jammu and Kashmir in particular and country in general.

UNIVERSITY AUTHORITIES

University Council

The University Council is the apex advisory body of the University. It reviews policies and programmes of the University and advises in its future plans, development & expansion as well as examines the annual accounts and audit report of the University.

Board of Management

The Board of Management is the principal executive body of the University. It has the power of management and administration of all the affairs of the University, including finance, revenue, property and academic affairs.

Academic Council

The Academic Council is the principal academic body responsible for academic policies, rules and regulations of the University. All matters relating to academic programmes are regulated by the Academic Council.

Research Council

The Research Council is responsible in respect of research programmes and projects undertaken by various university units with a view to promote effective coordination in the field of Agriculture, Veterinary & Animal Husbandry and other allied sciences.

Extension Education Council

The Extension Education Council is responsible in respect of coordinating Extension Education activities for improvement of Agriculture and Animal Husbandry for development of rural communities. Development of farmers' education and training and advisory services, identification and resolution

of field problems in transmission of information and integration of extension education with teaching and research are other responsibilities of Extension Education Council.

Faculties and Schools

The Faculties comprise the Divisions of studies in various disciplines of Agriculture, Veterinary & Animal Husbandry and allied sciences. The faculties are basic academic units responsible for the formulation of academic programmes. The faculties review teaching work and suggest improvements. Each faculty has a Board of Studies. The Board of Studies proposes to the faculty concerned the course of study and curricula for various programmes of instructions offered by the faculty concerned. The University has the following faculties:

i) Faculty of Agriculture
ii) Faculty of Veterinary Sciences & Animal Husbandry
iii) Faculty of Basic Sciences

School

School of Biotechnology

Planning Committee

The Planning Committee advises the Board of Management in matters relating to Planning and Development of the University. It is also responsible for programme planning, monitoring and implementation of major projects of the University.

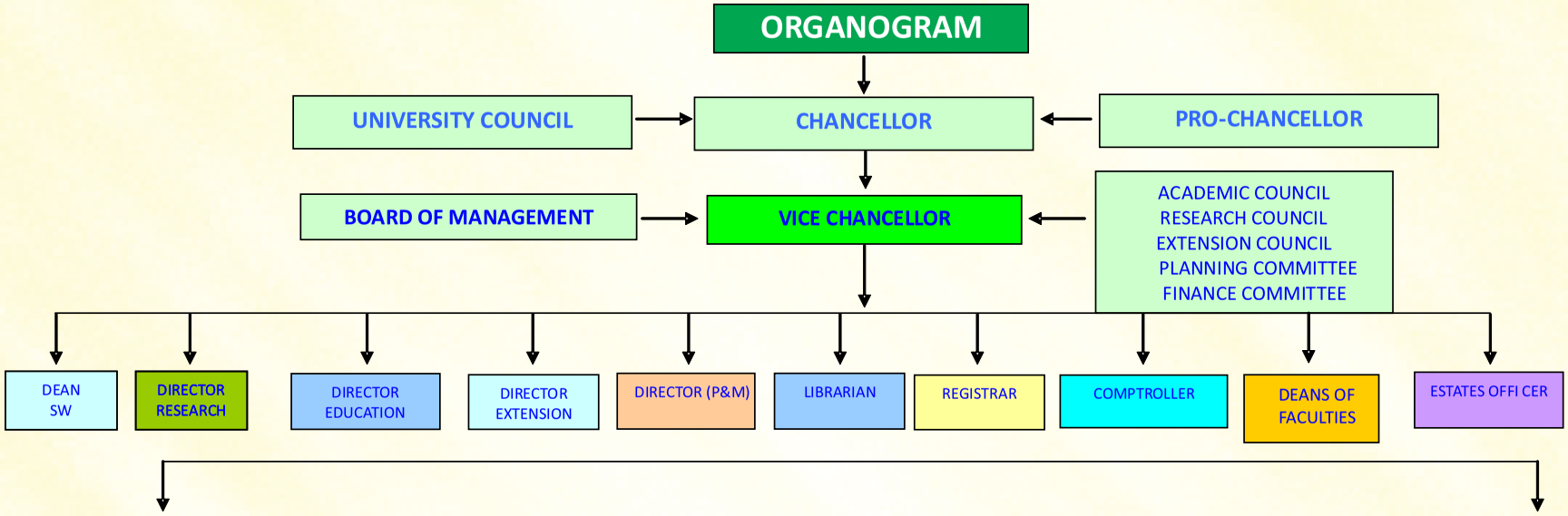
Finance Committee

The Finance Committee advises the Board of Management on all matters concerning financial management of the University and examines the accounts and expenditure of the University.

UNIVERSITY ADMINISTRATION

The Vice-Chancellor is the Chief Executive of the University. He is supported by the Registrar in the administration, Comptroller in financial management, Director Planning & Monitoring in planning and development of the University, Deans with respect to academic activities and Directors for management of research and extension activities in the field of Agriculture and Veterinary Sciences, besides, Librarian assists in library affairs, Students Welfare Officer in student activities and Estate Officer looks after civil works.

ORGANOGRAM



Regional / Sub- Research Stations/ Centre

1. Regional Agricultural Research Station, Rajouri
2. Maize Breeding Research Sub-Station, Poonch
3. Regional Horticultural Research Sub Station, Bhaderwah
4. Rain fed Horticultural Research Sub Station, Raya
5. Pulses Research Sub- Station, Samba
6. Maize Research Sub-Station, Udhampur
7. Advanced Centre for Rain-fed Agriculture, Dhiansar
8. Advanced Centre for Horticulture Research, Udheywalla

Krishi Vigyan Kendras

1. K V K, Jammu
2. K V K, Doda
3. K V K, Rajouri
4. K V K, Reasi
5. KVK, Poonch
6. KVK, Kathua
7. KVK, Samba

Faculty of Agriculture, Chatha

1. Division of Agronomy
2. Division of Agricultural Economics and Agri-Business Management
3. Division of Agriculture Extension Education
4. Division of Agricultural Engineering
5. Division of Agro forestry
6. Division of Entomology
7. Division of Vegetable Science and Floriculture
8. Division of Genetics and Plant Breeding
9. Division of Plant Pathology
10. Division of Fruit Science
11. Division of Food Science & Technology
12. Division of Sericulture
13. Division of Soil Sciences and Agriculture Chemistry

Faculty of Basic Sciences, Chatha

1. Division of Microbiology
2. Division of Statistics & Computer Sciences
3. Division of Bio-Chemistry
4. Division of Plant Physiology

Faculty of Veterinary Sciences and Animal Husbandry, R.S. Pura

1. Division of Veterinary Public Health, Hygiene & Epidemiology
2. Division of Veterinary Pathology
3. Division of Parasitology
4. Division of Pharmacology and Toxicology
5. Division of Veterinary Biochemistry & Physiology
6. Division of Veterinary Anatomy
7. Division of Livestock Products Technology
8. Division of Veterinary Clinic and Teaching Hospital
9. Division of Veterinary and Animal Husbandry Extension
10. Division of Livestock Production and Management
11. Division of Animal Reproduction, Gynecology and Obstetrics
12. Division of Veterinary Surgery and Radiology
13. Division of Instructional Livestock Farm Complex
14. Division of Veterinary Medicine
15. Division of Animal Genetics and Breeding
16. Division of Animal Nutrition
17. Division of Veterinary Microbiology

School

School of Biotechnology, chatha

UNIVERSITY COUNCIL (AS ON 31-03-2020)

Sh. G.C. Murmu, Hon'ble Lt. Governor, J&K UT (Hon'ble Chancellor, SKUAST-Jammu)	Chairman
Vice-Chancellor, SKUAST-Jammu	Member
Dr. Nazeer Ahmed Vice-Chancellor, SKUAST-Kashmir	Member
Dr. Baldev Singh Dhillon Vice Chancellor, Punjab Agriculture University, Ludhiana	Member
Prof. (Col.) A.K. Gehlot Vice Chancellor, Rajasthan University of Veterinary & Animal Sciences, Bikaner	Member
Sh. Arun Kumar Mehta, IAS, Financial Commissioner Finance Department (Financial Advisor, SKUAST-Jammu) J&K Govt., Jammu	Member
Sh. Rohit Kansal , IAS, Principal Secretary to Govt., Planning and Development Department, Govt. of J&K	Member (Co-opted)
Sh. Manzoor Ahmad Lone , IAS Secretary to Govt . Agriculture Production Department	Member
Sh. Rajesh Talwar Registrar, SKUAST-Jammu	Non- Member Secretary

BOARD OF MANAGEMENT (AS ON 31-03-2020)

Vice Chancellor, SKUAST-J	Chairman
Dr. Nazeer Ahmed , Vice Chancellor, SKUAST-K	Member
Dr. A.K. Sarial Vice Chancellor, CSK HPKVV, Palampur	Member
Sh. Arun Kumar Mehta, IAS Financial Commissioner , Finanace Department, J&K Govt.	Member
Sh. Rohit Kansal, IAS, Principal Secretary to Govt., Planning and Development Department, Govt. of J&K	Member
Sh. Manzoor Ahmad Lone , IAS Secretary to Govt . Agriculture Production Department	Member
Dr. G.P. Singh Director, Indian Institute of Wheat & Barley Research, Karnal	Member
Dr. Kusumakar Sharma Former ADG (HRD), ICAR, New Delhi	Member
Dr. D.P. Abrol Dean, FoA	Member
Director Education	Member
Sh. Dhunda Singh Progressive farmer	Member
Sh. Rohit Gupta Agro Industrialist	Member
Sh. Rajesh Talwar Registrar, SKUAST-J	Non- Member Secretary

OFFICERS OF THE UNIVERSITY (AS ON 31-03-2020)

Dr. R.K. Gupta	Vice Chancellor (Additional charge)
Dr. K.S. Risam	Director Extension
Dr. R.K. Gupta	Director Research
Dr . Deepak Kher	Director Planning & Monitoring
Dr. S.K. Gupta	Director Education
Sh. Rajesh Talwar	Registrar & Comptroller
Dr. D.P. Abrol	Dean, Faculty of Agriculture
Dr. Rajinder Raina	Dean, Faculty of Veterinary Sciences & AH
Dr. S.E.H. Rizvi	Dean, Faculty of Basic Sciences
Dr. Rajesh Katoch	Dean, Student Welfare
Dr. S.K. Gupta	Librarian
Sh. Iqbal Singh	Estates Officer

EXECUTIVE SUMMARY

1

With the generous and constant patronage of Chancellor; Central & State Governments, Indian Council of Agricultural Research, the University during 2019-20 under the stewardship of Hon'ble Vice-Chancellor continued its strive to achieve the goals for the development of competent and professional human resource, addressing farmers' problems through innovative research and transfer of technology in the fields of Agriculture, Veterinary and Basic Sciences. In spite of the various constraints the university successfully completed the academic programmes including B. Sc. (Ag), B.V.Sc. & A.H., B.Tech (Bio Chemistry) M. Sc. (Ag), M.V.Sc., Ph.D (Ag.) and PhD (Vety), carried out assigned research agenda as approved by the Research Council and undertook numerous initiatives for the transfer of technology to the farmers. The brief summary is given as under:

Education

- The University has total sanctioned strength of 355 faculty position. The academic and the gender wise spectrum of the faculty reveal that more than 95 per cent of the faculty holds Doctoral degrees and the female strength in the faculty is about 20 per cent.
- The admissions to the bachelor's degree programmes were made by University through SKUAST-J Common Entrance Test whereas for Master's and Doctoral degree programme, the University itself selected the candidates on the basis of merit. As many as 203 and 214 students were admitted to UG and PG programmes, respectively. The number of students who completed their B.Sc (Ag), B.Sc (Biotech), B.V.Sc & AH, M.Sc (Ag), M.V.Sc., M.Sc (Biotech), Ph.D. (Ag) and Ph.D (Vety) degrees were 297. The total number of students on roll remained 1477.
- The students of the University continued to participate in local/state/national level events. The university extended all facilities to the students including medical health care through a university dispensary equipped with full time medical officers (male & female) and supporting staff with liberal contingency for medicines.
- The University has modular libraries at Chatha and R.S. Pura facilitating reference services to our faculty and students. The library has 35574 text and reference books. The University has access to about more than 161000+ e-books & 50000+ e-journals through CeRa consortium, CAB abstracts access to over 9 million bibliographic and full text articles related to agriculture and other sciences, CABI e-books access to about 625 CABI e-books related to agriculture and allied disciplines and EBESCO Business Source Elite+ access to 1800+ e journals related to management sciences adn other related disciplines available in computer labs of libraries and all the campuses of SKUAST-J through NKN. LAN and CD-ROM workstation on CABCD, VETCED and FST, Internet services are also provided to the scholars and faculty. Solar power plant facilitiy with 30KwA and 20KwA are available for the libraries at Chatha and R.S.Pura, respectively.

Research

- Application of Carfentrazone@ 20g/ha **or** Metsulfuron @ 4 g/ha **or** Carfentrazone + Metsulfuron@ 25g/ha at 30 DAS as post-

emergence recorded significantly highest grain yield which was statistically at par with post-emergence application of metribuzin @ 210 g/ha.

- Application of 85 % of Rec. N applied through urea Coated with recommended zinc i.e. ZnCU + Rec. P & K was found as the best treatment as it recorded higher Agronomic Use efficiency and Recovery Use Efficiency besides producing grain and straw yields statistically at par with 100 % of Rec. N through ZnCU + Rec. P& K .
- In direct seeded rice Pendimethalin 1000 g/ha (PE) *fb* bispyribac-sodium 25 g/ha at 25 DAS gave higher grain yield with higher weed control efficiency and benefit cost ratio followed by pretilachlor 600 g/ha fb penoxsulam + cyhalofop-butyl 150 g/ha at 25 DAS.
- 125% RDN + Paddy residue with or without waste decomposer (WD) along with sulfosulfuron + carfentrazone 25+20 g/ha or clodinafop-propargyl+metsulfuron (60 +4 g/ha) at 30-35 DAS found suitable in zero tillage wheat.
- The acifluorfen + clodinafop 245 g/ha at 3-4 leaf stage recorded significantly higher grain yield and highest B: C ration under zero-tillage, minimum tillage and conventional tillage in summer greengram.
- For enhancing the shelf life of guava fruits 20% aloe vera gel treatment was found effective. Aloe vera gel coated guava fruits can be stored upto 21 days at ambient temperature without much of nutritional quality deterioration.
- Osmo-dried galgal peel sticks prepared from 500Brix with sugar is organoleptically the best for commercialization purpose. However, it also aids for utilization of galgal peel waste to enhance the economic status of the farmer.
- Bael pulp blended with apricot pulp for the development of powder and leather in the ration of 40: 60 was found to be superior followed by 50:50 ratio on the basis of sensory parameters, cost of production of these blended products are economically feasible.
- One new nomination SJR 103-4-1 having yield potential of 38q/ha and moderately resistant to BLB, Blast and brown spot was nominated for testing in All India Coordinated Research Improvement Programme trials during kharif 2019.
- Six new cross combinations involving locally adapted as well as improved basmati cultivars viz, Pusa Basmati 1637, Pusa 1401, Pusa 1728 and others were generated during kharif 2019.
- Wheat Variety JAUW- 584 released by state varietal release committee notified by GOI Gazette No: 1326 dated 02/04/2019. The variety is recommended for timely sown irrigated conditions. It is moderately resistant to all the three rusts. It has excellent grain characters and high protein content and yields 50 q/ha.
- A high yielding variety of *Brassica juncea* namely RSPR 69 (National ID- IC 623331) was released by the SVRC-J&K(DSCO/Dev/SSSC/2017-18/36-59)and notified by Govt. of India vide its Gazette no:1326 dated: 02/4/2019.
- A newly developed variety of Brassica rapa var. toria RSPT-6 (National ID- IC 623330) was with The agronomic package and practices has been released by the SVRC-J&K(DSCO/Dev/SSSC/2017-18/36-59) and notified by Govt. of India vide its Gazette no:1326 dated: 02/4/2019.
- Combined application of B10PAM10 recorded significantly higher grain yield of rice than 100% RDF. Highest increase of water productivity (1.28 times) and (1.33 times) in continuous flooding and water deficit, respectively was

recorded in plots receiving combined use of B10PAM10 over 100% RDF.

- Two blast resistance genes, Pi-9 and Pi54 and two bacterial blight xa13 and Xa21 alongwith semi-dwarfing gene sd1 were pyramided in the genetic background of a traditional basmati 'Ranbir Basmati' using marker-assisted backcross breeding (MABB).
- Supplementation of broiler ration with 4% azolla has highest cost benefit ratio without showing any adverse effect on poultry and fish performance.
- Poonchi chicken has been identified to have some unique traits that could qualify as a separate breed. Concerted efforts have been undertaken for its description and characterization. This will enable its declaration as a breed, thus contributing to the National animal genetic resource.
- With an objective to seek alternate sources of feed supplements, various non-conventional feed and fodder has been investigated. This will help utilize waste resources and also enhancing nutritional status, health and production performance of dairy cattle. Research is also underway to develop functional feed supplements from tanniferous leaf meal mixture.
- Various avenues to mitigate environmental stress have also been investigated through adequate and scientific livestock managerial interventions that would also boost animal productivity. State of the art molecular investigative indices like heat related expression proteins have been used to monitor stress effects and their mitigation using custom designed jackets, sorbitol, bypass fat, etc.
- Cheap alternatives to field diagnosis of reproductive health by using foldscope microscopy, and also to curb reproductive failure in animals by use of intra-vaginal progesterone sponges and other progesterone inserts on reproductive performance in post-partum anoestrus animals are being developed.
- Many livestock products as functional foods have been developed to alleviate modern lifestyle diseases and their prevention. Besides, considerable research has been oriented on value addition and fortification of livestock products.
- Investigation of antimicrobial residues in foods of animal origin was also undertaken to estimate and evaluate their impact on human health. Besides, many local botanicals have been surveyed that are used for traditional medicine in order to assess the perception and knowledge of farmers.
- Under entrepreneurship development programme, graduate students are trained and exposed in aspects of modern animal care and clinical services.
- Diagnosis and characterization of many parasitic and infectious diseases of livestock and poultry have been undertaken. Survey of anthelmintic resistance in livestock, diagnosis and development of recombinant vaccine for ovine footrot, investigation of capripox and warble fly infestation, development of nanoparticles for the treatment of mastitis in dairy animals etc. are some salient research investigations.
- On the societal development front, many projects have been pursued for the socio-economic upliftment of backward society, particularly for women. Public awareness and outreach programmes for zoonosis and parasitic diseases, entrepreneurial promotion in livestock and animal product enterprises,

Gujjar an Bakarwal pastoral women empowerment and establishment of rural women technology parks are significant efforts exerted in this direction.

Extension

- 7256 farmers/farm women and rural youth were imparted training through 365 different trainings. The trainings were organized in crop production, crop protection, horticulture, home sciences, and soil and fertilizer management.
- The University organized as many as professional trainings for the benefit of farmers and departmental functionaries scientists participated in different seminars/symposia/workshops at state/national level.
- The transfer of technology has been carried out through Krishi Vigyan Kendras and the involvement of subject matter resources personals from the Faculty of Agriculture and Faculty of Veterinary Sciences and Animal Husbandry.

Publications

- Among publications, the university brought out University Newsletter, various technical bulletins, Brochures and folders for dissemination to farmers, stakeholders and resource personnel. As many as 921 publications including book chapters/bulletins/ manuals/ research papers etc. were published by the scientists in various journals of repute.

Other Important University Activities

- The university has developed strong linkages with national and international organizations with a view to harness the information, materials, expertise and exchange of scientists and students visits. MoUs have been signed by the University with the national and international organizations.
- Among various Statutory Meetings, Board of Management was held accordingly.

EDUCATION

2

Education programme in Agriculture and other allied branches of learning and scholarship is an important and basic objective of the University. University has made remarkable achievements during the period under report in the field of agriculture education and maintained the standard as per the national level by following up-dated curriculum at under graduate and post graduate level both in agriculture and veterinary sciences as per the recommendations of Education Division of Indian Council of Agricultural Research (ICAR) and Veterinary Council of India (VCI), respectively. Library has been updated through purchase of books, journals, CD ROMs and automated literature search facility.

2.1 Academic programmes run by the university:

UG Programme : B.Sc. Hons. (Ag), B.V.Sc & AH and B.Tech. (Biotechnology)

PG Programme : M.Sc. (Ag), M.V.Sc., M.Tech., M.Sc. (Basic Sciences) and MBA (ABM)

: Ph.D. (Ag), Ph.D. (Vet), Ph.D. (Basic Sciences) and Ph.D. (Biotechnology)

2.2 Details of P.G. Programme running in the University:

S.No.	M.Sc. (Ag/ Basic Science)/M.Tech	Ph.D. Ag/Basic Science	M.V.Sc.	Ph.D.(Vet)
1	Soil Science & Agriculture Chemistry	Soil Science & Agriculture Chemistry	Animal Nutrition	Animal Nutrition
2	Genetics & Plant Breeding	Genetics & Plant Breeding	Veterinary Public Health & Epidemiology	Veterinary Public Health & Epidemiology
3	Entomology	Entomology	Veterinary Medicine	Veterinary Medicine
4	Agriculture Extension Education	Agriculture Extension Education	Veterinary Pathology	Veterinary Pathology
5	Vegetable Science	Vegetable Science	Veterinary Gynaecology and Obstetrics	Veterinary Gynaecology and Obstetrics
6	Agriculture Economics	Agriculture Economics	Veterinary Surgery & Radiology	Veterinary Surgery & Radiology
7	Agronomy	Agronomy	Veterinary Parasitology	Veterinary Parasitology
8	Fruit Science	Fruit Science	Veterinary Anatomy	Veterinary Anatomy
9	Post Harvest Technology	Post Harvest Technology	Veterinary physiology and Biochemistry	Veterinary physiology and Biochemistry
10	Plant Pathology	Plant Pathology	Livestock Products Technology	Livestock Products Technology
11	Statistics	Statistics	Animal Husbandry Extension	Animal Husbandry Extension
12	Biotechnology	Biotechnology	Veterinary Pharmacology & Toxicology	Veterinary Pharmacology & Toxicology
13	Bio Chemistry	Bio-Chemistry	Animal Genetics & Breeding	Animal Genetics & Breeding
14	Forestry	Agro-Forestry	Veterinary Microbiology	Veterinary Microbiology
15	Sericulture	Sericulture	Live stock Production and Management	Live stock Production and Management
16	Floriculture	-	-	-
17	Microbiology	Microbiology	-	-
18	Farm Machinary & Power Eng.	Farm Machinary & Power Eng.	-	-
19	Soil & Water Eng.	-	-	-
20	Agriculture Business Management	-	-	-

2.3 Faculty Spectrum

Posts	Sanctioned
Dean	3
Associate Dean	1
Professor	35
Associate Professor	70
Asstt. Professor	136
Total	245

The classified information pertaining to the faculty strength cadre wise are given in the table as evident there are 245 faculty positions as sanctioned strength for three faculties viz Faculty of Agriculture, Faculty of Veterinary Sciences & Animal Husbandry and Faculty of Basic Sciences.

2.4 Student Strengths

The strength of the students admitted to B.Sc (Hons) Agriculture, B.Tech (Biotechnology) and BVSc & AH programme during the academic session 2019-20 were 102, 27 and 70 respectively. The number of students admitted to M.Sc (Ag.) and Ph.D (Ag.) programme were 62 and 24 respectively in different divisions. In Veterinary faculty 25 MVSc and 14 Ph.D students were admitted during the academic session of 2019-20. In M.Sc Biotechnology and Ph.D Biotechnology programme 05 students were admitted. In Basic Sciences 03 M.Sc. & 08 Ph.D No. of students were admitted respectively. In MBA (ABM) 12 students were admitted. The total strength of the students on roll in Post Graduate and undergraduate Degree programme were 544 and 853 respectively. The distribution of the students' strength, intake capacity admitted year-wise and programme wise along with the number of students on roll are given in the following table:

2.5 Under Graduate Programme

S. No.	Name of faculty	Degree Programme	Students Strength										Total	
			I year 2019		II year 2018		III year 2017		IV year 2016		V year 2015			
			M	F	M	F	M	F	M	F	M	F	M	F
1.	Faculty of Agriculture	B.Sc. (Hons.) Agriculture	61	50	38	69	32	56	34	61	26	37	191	273
		B.Sc. (Hons.) Biotechnology	03	21	03	28	05	20	04	21	02	22	17	112
2.	Faculty of Veterinary Sciences & Animal Husbandry	B.V. Sc. & A.H.	39	29	40	30	41	28	47	23	40	24	207	134
3.	Faculty of Basic Sciences		-	-	-	-	-	-	-	-	-	-	-	-
		TOTAL	103	100	81	127	78	104	85	105	68	83	415	519

2.6 Postgraduate Programme

S. No.	Name of faculty	Master's Programme				Sub Total		Ph. D Programme						Sub Total		Total	
		I Year		II Year				I Year		II Year		III Year					
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1.	Faculty of Agriculture	50	44	38	46	88	90	10	17	19	16	35	27	64	60	152	150
2.	Faculty of Veterinary Sciences & Animal Husbandry	20	28	26	18	46	46	04	04	05	07	17	13	16	24	72	70
3.	Faculty of Basic Sciences	02	11	01	07	03	18	06	03	03	06	09	10	18	19	21	37
4.	School of Biotechnology	-	04	-	02	-	06	-	-	-	04	01	09	01	13	01	19
5.	MBA (ABM)	07	04	08	02	15	06	-	-	-	-	-	-	-	-	15	06
	TOTAL	79	91	73	75	152	166	20	24	32	33	62	59	107	116	261	282

2.7 Faculty wise Admission (2019-20)

S.No	Divisions		
Faculty of Agriculture		**Master's Degree**	**Doctoral Degree**
1.	Agronomy	**07**	**04**
2.	Agricultural Engineering	**02**	**01**
3.	Agri. Economics & Agri-business Management	**06**	**01**
4.	MBA (ABM)	**11**	**-**
5.	Agro-forestry	**04**	**02**
6.	Agricultural Extension & Communication	**07**	**04**
7.	Plant Breeding & Genetics	**07**	**-**
8.	Soil Sciences & Agriculture Chemistry	**07**	**04**
9.	Entomology	**12**	**01**
10.	Horticulture (Vegetable Science) & Floriculture	**10**	**02**
11.	Plant Pathology	**11**	**04**
12.	Horticulture (Fruit Science)	**07**	**02**
13.	Food Sciences & Technology	**07**	**01**
14.	Sericulture	**07**	**01**
15.	Biotechnology	**04**	**-**
Faculty of Basic Sciences			
1.	Statistics & Computer Sciences	**02**	**02**
2.	Biochemistry	**03**	**02**
3.	Plant Physiology	**03**	**03**
4.	Microbiology	**05**	**02**
Faculty of Veterinary Sciences & Animal Husbandry			
1.	Veterinary Anatomy	**-**	**01**
2.	Veterinary Physiology & Biochemistry	**03**	**-**
3.	Veterinary Pharmacology & Toxicology	**01**	**-**
4.	Veterinary Parasitology	**01**	**01**
5.	Veterinary Microbiology	**02**	**-**
6.	Veterinary Public Health & Epidemiology	**06**	**01**
7.	Veterinary Medicine	**06**	**-**
8.	Veterinary Pathology	**02**	**-**
9.	Animal Nutrition	**05**	**01**
10.	Animal Genetics & Breeding	**04**	**-**
11.	Livestock Production and Management	**03**	**-**
12.	Livestock Products Technology	**03**	**-**
13.	Veterinary Gynaecology & Obst.	**02**	**03**
14.	Veterinary Surgery & Radiology	**07**	**01**
15.	Veterinary & Animal Husbandry Education	**03**	**-**
	Total	**170**	**44**

2.8 Number of students who completed degree programme (2019 -20)

S.No.	Degree	No. of students who completed degree programmes (2019 -20)	
		Male	Female
Post Graduate			
1.	Ph.D (Agriculture)	**04**	**21**
2.	Ph. D (Veterinary)	**05**	**02**
3.	Ph. D (Basic Science)	**-**	**02**
4.	Ph. D (Biotechnology)	**-**	**03**
5.	M.Sc. (Agriculture)	**16**	**44**
6.	M.V. Sc.	**08**	**09**
7.	M.Sc. (Basic Sciences)	**01**	**02**
8.	M.Sc. (Biotechnology)	**01**	**02**
9.	MBA (Agri-Business Management)	**06**	**05**
Under Graduate			
1	B.Sc. (Agriculture)	**33**	**41**
2	B.Sc. (Biotechnology)	**36**	**32**
3	B.V. Sc. &A.H.	**02**	**22**

2.9 Thesis accepted (2019-20) :

M.Sc Ag/M.Tech./MBA

S.No.	Name of the student	Reg. No.	Discipline	Name of the Major Advisor	Title of Thesis
1.	Goldy Bhagat	J-17-M-468	Agril. Econ	Dr. S.P. Singh	Economic Analysis of Production and Marketing of Mustard in Jammu District
2.	Gazal Gupta	J-17-M-471	Agril. Econ.	Dr. Anil Bhat	Total Factor Productivity and Supply – Demand Gap Analysis of Rice in Sub-Tropics of Jammu Region
3.	HN Bhargavi	J-17-M-469	Agril. Econ.	Dr. Jyoti Kachroo	Status and Economic Utilization of Tractors in Jammu District of Jammu and Kashmir
4.	Rakshanda Malik	J-17-M-470	Agril. Econ.	Dr. Sudhakar Dwivedi	Total Factor Productivity and Supply Demand Gap Analysis of Wheat in Sub-Tropics of Jammu Region"
5.	Yasir Ayoub	J-17-M-38-ABM	ABM	Dr. Jyoti Kachroo	Consumer Perception: Case of Restaurants in Jammu
6.	Ishanka Gahlawat	J-17-M-39-ABM	ABM	Dr. Jyoti Kachroo	Perception and Attitude of Students Towards Agri-Preneurship in Jammu
7.	Priyanka Sharma	J-17-M-40-ABM	ABM	Dr. Jyoti Kachroo	Critical Analysis of Supply Chain Management of Potato in Jammu: A Case Study of Narwal Mandi
8.	Shubham Sharma	J-17-M-41-ABM	ABM	Dr. Sudhakar Dwivedi	Production and Marketing of Broiler Units in Kathua District of J&K State
9.	Aqib Manzoor	J-17-M-42-ABM	ABM	Dr. Sudhakar Dwivedi	Farmer's perception towards certified and farm produce seeds of major cereals in Jammu

10.	Maninder Singh	J-17-M-44-ABM	ABM	Dr. S.P. Singh	Analysis of Raw Fish Marketing In Jammu District
11.	Aryaa Zutshi	J-17-M-45-ABM	ABM	Dr. S.P. Singh	A Study on Advertisement Influencing Consumer Brand Preference towards Fast Moving Consumer Goods in Jammu City
12.	Shivani Gupta	J-17-M-46-ABM	ABM	Dr. S.P. Singh	A Study of Supply Chain Management of Fresh Tomatoes in Jammu
13.	Shubham Rohela	J-17-M-47-ABM	ABM	Dr. Anil Bhat	Economic Analysis of Milk Processing Plants in Jammu District
14.	Sushmita Rangar	J-17-M-48-ABM	ABM	Dr. Anil Bhat	Economic Analysis of Basmati under Organic and Inorganic Conditions
15.	Amit	J-17-M-49-ABM	ABM	Dr. Anil Bhat	Analysis of Market Share and Promotional Approaches of Pesticide Companies for Vegetable Crops in Jammu District
16.	Bhashkar Gupta	J-17-M-529	Farm Machinery & Power Engineering	Dr. Sushil Sharma	Development of Portable Crop Harvester
17.	Sahil Sharma	J-16-M-464	Farm Machinery & Power Engineering	Er. Hemant Singh	Development and Evaluation of Manual Seed Drill for Mustard Crop
18.	Sadaf Nabi	J-17-M-526	Soil and Water Engineering	Dr.A.K.Raina	Effect of Different irrigation and Fertigation Schedule in Broccoli under Drip Irrigation
19.	Mubina Banoo	J-17-M-527	Soil and Water Engineering	Er. N.K. Gupta	Impact of Ranbir Canal Closure on Wheat Productivity
20.	Shaista Rashid	J-17-M-528	Soil and Water Engineering	Dr. R.K. Srivastava	Designing of water harvesting pond for rainfed areas of Jammu district
21.	Ekta Sharma	J-17-M-472	Agri. Extn. Education	Dr. P.S Slathia	Adoption of production reccomendations of Mash *Vigna mungo* (Black Gram) crop by the farmers in the Sub- tropics of Jammu and Kashmir
22.	Rashika Mahajan	J-17-M-473	Agri. Extn. Education	Dr. L.K Sharma	Impact evaluation of pu blic and private sector interventions on basmati rice production in Jammu District.
23.	Apoorva Gupta	J-17-M-474	Agri. Extn. Education	Dr. Poonam Parihar	Impact evaluation of women diary self help groups of Mahila Grameen Hastkala Welfare Society of Kathua District.
24.	Jamyang Lahmo	J-17-M-475	Agri. Extn. Education	Dr. J.S Manhas	Impact evaluation of national food security mission intervention in wheat crop of Jammu region
25.	Amreena Akhter	J-17-M-494	Agroforestry	Dr.L.M. Gupta	Evaluation of germplasm of cumin (*Cuminumcyminum* Linn.) under subtropics of Jammu
26.	Amit Kumar	J-15-M-430	Agroforestry	Dr. Sandeep Sehgal	Documentation of plants used for the treatment of hypertension and liver diseases in Jammu division of Jammu and Kashmir state

27.	QuratUl Ain Binte Syed	J-17-M-495	Agroforestry	Dr. Sandeep Sehgal	Effect of pruning on growth characteristics of *Meliacomposita*
28.	Akshay Kumar	J-17-M-496	Agroforestry	Dr.Meenakshi Gupta	Performance of wheat in harad (*Terminaliachebula* Retz.) based agroforestry system in Jammu sub-tropics
29.	Sapna Bhagat	J-15-D-230-A	Agronomy	Dr Anil Kumar	Evaluation of different herbicides mixture for post-emergent weed management in maize and their residual effects on succeeding mustard under rainfed conditions
30.	Meneakshi Attri	J-17-M-477	Agronomy	Dr. Meenakshi Gupta	Relatively efficacy of different doses and types of coated area on growth and productivity of wheat under irrigated sub tropics of Jammu region (*Triticum aestivum* L.)"
31.	Preeti Sharma	J-17-M-476	Agronomy	Dr. Anil Kumar Sharma	Influence of integrated nutrient management with differential substitution of farm yard manure for Nitrogen on quality and productivity of dual purpose *Rabi* fodders
32.	Sultan Singh	J-17-M-480	Agronomy	Dr. Ashok Gupta	Effect on Crop establishment methods and sowing environments on growth, yield and quality of Basmati cultivars
33.	Akshay Ujjwal	J-17-M-479	Agronomy	Dr. B R Bazaya	Effect of system of rapeseed intensifaction on growth and productivity of Gobhi sarson (*Brassica napus*) under irrigated conditions of Jammu region
34.	Lalitchetti Sagar	J-17-M-401	Agronomy	Dr. A P Singh	Effect of foliar nutrition and crop geometry on cultivars of black gram in *Shiwalik* foothills of Jammu
35.	Aditi Charak	J-17-M-482	Entomology	Dr. Devinder Sharma	Effect of insecticides on insect pest and pollinator complex of Litchi, *Litchi chinensis* (Sonn.)
36.	Summira Rafiq	J-17-M-483	Entomology	Dr. R.S Bandral	*In-vitro* evaluation of insecticidal activity of *Nerium indicum* M
37.	Rehana Akbar	J-17-M-484	Entomology	Dr. Magdeshwar Sharma	Evaluation of some botanicals and inert dusts against rice weevil, (*Sitaphilus oryzae* L.)
38.	Surendra Singh Bhadu	J-17-M-485	Entomology	Dr. Rajan Salalia	Studies on the distribution, management and life cycle of potato cyst nematode *Globodera* spp. in Jammu region of J&K
39.	Ayushi Bali	J-17-M-486	Entomology	Dr. A.K. Singh	Biorational management of mites in chilli (*Capsicum annuum* L.)
40.	Shazia Baloor	J-17-M-487	Entomology	Dr. Reena	Evalution of various inter and border crops for management of maize stem borer (*Chilo partellus* Swinhoe)
41.	Shoeb Ahmed Bhatti	J-17-M - 490	FST	Dr. Jagmohan Singh	Standardization and evaluation of bael-apricot blended powder and leather.
42.	Nusrat Chaudhary	J-17-M - 491	FST	Dr. Julie D. Bandral	Effect of foaming agents and drying temperature on quality characteristics of garlic powder.
43.	Pawandeep Kour	J-17-M-492	FST	Dr. Neeraj Gupta	Waste utilization of eureka lemon for development of value added product.
44.	Mandeep Kour	J-17-M-493	FST	Dr. Neeraj Gupta	Development and quality evaluation of osmo-dried plum.

45.	Nishta Kumari	J-17-M-497	Horticulture (Fruit Science)	Dr. Arti Sharma	"Propagation Studies in Fig (*Ficus carica* L.) under Jammu Sub-Tropics".
46.	Sarita	J-17-M-501	Horticulture (Fruit Science)	Dr. Parshant Bakshi	Effect of Different Potting Media on Survival and Growth of Air Layered Litchi cv. Dehradun.
47.	Isha Sharma	J-16-M-446	Horticulture (Fruit Science)	Dr. Nirmal Sharma	Diversity Assessment of Seedling Guava (*Psidium guajava* L.) in Jammu Sub-tropics.
48.	Mohit Sharma	J-17-M-499	Horticulture (Fruit Science)	Dr. Amit Jasrotia	Standardization of Time and Method of Propagation in Beal (*Aegle marmelos* L.) under Jammu sub-tropics.
49.	Maanik	J-17-M-500	Horticulture (Fruit Science)	Dr. Deep Ji Bhat	Propagation Studies on Karonda (*Carissa carandus* L.) under Jammu Sub –Tropics.
50.	Chamanpreet Kour	J-16-M-438	Plant Breeding and Genetics	Dr. Anjali Kr. Singh	Stability analysis of bread wheat (*Triticum aestivum* L.) genotypes under organic conditions
51.	Saroj Bala	J-16-M-440	Plant Breeding and Genetics	Dr. Sanjeev Kumar	Genetic divergence studies in advance breeding lines of chickpea (*Cicer arietinum* L) under rainfed conditions
52.	Om Praksh Yadav	J-17-M-507	Plant Breeding and Genetics	Dr. A.K. Razdan	Stability analysis of barley (*Hordeum vulgare* L.) genotypes using AMMI Model"
53.	Sunidhi Tiwari	J-17-M-506	Plant Breeding and Genetics	Dr. S.K. Gupta	"Identification of stable genotypes for pest and disease resistance, seed yield and quality in *Brassica napus"*
54.	Harpreet Singh	J-17-M-505	Plant Breeding and Genetics	Dr. Bikram Singh	Genetic Analysis of Recombinant inbred line for heat tolerance and productive trait in bread wheat (*Triticum aestivum* L)
55.	Himani Sharma	J-17-M-504	Plant Breeding and Genetics	Dr. Subhash Chander	"Studies on Character Association and stability analysis in Wheat (*Triticum aestivum* L.) Under Organic Condition"
56.	Vakul Sood	J-17-M-512	Plant Pathology	Dr. A.K. Singh	Epidemiology and management of leaf spot and werbling *(Alternaria) tagetica*) of marigold under Jammu conditions.
57.	Dyutima Bandral	J-17-M-511	Plant Pathology	Dr. Vishal Gupta	Molecular characterization and pathogenicity analysis of *Puccinia striiformis* pathotypes causing stripe rust in wheat.
58.	Neeru Sadotra	J-17-M-513	Plant Pathology	Dr. M. K. Pandey	Characterization of stripe rust (*Puccinia striiformis)* resistence in elite wheat genotypes.
59.	Roohi Jan	J-17-M-509	Plant Pathology	Dr. Sachin Gupta	Evaluation and standardization of horse dung manure based compost formulation for button mushroom cultivation.
60.	Somagaini Pavankumar	J-17-M-514	Sericulture	Dr. Kamlesh Bali	Organic based nutrient management in mulberry and its impact on silkworm
61.	Divya Sharma	J-17-M-515	Soil Science	Dr. Vikas Sharma	Effect of conservation agricultural practices on soil carbon and nitrogen losses through erosion
62.	Shubham Chaddha	J-17-M-519	Soil Science	Dr Peeyush Sharma	Effect of integrated use of biochar and organic manures on soil properties and growthofknolkhol(*Brassica oleracea* var. *gongyloides* L.)

63.	Meena Yadav	J-17-M-520	Soil Science	Dr. Vivak M. Arya	Impact of resource conservation techniques on runoff & sediment yield in lower Shivalik of north western Himalayas
64.	Farah Muzammal Khan	J-16-M-448	Vegetable Science	Dr. R. K. Samnotra	Seed Production Studies in European Red Radish (Raphanus Sativus L.) Under Non Traditional Climatic Conditions Of Jammu
65.	Amanjeet Singh Sodhi	J-16-M-460	Floriculture and Landscaping	Dr. Nomita Laishram	Genetic variability studies and character association in French Marigold (Tagetes patula L.)
66.	Assma Rashid	J-17-M-488	Floriculture and Landscaping	Dr. Arvinder Singh	Integrated Nutrient Management in french Marigold Tagetes patula)
67.	Raman Thappa	J-17-M-521	Vegetable Science	Dr. Sanjeev Kumar	Genetic Variability and Divergence Studies in Cucumber (Cucumis sativus L.)
68.	Tsering Lanzes	J-17-M-522	Vegetable Science	Dr. Manoj Kumar	Growth Yield And Quality of Broad Bean (Vicia Faba L.) as Influenced by Nutrient Management Under Different Dates of Sowing
69.	Dechen Yangdol	J-17-M-523	Vegetable Science	Dr. Sandeep Chopra	Standardization of Sister Planting Pattern for Growth, Yield and Quality in Pea (Pisum sativum L.)
70.	Padma Dolkar	J-17-M-524	Vegetable Science	Dr. Satesh Kumar	Varietal Evaluation of Bulbsets for Growth, Yield and Quality in Kharif Onion (Allium cepa L.)
71.	Manohara D	J-17-M-525	Vegetable Science	Dr. Anil Bhushan	In Vitro Shood multiplication for grafting in tomato (Solanum lycopersicum L.)
72.	Chahat Chopra	J-17-MB-30	Biotechnology	Dr. R.K. Salgotra	Characterization of Grain Size 3(GS3) Locus for grain length in Basmati Rice (*Oryza sativa* L.)"
73.	Neha Bharti	J-17-MB-31	Biotechnology	Dr. R. Singh	Genomic Profiling for Erucic Acid in European Germplasm of *Brassica juncea* (L.)
74.	Jaspreet Singh	J-17-MB-29	Biotechnology	Dr. Sumita	Expression Kinetics of Nogi Gene in Indian Bread Wheat (*Triticum aestivum* L.)

M.V.Sc.

S.No.	Name of the student	Regd. No	Discipline	Name of the Major Advisor	Title of thesis
1.	Nireeksha	J-17-MV-510	Animal Genetics and Breeding	Dr. Vikas Mahajan	Polymorphism of cGH and cGHR genes and their associations with growth traits in Poonchi chicken
2.	Sahil Raina	J-17-MV-495	Animal Nutrition	Dr. R. K. Sharma	Effect of feeding boiled potato (*Solanum tuberosum*) waste silage on the performance of goats.
3.	Sonali Choudhary	J-17-MV-498	Animal Nutrition	Dr. Nazam Khan	Effect of dietary inclusion of Turmeric (*Curcuma longa*) and Garlic (*Allium sativum*) powders as feed additives on performance of broiler chickens.
4.	Varsha Sharma	J-17-MV-496	Animal Nutrition	Dr Ankur Rastogi	Utilization of Boiled Potato Peel Waste as a Replacer of Green Fodder in Sheep
5.	Saheem Goni	J-17-MV-499	Animal Nutrition	Dr. A. K. Pathak	Influence of tanniferous leaf meal mixture based functional feed supplement on nutritional status, health and production performance of dairy cattle

6.	Sofi-Imran-ul Haq	J-17-MV-517	LPM	Dr. Dipanjali Konwar	Delineation of the period of the heat stress in buffaloes of Jammu region
7.	Indica Sharma	J-17-MV-504	Veterinary Microbiology	Dr. Mohd. Altaf Bhat	Charcterization of Extended Spectrum Beta-Lactamase (Esbl) Producing *Escherichia Coli* in Poultry.
8.	Ufaq Aijaz	J-17-MV-505	Veterinary Microbiology	Dr. Mohd. Altaf Bhat	Molecular Genetic Analysis of *Dichelobacter nodosus* Acidic Protease Isoenzyme 2 in Clinical Samples from Sheep Flocks of Jammu and Kashmir.
9.	Apoorva Gupta	J-17-MV-503	Veterinary Microbiology	Dr. Anil Taku	Metagenomic Analysis of Footrot Samples from Affected Sheep.
10.	Dr. Mufeeda Tariq	J-17-MV-515	Veterinary Parasitology	Dr. Sanku Borkataki	Detection of antimicrobial properties of *Chrysomyia megacephala* larvae in chronic wound healing
11.	Harpreet Kour	J-17-MV-508	VPT	Dr R Raina	Studies on wound Healing Potential of *Bergenia ciliata* rhizome
12.	Yousuf Jamil Beg	J-16-MV-480	Veterinary Physiology	Dr. J.A. Ahmed	Electrocardiogram and electrolyte changes in dehydrated male bovine calves
13.	Zaid Bashir Tragwal	J-17-MV-511	VSR	Dr. R.B. Kushwaha	Clinical study on intravenous pyelography for diagnoses of urological diseases in dogs.
14.	Upasana Sharma	J-17-MV-512	VSR	Dr. Ashok Kumar	Studies on the efficacy of radiography and ultrasonography on diagnosis of foreign body syndrome in bovine.
15.	Anmol Watal	J-17-MV-513	VSR	Dr. Ankur Sharma	Evaluation of cyclosporine and parotid duct transposition for management of KCS in dogs.
16.	Shah Niwaz Khan	J-17-MV-514	VSR	Dr. D,K, Dwivedi	Clinical evaluation of locking compression plate (lcp) in fixation of unstable diaphyseal long bone fracture in dogs.
17.	Zaid Bashir Tragwal	J-17-MV-511	VSR	Dr. R.B. Kushwaha	Clinical study on intravenous pylography for diagnosis of urological diseases in dogs
18.	Upasana Sharma	J-17-MV-512	VSR	Dr. Ashok Kumar	Studies on the efficacy of radiography and ultrasonography on diagnosis of foreign body syndrome in bovine.

M.Sc.(Basic Sciences)

S.No.	Name of the student	Regd. No	Discipline	Name of the Major Advisor	Title of thesis
1.	Chetna Skolia	J-17-MBS-21	Statistics	Dr. S.E.H. Rizvi	Statistical Modelling for Area and Production of Basmati Rice in Jammu Distt. of J&K State
2.	Saquib Khan	J-17-MBS-22	Statistics	Dr. M.Iqbal Jeelani Bhat	Evaluation of Validation Techniques in Linear & Non-Linear Statistical Models

Ph.D. Agriculture

S.No.	Name of the student	Regd. No	Discipline	Name of the Major Advisor	Title of thesis
1.	Jahangir Ali	J-13-D-185-A	Agril. Econ	Dr. Jyoti Kachroo	Production and Marketing Analysis of the Commercial Cultivars of Apple in Jammu Province.
2.	Kiran Lata	J-15-D-261-A	Agril. Econ.	Dr. Jyoti Kachroo	Economic Evaluation of Sericulture Production in Jammu Region
3.	Fatima Bano	J-14-D-225-A	Agril. Extn. Educ.	Dr. Rakesh Nanda	Farmers Knowledge and practices about agrochemical use on selected crops in Jammu and Kashmir State.

4.	Yudhishther Singh Bagal	J-16-D-268-A	Agril. Extn. Educ.	Dr. Rakesh Nanda	Prospects of Non-Timber forest products for sustainable livelihood in Jammu region
5.	Darpreet Kour	J-14-D-229-A	Horticulture (Fruit Science)	Dr. V.K Wali	Studie on Integrated Nutrient Management in Aonla (*Emblica officinalis* Gaertu) Cv.NA-7
6.	Vanya Bawa	J15-D-244-A	Genetics & Plant Breeding	Dr. S.K. Gupta	Association mapping of QTLs for yield contributing traits and identification of candidate genes for Alternaria blight resistance in *Brassica juncea* L.
7.	Heena Attri	J-15-D-243-A	Genetics & Plant Breeding	Dr. Tuhina Dey	Multi-trait integration in bread wheat (*Triticum aestivum L.)*
8.	Rubby Sandhu	J-15-D-241-A	Genetics & Plant Breeding	Dr. Bikram Singh	Pyramiding of stripe rust resistance genes in bread wheat (*Triticum aestivum* L.)
9.	Seethiya Mahajan	J-14-D-217-A	Plant Pathology	Dr. S.K. Singh	Studies on variability and management of *Fusarium oxysporum* f.sp. *ciceri* (Padw.) Synd. & Hans causing chickpea wilt.
10.	Shazia Paswal	J-14-D-219-A	Plant Pathology	Dr. Anil Gupta	Studies on domestication of shitake mushroom [*lentinula edodes* (berk.) Pegler] under natural growing conditions
11.	Saima Farooq	J-15-D-239-A	Plant Pathology	Dr. R. R Jat	Pathogenic diversity in *Alternaria solani* infecting tomato crop and its management.
12.	Suraksha Chanotra	J-15-D-258-A	Sericulture	Dr. R.K.Bali	Characterization of mulberry genotypes (*Morus* spp.) of North-Western region using molecular markers
13.	Rubia Bukhari	J-15-D-260-A	Sericulture	Dr. R.K.Bali	Genetic diversity analysis of indigenous silkworm breeds (*Bombyx mori*) using morphological and molecular markers
14.	Ardhana Sharma	J-14-D-03-BS	Sericulture	Dr. R.K.Bali	Studies on silkworm diseases and their influence on cocoon productivity under field conditions
15.	Vishav Vikas	J-15-D-236-A	Soil Science	Dr. A.K Mondal	Studies on impact of organic manures on soil quality in Okra-Dhaincha-Broccoli sequence.
16.	Bhoye Ranjanabai Chhagan	J-13-D-191-A	Soil Science	Dr. M.P Sharma	Intergated effect of inorganic, organic and biofertilizer on crop yield and soil characteristics under rainfed maize-wheat cropping system
17.	Shalini Khajuria	J-13-D-192-A	Soil Science	Dr. A.K Mondal	Effect of boron application, moisture regimes and mulching on soil boron fractions and productivity of cauliflower
18.	Shazia Mukhtar	J-14-D-19-Biot	Biotechnology	Dr. Sumita	Molecular Characterization of Grain Size Locus in Bread Wheat (*Triticum aestivm*.L)
19.	Nadeya Khaliq	J-15-D-233-A	Entomology	Dr. Uma Shankar	Status and management of leaf miner on vegetable crops with special reference to tomato (*Solanum lycopersicum* L.)
20.	Shahida Ibrahim	J-15-D-232-A	Entomology	Dr. R. K. Gupta	Exploring mealy bug endosymbionts for bioremediation and biodegradation of insecticide and polyethylene

Ph.D. (Basic Sciences)

S.No.	Name of the student	Regd. No	Discipline	Name of the Major Advisor	Title of thesis
1.	Kanika Sharma	J-14-D-02-BS	Biochemistry	Dr. Sanjay Guleria	Studies on phytochemical profile, antioxidant and antimicrobial properties of extracts/essential oils and silver nanoparticles synthesized from selected medicinal plants.
2	Archana	J-14-D-204-A	Statistics	Dr. S.E.H. Rizvi	Small Area Estimation and its Application for the study of Milk Production at Block levels in Jammu Districts

Ph.D. Vety. Sciences

S.No.	Name of the student	Regd. No	Discipline	Name of the Major Advisor	Title of thesis
1.	Sandeep Kaur	J-14-D-76-V	LPM	Dr. Asma Khan	Study on traditional livestock management practices of Gujjars and effect of UMMB supplementation on performance of buffalo
2.	Iqra Khursheed	J-14-D-75-V	LPM	Sahar Masud	Studies on effect of flaxseed and azolla supplementation in poultry under poultry cum fish integrated system
3.	Neelofar Nabi	J-15-D-93-V	Veterinary Anatomy	Dr. Kamal Sarma	Comparative studies on the morphology of the trachea and lungs and certain blood profiles in adult Pashmina, Bakerwali and non-descript goats of Jammu & Kashmir state.
4.	Sharad Kumar	J-13-D-61-V	Veterinary Gynaecology & Obstetrics	Dr. Utsav Sharma	Comparative efficacy of intravaginal progesterone sponge and other progesterone inserts on reproductive performance in post-partum anestrus buffaloes.
5.	Mohsina Mushtaq	J-15-D-94-V	Veterinary Medicine	Dr. Rajesh Agrawal	Investigations on proactive and therapeutic approaches for improving udder health in dairy cows
6.	Sindhu Berian	J-15-D-95-V	Veterinary Medicine	Dr. S. K. Gupta	Studies on climatic stress in dairy cattle and its amelioration through supplementation of micronutrients
7.	Rajesh Godara	J-15-D-99-V	Veterinary Parasitology	Dr. Rajesh Katoch	Status of pyrethroid resistance and role of esterases in its detoxification mechanism in *Rhipicephalus (Boophilus) microplus* isolates of Jammu region
8.	Alveena Ganai	J-14-D-74-V	Veterinary Parasitology	Dr. Anish Yadav	Molecular studies on Cryptosporidium and Giardia species in cattle calves and therapeutic evaluation of Curcuma longa against experimental cryptosporidiosis in mice

9.	Rabjot Kour	J-16-D-110-V	Veterinary Parasitology	Dr. Anish Yadav	Molecular studies on the prevalence of tick borne haemoprotozoan and rickettsial infections in bovines and vector ticks
10.	Sankalp Sharma	J-15-D-97-V	Veterinary Pathology	Dr. Nawab Nashiruddullah	Pathology and Characterization of Pox Virus Infeoti of Small Ruminants in Jammu Region
11.	Kawardeep Kour	J-15-D-98-V	Veterinary Physiology	Dr. Jonali Devi	Impact of Chromium Proprionate supplementation on Stress Markers, Immune Response and Productive Performance of Buffaloes

2.10 Students Welfare

- Rangoli Competion at Urja Hostel 27th May 2019
- World Environment day 6th June 2019.
- Organization of SKUAST-Jammu Open Badminton Tournament 2019 for Teaching and Non-teaching employess 13-14th June 2019 at Sports Complex Chatha
- Celebration of Yoga Day 21st June 2019
- 30th July 2019 plantation under Vanmohtasav
- 29th August 2019 Prepared hockey ground and celebrated national sports day by organizing friendly hockey match
- September 2019 Literacy day was celebrated by providing stationary items to Bal Ashram
- Foundation day was celebrated at university level on 20th September 2019 Advisior to Hon'ble Governor as Chief Guest
- Fire Extinguisher hydrant Mock Drill was given to Urja Hostel on 5th September Teacher day
- 2nd October Gandhi Jayanti Celebration (Week).
- 16th October 2019 "World Food day" Essay writing on theme our actions are our future: healthy diets for a zero hunger world.
- 19th -20th October 2019Twenty three students participated in"ABHIVYAKTI" 5th National Literary Fest2019 at Chandigarh University. Two students won third prize in caligraphyand word stroke event.
- 25th October 2019 Under NSS distributed Sweets ,Stationary items (Bat, football etc) and sanitary pads to Bal Niketan and Naari Niketan at R.S Pura.
- 30th October 2019 Integrity Pledge was taken under "Vigilance Aeareness Week" by both the faculities and Head of Division at R.S Pura an Chatha. Banners of celebrations were place at different locations of University.
- 31st October 2019 Rastriya Ekta Diwas was celebrated by organizing rally at Chatha and R.S Pura campus, Flowers were distributed to citizens passing near the University gate .Students also prepared charts on national unity theme.
- SKUAST- J students participated in North Zone Inter University Badminton competition at LPU Jalhandar, Punjab from 6-10th October 2019.
- Vet.Fest is held at F.V.sc & A.H from 27th -29th Nov.2019 in which various sports event like cricket, badminton, table tennis,volleyball and atheletes.
- SKUAST- J students participated in North Zone Inter University Cricket tournament to be held at Aligarh Muslim University, Aligarh.w.e.f 21st Nov-3rd Dec 2019.
- Participation of SKUAST-J employees cricket team in the 17th All India Vice Chancellor T-20 Cricket Tournament at Shivaji University Kolhapur w.e.f 18th -30th Nov 2019.
- Agri .Fest is held at FOA Chatha from 1-4th Dec.2019 in which various sports event like cricket, badminton, table tennis,volleyball and atheletes.
- Students Cricket team participated in Chancellor Trophy organized by University of Jammu w.e.f 10th -15th Dec 2019.

- Observance of 73th Marty'rdom day of Father of Nation on 30th January, 2020 at Sports Centre, Chatha.
- Mother Tongue day celebrated on 24th Feb 2019 with debate, painting competition among students.
- SKUAST-J students participated at XX Arifest at Indira Gandhi Krishi Vishwavidyala, Raipur ,Chattisgarh w.e.f 8th-12th Feb2020.
- National Science day with theme of "Women in Science" week was celebrated w.e.f 28th Feb2020.
- Participation of SKUAST-J students in XX All India Agricultural University Sports and Games meet scheduled to be held at Tripathi, Andhra Pradesh w.e.f. 1st-5th March 2020.
- Furnishing and functioning of 2nd part of Urja Hostel (Capacity 105).

2.11 Students' Placement and Counseling Cell

The Counseling and Placement Cell is established at main campus, Chatha and facilitates the students by providing information to them about various avenues of employment. A fortnightly e-bulletin **"Career Calls"** containing information regarding opportunities for students in academics, public and private is available on the University website. To sensitize and develop the soft skills of the students, the Counseling and Placement cell has started a series of expert lectures covering different facets of personality development. Students are advised to seeking jobs in private, government, army and other government/non-government organizations. Counseling of students about career prospects, group discussions and mock interviews are done regularly in this cell.

2.12 Hostels and hostel facilities

Separate hostel accommodation for boys and girls are available at the Chatha & RS Pura campuses and one PG hostel is under construction at the Main Campus, Chatha. The girl boarders are housed in newly constructed Girls Hostels. Male boarders are housed in two hostels namely Boys Hostel and Students Hostel. The boys hostel has 44 rooms for housing 138 students at a time with adequate furniture and fixture facility. The students hostel has a capacity to accommodate 143 boarders; 29 rooms are single seater, 49 rooms are double seater and have 16 single room suites for foreign students with facility of kitchenette and attached rest rooms. Spacious and well furnished dining hall, common room, lawn, courtyard, CTV with cable/dish connection etc., have also been provided in the hostels. Facilities for indoor games like table tennis, chess, ludo, and carom boards, also have been made available.

2.13 Health Care Facilities

The Annual Work done Statement of the Health Center is detailed below:

Total OPD	3528
Students	1670
Staff	1858
Hostellers	1222
Non-Hostellers	448
Medical patients	3128
Surgical patients	400
Males	2423
Females	1105
Emergencies	236
Indoors	54
Refereed	44
Physiotherapy sessions	569
Dental sittings	209
Lab. Test	180

2.14 Scholarship

The under graduate and postgraduate students are being awarded various scholarship. The value of merit scholarship awarded per month was Rs.500/-, Rs.800/- and Rs.1200/- to B.Sc.(Ag) / B.V.Sc., M.Sc.(Ag)/M.V.Sc. and Ph.D. students, respectively where as the amount of National Talent Search (NTS) scholarship awarded was Rs.1000/- per month.

2.15 RAWE PROGRAMME

The last Rural Agriculture Work Experience (RAWE) programme was offered in the first semester of 2019-20 to the final year students of B.Sc Agriculture, batch 2016 and concluded successfully. This programme provided the students the practical experience so that the graduates can respond to the real life situation in their profession. The activities undertaken under RAWE programme were: Techno-economic survey (2weeks), Soil and water sample collection and analysis (2 weeks), Plant clinic (3 weeks), Attachment to agro-industry (2 weeks) and rural experience in terms of Attachment (9 weeks) with farmers in village Jinder Melu of block R.S. Pura, Jammu. Total number of students of RAWE (Batch 2016) for the Academic Year 2019-20 were 90

Students Interacting with Teacher during RAWE Programme

2.16 Internship Programme

Students of B.V.Sc & A.H were exposed to internship programme for a period of 6 months in the 10th Semester.

Group Photograph Internship students

2.17 LIBRARY

Usage

Campus	Books Borrowed		Literature referred in the Library	
			Books/Journals/Back Volumes/ Current Issues	
	Per day (avg.)	Total (annually)	Per day (avg.)	Total (annually)
Central Library, Chatha	29	6876	86	20265
Faculty Library, R.S. Pura	27	6613	77	18415
Total				

Book Collection

Campus	Books
Central Library, Chatha	27949
Faculty Library, R.S. Pura	7625
Total	35574*

*Includes Gratis books

Online Databases / e-Journals/e-Books

New Additions

Campus	Books	Journals (Issues/Number)	Theses Ph.D/M.Sc/MV.Sc	Reports	Newsletter	Gratis Books	ST
Central Library, Chatha	-	-	120	32	95	68	--
Faculty Library, R.S. Pura	-	-	61	-	-	-	-
Total		-	181*	32	95	68	-

* includes multiple copies.

Reprographic Services for students and researchers on payment basis

Campus	No. of exposures
Central Library, Chatha	73296
Faculty Library, R.S. Pura	858
Total	74154

Receipts

Campus	Overdue charges	Collection from lost ticket (₹)	Cost recovered from lost books (₹)	Reprographic services (₹)	Total (₹)
Central Library, Chatha	55203	2700	-	76801	134704
Faculty Library, R.S. Pura	14360	300	-	858	15518
Total	69563	3000		77659	150222

Other services provided

Campus	News Clippings	Internet	Journal Online	e-Books	CD ROM Services	Miscellaneous (Documentation
Central Library, Chatha	Yes	Yes	Yes 2923+	Yes 625+	Yes	Yes
Faculty Library, R.S. Pura	Yes	Yes			Yes	Yes

Training provided to Library Users:

S. No.	Title	Participants	Venue
1	User education programme regarding how to use Library resources on 21-10-2019 by Sh. Leela Dhar Mangi, Asstt. Librarian & Sh. Amit Sharma	102	Central Library, Chatha
2	User education programme regarding how to use Library resources on 17 -12-2019 by Sh. Leela Dhar Mangi, Asstt. Librarian & Sh. Amit Sharma	108	
3	Orientation/workshop/training on OPAC (Online Public Access Catalogue) and module of Library Management Software Koha for the members / patrons on 12th December 2019 at Conference Hall (01), Central Library, Chatha.	45	
4	Orientation/workshop/training on OPAC (Online Public Access Catalogue) and module of Library Management Software(LMS) for the members / patrons on 11th December 2019 at Faculty Library, R.S.Pura.	25	Faculty Library, R.S.Pura.

Library Membership

Type of Members	Central Library, Chatha	Faculty Library, R.S. Pura
Faculty & Staff	275	98
Ph. D students	149	40
M. Sc. students	160	85
UG students	161	405
Total	745	628

Subscription to Newspapers & Magazines

Campus	Newspapers	Magazines
Central Library, Chatha	12	8
Faculty Library, R.S. Pura	5	11
Total	17	19

RESEARCH

3

Jammu region is blessed with varying agro-climatic conditions ranging from sub-tropical areas of Doda, Poonch, Rajouri, Udhampur, Kathua and mid hill-zone around Chenab River, *kandi* areas of Rajouri, Udhampur, Kathua and Jammu. The Research is being carried out by the scientists at the Faculty of Agriculture, Faculty of Veterinary Sciences and Animal Husbandry, School of Biotechnology and at different Research Stations/Sub-Stations/Centers spread over the entire Jammu province of Jammu and Kashmir state in the areas of agriculture, horticulture, livestock, dairy, fisheries and home science. Post graduate research also forms an important component of research activity. The research is being funded through co-ordinated research projects and other schemes of Indian Council of Agricultural Research (ICAR), state plan and non plan and various other sponsoring agencies *viz*. DBT, DST, MIDH, MES, NMPB, RKVY etc.

The research outputs accrued from different divisions/research stations/units/centres are reported as under.

3.1 Faculty of Agriculture

3.1.1 Division of Plant Breeding & Genetics

Rice

- **Nomination of new basmati variety in national Trials during kharif 2019**

  One new nomination SJR 103-4-1 having yield potential of 38q/ha and moderately resistant to BLB, Blast and brown spot was nominated for testing in All India Coordinated Research Improvement Programme trials during *kharif* 2019.

- **Breeding materials developed**

  Six new cross combinations involving locally adapted as well as improved basmati cultivars viz, Pusa Basmati 1637, Pusa 1401, Pusa 1728 and others were generated during *kharif 2019*.

- **Breeder Seed Production**

  6.60 qtls breeder seed of various basmati and non-basmati varieties was produced during kharif 2019 for supply to the indenting agencies

Development of bacterial blight resistant mutants of locally cultivated Basmati 370 of Jammu region.

Raising M2 Generations and observation on Mutant frequency: The seeds of the separate progeny lines of the 100 selected M1 panicle and the bulked seeds of all the treatments of both mutagens were sown. The BLB resistant mutants and their frequencies were observed for all the panicle rows and bulk progenies of all the treatments and control. The frequency of BLB resistant mutants were recorded at seedling nursery stage under artificial inoculation condition. Some other mutant plants for plant height, earliness and their frequencies were also observed. The frequency was calculated on the basis of 100 M2 plants.

Development of high yielding fodder oats varieties for Jammu regions

Thirty five (25) germplasms of oats including commercial varieties, experimental varieties and land races have been procured from different research centres/institute of the country were evaluated during Rabi 2019-20 and morpho-physiological and fodder yield characters were recorded which was further subjected to diversity analysis for selection of parent lines and their combinations in oats crossing programme during next season.

Wheat

Development of wheat varieties for Jammu region: Wheat Variety **JAUW- 584** released by state varietal release committee notified by GOI Gazette No: 1326 dated 02/04/2019. The variety is recommended for timely sown irrigated conditions. It is moderately resistant to all the three rusts. It has excellent grain characters and high protein content and yields 50 q/ha.

JAUW - 584

Wheat Variety **JAUW 672** excelled in National Initial Varietal trial for restricted irrigation condition. Based on its national performance it was promoted to Advance varietal trial during rabi 2019-20. The results are awaited. Out of ten, newly developed and stabilized wheat time four times qualified the National Plant Pathological screening and they shall be evaluated in national trials during rabi 2020-2021.

Rapeseed & Mustard

- **Oilseed varieties Notified in year 2019-2020:** A high yielding variety of *Brassica juncea* namely **RSPR 69** (National ID- IC 623331) was **released** by the SVRC-J&K(DSCO/Dev/SSSC/2017-18/36-59)and **notified** by Govt. of India vide its Gazette no:1326 dated: **02/4/2019.**

- A newly developed variety of *Brassica rapa* var. toria **RSPT-6 (**National ID- IC 623330) was with The agronomic package and practices has been **released** by the SVRC-J&K(DSCO/Dev/SSSC/2017-18/36-59) and **notified** by Govt. of India vide its Gazette no:1326 dated: **02/4/2019**.

3.1.2 Division of Agricultural Engeneering

Promotion and Strengthening of Agricultural Mechanization through Training, Testing and Demonstration under SMAM

The purchase of testing machinery and equipments and related equipments have been procured. The construction work of Training Hall and Testing Lab is in progress. As far as the progress and implementation of project is concerned, the Testing Centre has received 22 machines for testing as on date and testing of nine of them have been completed and reports sent to the concerned firms. The testing of remaining 13 machines is in progress.

Multi Crop Thresher

Multi Crop Cutter Type Thresher

Wheat Thresher

Multi Crop Thresher

13 Row Zero Till Seed Cum Fertilizer Drill

10 Row Happy Seeder

Demonstration of Technologies for Improving Productivity of Rainfed Area in Jammu District

DST funded project entitled "Demonstration of technologies for improving productivity of rainfed area in Jammu district is operating in three villages namely Gargal, Kandi and Godhan of Akhnoor Tehsil of Jammu district. Basic objectives of the project are promotion of soil and water conservation technologies for land and water resource management and improving livelihood in rainfed areas. During said period 01 number of earthen embankment (capacity: 225 m^3), 01 number of woven wire stone filled check dam (capacity: 90 m^3). 08 number gabions, 10 number roof water harvesting system (capacity: 2000 litre), 1.5 ha contour /compartmental bunding, 02 ha continuous contour trenching and 0.5 ha bench terracing system were constructed at project site for conservation of soil and water in rainfed areas. 08 number portable

sprinkler kit were distributed at project site for improving water use efficiency. Fruit plants, maize seed, wheat seed and vegetables seed were also distributed among the beneficiaries.

Development and Evaluation of Rooftop Rainwater Harvesting and its utilization for horticultural crops through low cost drip irrigation system at ACRA Dhiansar

Developed Rooftop rainwater harvesting structure at ACRA Dhiansar, SKUAST-Jammu. The height of the stand is 2 m (approx.) and roof water storage capacity is 2000 lt. A low cost drip irrigation system has installed for guava orchard having 5mX5m spacing. There are 100 plants (approximate).

3.1.3 Division of Agricultural Extension Education

Availability, Utilization and Digital Documentation of Non-Timber Bioresources for Sustainable Rural Livelihood and Decision Support System of the Rural Households in the Northwest Himalayas

- Data collection from forest circles of Jammu division & H.P from NTFP collectors
- NTFP collectors meet organized at Chamba H.P.
- Organized a training programme at F.V.Sc, R.S. Pura on Utilization of Non-Timber Bioresources of North West Himalayas for Optimizing Livestock Health and Production on 20/2/2020

3.1.4 Division of Agroforestry

Performance of different clones of Poplar under sub-tropics of Jammu

Maximum tree height of 17.21 m was recorded in Udaiclone followed by WSL-22 (16.18 m) & S_7C_{15}(15.75m) at the age of 8.0 years after evaluation of 05 clones. Whereas, maximum DBH of 36.18 cm was recorded in Udai and minimum in WSL-32.

Growth and productivity of Meliacomposita

After 4.0 years of planting, the average height of the pruned trees was higher (10.71 m) compared to un-pruned trees (8.53 m). However, the pruned trees attained maximum diameter growth to the extent of 16.44 cm as compared to un-pruned trees (13.01 cm).

Conservation and evaluation of elite germplasm of Terminalia chebula

A field gene bank comprising of 04 elite collections of Harad (Terminaliachebula) viz. Raj harad (J&K), Paragpur, Kalar and Palodi (HP) is maintained since 2017. After 2.5 years, maximum plant height (2.57m) and collar diameter (4.77 cm) was recorded in Raj Harad. The minimum plant height (1.89m) and collar diameter (3.23cm) was recorded in Palodi (HP) selection.

Silvipastoral studies on tree- grass-legume combination for the sub tropical areas of lower Shivaliks

Growth data recorded for tree component after 3.0 years of planting indicated that the height of *Terminaliachebula*trees ranged from 78.06to 147.78cm and the collar diameter ranged between 9.09 to 21.78 mm.

Evaluation and standardization of agro-techniques of important medicinal plants of Jammu subtropics

14 accessions of Kalmegh (*Andrographispaniculata*) procured from NBPGR, New Delhi have been planted in experimental farm of the division at Chatha in July, 2019 and the evaluation is underway. In case of Harad, 4 collections of harad were planted at 02 different locations in two districts (One in each district) viz. Udhampur (Village Bansae, Block-Tikri) and Reasi (Village Bharakh, Block-Pauni) with eight plants of each collection atboth locations in July, 2019. The recording of growth data is in progress.

3.1.5 Division of Agronomy

Technologies recommended for Incorporation in Package and practices of Rabi Crops

- **Weed management practices in wheat**
  Application of pendimethalin 1 kg/ha as pre-emergence followed by application of Sulfosulfuron + Metsulfuron @ 30 g/ha + 2 g/ha **or** Mesosulfuron + Iodosulfuron @ 12 + 2g/ha at 30 DAS as post-emergence recorded significantly highest grain yield which was statistically at par with post-emergence application of metribuzin @ 210 g/ha
- **Broad-Leaf Weed management practices in wheat**
  Application of Carfentrazone@ 20g/ha **or** Metsulfuron @ 4 g/ha **or** Carfentrazone + Metsulfuron@ 25g/ha at 30 DAS as post-emergence recorded significantly highest grain yield which was statistically at par with post-emergence application of metribuzin @ 210 g/ha.

Effect of System of Rapeseed Intensification on Productivity of Gobi sarson (Brassica napus) under irrigated conditions of Jammu region

Planting of 15 days old seedlings spaced at 45cmx45cm was found most suitable option for system of rapeseed intensification (SRI) in gobi sarson under timely sown

irrigated conditions of Jammu region. Under late sown irrigated conditions which usually occurs due to late harvest of basmati rice, 30 days old seedlings planted at spacing of 45cm x 45 cm was found quite good as it recoded higher yield over the conventional sowing (Farmer's practice) of gobi sarson.

Impact/Benefits: System of rapeseed intensification not only facilitated planting of Gobi sarson up to 15th of November but was also found quite effective under irrigated conditions in Jammu region as it registered 5.6 % higher seed yield as compared to conventional sowing with 45 cm x 10 cm.

Relative efficacy of different types of coated urea on growth and yield of wheat in irrigated subtropics of Jammu region

Application of 85 % of Rec. N applied through urea Coated with recommended zinc i.e. ZnCU + Rec. P & K was found as the best treatment as it recorded higher Agronomic Use efficiency and Recovery Use Efficiency besides producing grain and straw yields statistically at par with 100 % of Rec. N through ZnCU + Rec. P& K .

Impact/benefits: Application of 85 % of Recommended N through Zn coated urea registered 5.2 % increase in wheat yield and 36.2% increase in Agronomic use efficiency of nitrogen and 30% Recovery Use Efficiency over ordinary urea applied at 100 % of its recommended dose.

Weed management in Kinnow basins

Atrazine 2 kg/ha + paddy straw mulch *fb* glyphosate 1% or Pendimethalin 1.0 kg/ha + paddy straw mulch *fb* glyphosate 1%, was found to suitable for chemical weed management in Kinnow basins.

Impact/benefits : Application of Atrazine 2 kg/ha + paddy straw mulch *fb* glyphosate 1% and Pendimethalin 1.0 kg/ha + paddy straw mulch *fb* glyphosate 1% registered 47.5% and 43.6% increase in Kinnow yield than weedy check (Control), respectively.

Real Time High Intensity Rice based Cropping Systems For Irrigated Sub-Tropics

Since the sequences so formulated had cropping intensity ranging from 300% (Check) to 600% and as per need some of the crops in each of these sequences were replaced to ensure the success of the sequences and finally the job of identification of crops has been over and now the experiment has been allotted to one of the Ph.D student in the division for assessing their performance as per objectives of the study.

Designing, Development and Field testing of Prototypes of Rice-Wheat Ferti-Seeder

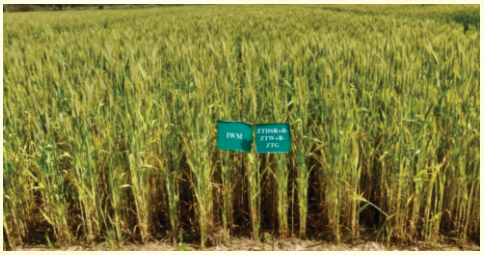
Prototype of rice wheat ferti - seeder has been developed for sowing of direct seeded rice and wheat crops at recommended inter row spacings, however for maintaining seed to seed spacing and to convert it from manual to power operated machine, the expertise of Agri-Engineering Division shall be taken and thereafter, the field demonstrations for sowing of rice and wheat shall be conducted in collaboration with Division of Agriculture Engineering, KVK Kathua and KVK Jammu from *kharif* 2020 onwards.

AICRP-Weed Management

- **Weed management in rice-wheat-greengram cropping system under conservation agriculture**

  In Rice: Among the tillage treatments, significantly higher grain yield with lowest density and biomass of weeds were recorded in CT transplanted rice, however, highest net returns and benefit cost ratio was recorded in ZT-DSR + residue. Integrated weed management (pendimethalin 1 kg/ha *fb* bispyribac-sodium 25 g/ha *fb* with 1 hand weeding in DSR and bispyribac-sodium 25 g/ha *fb* with 1 hand weeding in transplanted rice) practice recorded significantly lowest density and biomass of weeds as compared to weedy check.

In wheat: The highest grain yield and B: C ratio was recorded in ZT wheat + residue than ZT wheat without residue. Among the weed management treatments, the integrated weed management (sulfosulfuron + metsulfuron 30+2 g/ha at 30 DAS fb HW at 45 DAS) recorded significantly lowest density and biomass of weeds with highest grain yield and benefit cost ratio.



- **Weed management in basmati rice-broccoli-sesbania (green manure) cropping system under organic farming**

  In Rice: The highest grain yield was recorded with soil solarisation *fb* 1 mechanical weeding at 30 DAT which was statistically at par with stale seedbed + 1 hand weeding at 30 DAT and stale seedbed *fb* 1 mechanical weeding at 30 DAT. Highest benefit cost ratio was recorded in stale seedbed *fb* 1 mechanical weeding at 30 DAT followed by stale seedbed +1 hand weeding at 30 DAT.

  In Broccoli: The highest weed control efficiency (77.63%) and benefit cost ratio was recorded in paddy straw mulch (6 t/ha) +1 hand weeding at 30 DAT along with significantly higher curd yield of broccoli and thus found suitable for weed management in organic broccoli.

Broccoli in weedy check

Broccoli in Paddy straw mulch 6 t/ha + 1 hand weeding

- **Effect of pre and post emergence herbicides on weed flora and yield of direct seeded rice**

  In direct seeded rice Pendimethalin 1000 g/ha (PE) *fb* bispyribac-sodium 25 g/ha at 25 DAS gave higher grain yield with higher weed control efficiency and benefit cost ratio followed by pretilachlor 600 g/ha *fb* penoxsulam + cyhalofop-butyl 150 g/ha at 25 DAS.

- **Effect of crop residue and weed management practices on weed flora and yield of zero-till wheat**

  125% RDN + Paddy residue with or without waste decomposer (WD) along with sulfosulfuron + carfentrazone 25+20 g/ha or clodinafop-propargyl+metsulfuron (60 +4 g/ha) at 30-35 DAS found suitable in zero tillage wheat.

125% RDN+Paddy residue+ waste Decomposer and codinafop-propargyl+metsulfuron (60 +4 g/ha)

100% RDN and weedy check (Control)

- **Evaluation of post-emergence herbicides against complex weed flora in summer green gram under different tillage practices**

  The acifluorfen + clodinafop 245 g/ha at 3-4 leaf stage recorded significantly higher grain yield and highest B: C ration under zero-tillage, minimum tillage and conventional tillage in summer greengram.

Zero-tillage with Acifluorfen+clodinafop at 245 g/ha

Zero-tillage with weedy check

- **Monitoring for appearance of new weed species**

  The potato field was infested with *Arisaema spp*. at Natha Top, District Ramban of Jammu region.

- **Agro-Advisory for inclement weather conditions prevailed during Rabi season of 2019-20**

During the *Rabi* season of 2019-20 in Jammu sub-tropics, the rainfall received in the months of November and December was quiet higher than the normal rainfall 'that too' in contiguous spans have not only shattered the normal cultivation process of *rabi* crops, especially the planting and establishment of wheat crop, but by and large, has even affected the germination of the wheat crop. The general advisory issued in this regard is as under.

a) Drain out water immediately after every rain fall both from the wheat sown fields as well as from the fields where wheat crop is yet to be sown so as to save the already planted crop from excess moisture and to create optimum conditions for the fields where sowing is yet to be undertaken.

b) Keep the field outlets open for affecting the proper drainage of excess water till the crop is well established, and thereafter regulate the openings and closings of field drainage outlets as per need.

c) Farmer's who have yet not been registered on the Agro-advisory portal of Agrometeorology centre of , Division of Agronomy, SKUAST-Jammu for receiving weather forecast and weather forecast based crop advisories through SMS, may call on our divisional land line (0191-2263891) and Mob. (9419101478) numbers to provide the requisite detail for registration.

d) Plan field / cultural operations keeping in view the weather forecast which is issued bi-weekly by Agro meteorology Research Centre, Division of Agronomy, and SKUAST-Jammu.

- **Agronomic evaluation of promising rapeseed mustard entries-Timely sown mustard- Rainfed condition (2nd year)**

  Among the different fertility levels significant increase in yield was recorded in plots with 125% RDF than 100% recommended dose of fertilizers but it was found to be at par with 150% RDF plots. Among the different spacing no significant difference was observed in seed yield . However, maximum seed yield was recorded in spacing 30×10 cm followed by 45 ×15 cm spacing.

- **Developing resource efficient and resilient rapeseed mustard based cropping systems under the current and future climates (3rd year)**

  Among the different tillage methods, significantly higher seed yield was recorded in raised bed planting (13.37 q/ha) plots followed by conventional tillage (11.17 q/ha) and Zero tillage (9.45 q/ha) in comparison. Among the sub plots maximum seed yield was recorded in sub plots containing green gram which however was statistically at par with all other crops in comparison. However, maximum mustard equivalent yield was recorded in Mustard-Green gram cropping systems which was significantly higher than Mustard-Maize cropping system, Mustard-sesame cropping system and mustard pearl millet cropping system respectively.

- **Enhancing water using efficiency in Rapeseed Mustard**

  Among the different treatments Hydrogel @5.0 kg/ha + Salicylic acid 100 ppm flowering stage & Siliqua stage (T8) (1332 kg/ha).

AICRP-INTEGRATED FARMING SYSTEM, FARMING SYSTEM RESEARCH CENTRE

- **Sustainable resource management for climate smart IFS.**

  Recommendations:

  One ha integrated Farming System (IFS) model comprising of cropping systems (rice-wheat-green manuring, rice-potato-blackgram, rice-mustard-greengram and berseem + oat-maize + sorghum with hybrid napier on bund) in 0.52 ha + horticulture (Guava as main crop, Lemon & mango (Amarpali) as boundary crop and broccoli, Knol Khol, palak, Cauliflower, Radish, turmeric as intercrops) in 0.32 ha + dairy (2 cow, 1 buffalo heifer) including 2 m^3 bio-gas and vermicompost unit in 0.08 ha + fish cum poultry in 0.1 ha) + mushroom (button & dhingri) developed for the Mid to high altitude plain zone (JK-1) in Western Himalayas provides *round the year* production (24.43 t REY/ha/year), profit (Rs 3.00 lakhs/ha/year) and employment (461 man days/ha/year). The highest production and profit was realized in January. While employment was in February month signifying the work even during lean period. Among the different components of farming system, the maximum percent profit share was realized from Animal unit including Vermicompost and biogas which contributes 54% share of total profit. The model also meets around 75% of inputs required for different enterprises within the farm besides providing all the commodities (cereals, pulses, oilseeds, vegetables, fruits, mushroom, milk, egg, and fish) required for the farm family.

- **Emission of GHG's CO_2-e (kg)**

  Crop and Horticulture enterprise in IFS Research Model of 1 ha showed soil Carbon buildup and Carbon Sequestration Potential to the tune of 18.13 t and 4.88 t up to 6 years, respectively (0-45 cm soil depth). Among the various components of crop and horticulture enterprises of IFS Model, the carbon sequestration potential was estimated higher in order of Fodder block (7.29 t/ha), Horticulture (7.13 t/ha), Rice-Wheat-Green manuring (6.36 t/ha), Rice-Mustard-Moong (5.70 t/ha) and Rice-Potato-Mash (4.34 t/ha). On the basis of IFS-GHG estimator tool (Version 1.1), the livestock contributed 67 % net emission of CO_2-e (4709.7 kg), whereas 24% of the net emission of CO_2-e was estimated under rice based cropping system and remaining 9% contributed from fodder, horticulture crops, poultry and fishery component.

  The source-sink relationship of net GHG in terms of CO_2-e(kg) is concerned the Agro-forestry and horticulture plants contributed for maximum carbon sink (13585.2 kg) out of 15146.5 kg as compared to source (7070.9 kg). Thereby showing a reduction in the GHG emission under IFS model to the tune of 8075.6 kg/year.

- **Identification of need based alternative cropping system under assured irrigated conditions of Jammu region**

  Recommendations:-

  The diversified cropping system like rice-broccoli-mash (Rs. 217687/ha), rice-potato-bhindi (Rs. 1,81589/ha) and rice-cauliflower-cucumber (Rs. 1,35,336/ha)are the better choice for obtaining higher net return as compared to existing rice based system . However system profitability of (Rs. 596/ha/day) in Rice-broccoli-mash, Land use efficiency (93.42%) in Rice-Wheat-Daincha and Production efficiency (49.78kg/ha/day) in Rice-Broccolli-Mash was recorded higher under diversification and intensification of rice based cropping under irrigated condition of Jammu region. In terms of energy use efficiency the Rice-Berseem-Seed cropping system showed more energy use efficiency (17.94%) followed by Rice-Oat-Seed (16.15%) and Rice-Barley+Chick pea-Green gram (13.03%) while low energy use efficiency (2.82%) was recorded in Rice-Potato-Bhindi cropping system. However, energy productivity was more (0.56 kg/MJ) in Rice-Broccolli-Mash cropping system which is more profitable system among all ten Rice based cropping system.

- **Development of Organic Farming package for system based high value crops**

  Recommendations:-

  Based on the seven years of investigation, and particularly after the superimposition of organic weed management treatments, it can be recommended that:-

a. Application of 100% Rec. N through different organic sources each equivalent to 1/3 of Rec. N i.e. FYM+ vermicompost + non edible oil cake + VAM (T_5) after the conversion period in rice-potato-frenchbean cropping system produced significantly higher system productivity, profitability and REY besides showed improvement in physical, chemical and biological properties of soils to considerable and sustainable levels.
b. Both the weed management practices through organic sources i.e. Rice bran (@4 t/ha) and Mustard seed meal (@5 t/ha) applied before 10 days before sowing/transplanting showed a significant effect in controlling of all the weed species below the threshold level in a system due to transformation of Ethyle acetate and Glucosinoate.
c. However the application of Mustard seed meal realized a B:C ration of (-0.20) which is owing to its higher cost.
d. The doses of Mustard seed meal can be further reduced to 2.5-3 t/ha by reducing the mesh size less than 400 mm.

- **On-Farm crop response to plant nutrients in predominant cropping systems and their impact on crop-livestock-human chain Cropping system: Rice-Wheat**

  Recommendations:

a. Application of 20 kg ZnSO4 along with recommended dose of NPK in rice (30:20:10) produced significant higher grain yield (2918 kg/ha) over NPK alone (2818 kg/ha),control(1391), Farmers practice(2223) respectively which contribute 4 and 25 per cent increase in rice yield over recommended NPK and farmers practice, respectively. However, in case of wheat increase of grain yield was recorded to the tune 3.06 percent, in the plot fertilized with ZnSO4 @ 10kg per hectare as basal and 0.5% foliar spray at pre & post flowering as compared to treatment where rec. NPK alone was applied. The system productivity w.r.t. REY increased to the tune of 3.5 and 30 per cent over rec. NPK and farmers practice in rice-wheat system, respectively.
b. The nutrient response in Rice-Wheat System w.r.t. kg grain/kg nutrient applied was 15.4(N),29.0 (P2O5),35(K2O) and 22(Zn) in rice where as in wheat it was worked as 5.2(N),12.8(P2O5),14.56(K2O) and 10 (Zn). The higher response of K2O in a system was due to low status of K in soil.

- **Diversification of existing Farming Systems under marginal household conditions**

  Recommendations:

  Twenty four farmers of marginal household were selected in Jammu district having the mean holding size of 0.49 ha. Based on benchmark survey the crop + dairy is the only farming system was identified. The interventions were made in crop (Rice-wheat) and product diversification (NKG). The net return of Rs. 17570 was realized with the intervention cost of Rs. 2850.The additional gain of Rs 10076 over existing system.

- **On-Farm evaluation of farming system modules for improving profitability and livelihood of small and marginal farmers**

Recommendations:

Twelve small and marginal household were selected to evaluate the farming system in Jammu district. The two farming system i.e. Crop+ Dairy and Crop +Dairy+ Fishery were identified having mean holding size of 1.12 and 0.67 ha, respectively. The intervention were made in crop module (HYV with balance nutrition, crop diversification) and(NKG & Oyster mushroom).The net return of Rs 12730 and Rs27956 was realized with intervention cost of Rs 2150 and 4600 with additional gain of Rs 8827 and Rs 20160 over existing in FC+D and FC+D+Fishry farming system, respectively.

Agrometeorology

All India Coordinated Research Project on Agrometeorology (AICRPAM)

- **Weather Situation observed during 2019:**

i. The total annual rainfall received 1184 mm in 59 rainy days, which was 5.3 per cent above normal. Highest rainfall (322.8 mm) was received in the month of July.

ii. The mean annual Maximum and Minimum temperature was recorded 28.7 ºC and 16.6 °C which was 0.9 ^{0}C below normal and 0.4 ^{0}C above normal, respectively. Whereas, the mean annual maximum and inimum relative humidity was recorded 81 and 51 per cent, respectively.

- **Agro climatic Characterization:**

Weekly climatic water balance of Jammu region was worked out by using Thornthwaite's method with long term data of different stations. It revealed that the rainfall received from 27th to 37th standard meteorological weeks exceed the amount of potential evapotranspiration (PET), with the results the surplus water lost through the run off, can be harvested and stored in rain harvested structure, which is available for its use at moisture stress stages of the *rabi* crops.

- **Crop weather relationship**

Paddy: Field experiment was conducted during *kharif-2019* in order to develop the crop weather relationship indirect seeded basmati rice crop with the experimental details viz; three sowing environments (E_1- 1st June, E_2- 16th June & E_3: 1st July, 2019) and three basmati rice varieties (V_1- Pusa -1121, V_2–Basmati-370 and V_3- Local Basmati-123). The brief results of experiment obtained are as follows:

I. The results revealed that basmati rice crop 1st June direct seeded took more accumulated thermal times, Photothermal and Heliothermal units as compared to 16th June and 1st July sown crop. While the cultivar Basmati 370 accumulated more thermal times as compared to Pusa 1121 and SJR129 sown under different sowing environments. The early sown (1st June) basmati cultivars took more number of days for maturation as compared to crop sown on 16th June and 1st July due to higher radiation use efficiency.

Experimental view of Paddy-2019

Basmati Rice Crop

ii. Among these cultivars, SJR 129 produced significantly highest seed yield (26.41 q/ha) as compared to Pusa1121 (19.66 q/ha) and Basmati 370 (17.85 q/ha) sown under different sowing environments due to the crop sown on 1st June was found more efficient in utilizing heat use efficiency (HUE) and exhibited highest (0.39 g /m^2/ degree day) followed by 16th June (0.37 g /m^2/ degree day) and lowest heat use efficiency was observed when crop sown on Ist July (0.34 g /m^2/ degree day). The highest HUE (0.40 g /m^2/ degree day) was observed under Basmati 370, followed by Pusa 1121 (0.37 g /m^2/ degree day) and SJR 129 (0.32 g /m^2/ degree day) varieties of basmati rice crop.

iii The maximum temperature has significantly negative impact on flowering stage and positive impact at hard dough and physiological maturity which influence the yield of crop. The minimum temperature showed significantly positive impact from panicle emergence stage to physiological maturity (reproductive phase). The rainfall had significantly positive affect at the milking stage. Whereas, evaporation and sunshine hours were impacted significantly negative at hard dough stage. The morning relative humidity has significant positive impact at milking stage, whereas, evening relative humidity positively correlated at milking and hard dough stage.

iv Subsequently, the maximum temperature also recorded higher at panicle emergence and milking stage when the crop sown 30th June (D_3) as compared to D_1 (1st June) & D_2 (16th June). The total rainfall and mean bright sunshine hours were less at emergence, tillering and booting stage of basmati cultivars Pusa

1121 and Basmati 370 when crop directly sown on 1st (D_1) & 16th (D_2).

Wheat:

The field experiment was conducted during *Rabi 2018-19* in order to develop the crop weather relationship in wheat crop with different treatments details viz; three sowing environments i.e. E_1- 05th Nov., E_2- 20th Nov., E_3- 05th Dec. and three varieties (V_1- HD 2967, V_2-Raj 3077 and V_3- RSP 561) with three replications in randomized block design. The brief results of experiment are as:

Wheat Crop

I. The wheat sown on 06th November recorded significantly higher grain yield (34.31q ha^{-1}) than the crop sown on 05th December, but at par when sown on 20th November. The increase in the grain yield ha^{-1} under early (05th Nov.) sown and normal sowing date (20th Nov.) amounted to 24.18% and 22.15% as compared to late (5th Dec) sowing, respectively which may be due to the high efficiency of plants to convert solar energy to chemical energy and increase the grain weight. The Early sowing (05th Nov.) recorded the highest number of grains $spike^{-1}$ and spikes length as compared with the delayed sowing by 15 and 30 days. On the other hand, 30 days delayed in sowing has found least number of grains $spike^{-1}$ and spikes length. Early sown wheat crop (D_1) accumulated highest thermal time up to the physiological maturity (at almost all growth stages) as compared to normal sown and late sown. The late sown crop faced higher phenothermal index results in shortened the phenophases and ultimately reduced the seed yield of wheat crop under delayed sowing.

I. The variety HD2967 produced highest grain and biological yield followed by RSP-561 and Raj 3077 due to the varieties HD-2967 showed highest RUE (1.49 gm MJ^{-1} m^{-2}) followed by RSP-561 (1.38 gm MJ^{-1} m^{-2}) and Raj-3077 (1.30 gm MJ^{-1} m^{-2}) at 100 days after sowing and subsequently decreases. The variety HD-2967 recorded significantly highest test weight, spike length, number of grains per spike and harvest index followed by RSP-561 and Raj-3077 as higher RUE, the more total above ground dry matter produced by the variety HD-2967 and found higher yield than the other two varieties.

Experimental View of Wheat-2018-19

i. The correlation studies revealed that the emergence stage (P_1) of wheat crop was positively affected by the maximum temperature and bright sunshine hours, negatively with the rainfall.

ii. Subsequently, the crown root initiation stage (P_2) negatively affected by the maximum temperature and bright sunshine hours and positively with minimum temperature.

iii. The tillering stage (P_3) was also positively correlated with minimum temperature and rainfall. This shows that increase in minimum temperature coupled with rainfall favourable for increasing number of tillers per plant in wheat crop.

iv. The rainfall and evening relative humidity were positively correlated with seed yield of wheat at ear head emergence stage (P_6).

v. Low minimum temperature (-ve) and increase (+ve) in rainfall & morning relative humidity at stage (P_7) and further anthesis decreases in maximum temperature (-ve) as well as bright sun shine hours at milking (P_8) was also favourable for increasing yield of wheat crop.

The rainfall had significantly positive influence on the crop at tillering (P_3), ear head emergence stage (P_6) and hard dough (P_8) and negative effect at emergence (P_1) and hard dough (P_9). At hard dough stage (P_9) the maximum, minimum temperature and rainfall has significantly negative effect on seed yield of wheat crop, might be a reflection of increased respiration rate

leading to poor sink development and enhance the force maturity. The evening relative humidity at physiological maturity stage has observed significantly positive impact.

- **Insect pest weather relationship:**

For developing insect pest and weather relationship particularly Aphid in gobhi sarson crop & yellow rust in wheat crop. The field experiment is conducted in order to develop the insect pest weather relationship in which three sowing environments (E_1- 20th Oct., E2- 30th Oct. & $E_3$10th Nov., 2019) three varieties (V_1- GSL-1, V_2- ONK-1 & V_3-DGS-1) with three replications in mustard crop and wheat as mentioned above theme. The results are as:

i. Aphid in Gobi sarson

The temperature increases along with dry conditions influence rapid aphids build up, the severity of attack was more in 10th standard meteorological week when the maximum temperature ranged between 17.6 to 24.8 ^{0}C, minimum temperature ranged between 7.8 to 13.0 ^{0}C with morning and evening relative humidity ranged from 89 to 93 and 39 to 86 per cent, respectively. The aphid population peak was usually observed in the month of March. Infestation on aphid on mustard was not so high perhaps because of low temperature, partially cloudy and rainy weather and an amount of coccinellid predator. The correlation coefficients derived between the aphid population and different meteorological parameters reveal that maximum, mean temperature, morning and evening, mean relative humidity and bright sun shine hours have significant relationship with aphid population.

I. Yellow rust in wheat crop

The incidence of yellow rust in wheat crop was observed at flag leaf stage on 24th February in all the three varieties sown on different dates, but higher incidence noticed in the variety RSP 561 and lowest in Raj 3077. Subsequently, it has lot of variation were observed and the maximum incidence was found on 18th March in all three varieties thereafter the disease intensity decreases. The disease intensity was found maximum up to 59.1 percent in variety RSP 561 followed by HD 2967 (39.5 percent) and lowest in Raj 3077 (12.3 percent). The variety RSP 561 was found more susceptible to the yellow rust as compared to HD 2967 and Raj 3077. A highly positive significant corelation was found that maximum temperature, morning & evening relative humidity and wind direction with the outbreak of yellow rust in the variety HD 2967. But significant positive corelation was found that maximum temperature, morning & evening relative humidity and wind direction with the outbreak of yellow rust in the variety RSP 561.

The incidence of yellow rust in wheat crop was observed higher in the variety RSP 561 and lowest in Raj 3077. The disease intensity was found maximum up to 59.1 percent in variety RSP 561 followed by HD 2967 (39.5 percent) and lowest in Raj 3077 (12.3 percent). The variety RSP 561 was found more susceptible to the yellow rust as compared to HD 2967 and Raj 3077.

Gramin Krishi Mausam Sewa, AMFU, Chatha, Jammu

Weather based Agro Advisory:

The Agromet Research Centre SKUAST-J, Chatha issues bi-weekly weather forecast and based on agromet advisories bulletins were formulated and disseminated through various means of communications including electronic and print media, personnels of the line departments, KVKs and SMS for the farmers of sub-tropical area of Jammu region encompassing districts of Jammu, Samba and parts of Kathua and Reasi having both the rainfed and irrigated agro-ecologies.

- The total weather forecast based bulletins (including field crops, horticulture, olericulture, sericulture, mushroom culture, floriculture, fisheries, livestock and poultry) issued 416 agromet advisory bulletins were issued for **four** districts, viz; Jammu, Kathua, Reasi and Samba of 104 bulletins each formulated offline from 01-04-2019 to 31-03-2019.
- About 440 agromet advisory bulletins were also formulated through online by using decision support system (DSS) in Hindi and English languages during this period.
- These bulletins were disseminated to the farmers via

various modes viz; mass media (Amar Ujala, Dainik Jagran, Daily Taksin, State Times, Himalayan mail, The Latest, Kashmir Images, Kashmir Times, Dehat Samacher, UNI, Daily Excelsior), **Broadcasted** from AIR, Jammu and Kathua, also **telecasted** from Doordarshan Kendra, Jammu, JK & Take One Channels officers of line departments (Director Horticulture & Director of Agriculture, Jammu & the CAO'S, CHO'S, AEO'S VAEA'S of Jammu, Kathua, Reasi and Samba district) and also KVK-Jammu, Kathua, Reasi and Samba district.

- The block level (Akhnoor, Bhalwal, Bishnah, Khour & R.S.Pura) of Jammu district, agromet advisory bulletins were also formulated were disseminated to the farmers with the help of above mentioned modes.
- The medium range weather forecasting and based on agromet advisory bulletins were also send via mobile sms through kisan portal and about 89 numbers of SMS each in Hindi and English language (178) were sent to the farmers of Jammu, Kathua, Reasi & Samba district
- These agromet advisory bulletins were uploaded in various websites like ***imdagrimet.gov.in, skuast.org, agromet.imd.gov.in***, on biweekly basis (Tuesday and Friday).
- The total number of beneficiary of mobile SMS's for different districts, Jammu (20393), Kathua (4123), Reasi, (6976), Samba (6571), Rajouri (6639), Poonch (5266), Doda (8252), Ramban (3631) and Udhampur (14524).

Economic Impact assessment

- days weather forecast is issued to farmers. Economic Impact assessment given for year 2018-19
- In wheat crop 3 irrigations were saved each on pre sowing, tillering, & jointing. Total saving is Rs 2700-3000 @ Rs 900-1000/acre.
- In Mustard crop 3 irrigations were saved each on pre sowing, vegetative & flowering. Total saving is Rs 2700-3000 @Rs 900-1000/acre.
- In Rabi pulse crop (Pea, Lentil & Gram) 3 irrigations were saved each on pre-sowing, flowering & pod formation Total saving is Rs 2700-3000 Rs 900-1000/acre.
- In Rice crop 5 irrigations were saved each on presowing, Tillering, flag leaf, panicle emergence, grain formation. Total saving is Rs 4500-5000 @ Rs 900-1000/acre.
- In Maize crop 4 irrigations were saved each on presowing, early vegetative, Tasseling & Silking. Total saving is Rs 3600-4000 @ Rs 900-1000/acre.
- In kharif pulse crop (moong mash) 3 irrigations were saved each on pre-sowing, flowering pod formation. Total saving is Rs 2700-3000 Rs 900-1000/acre.
- In Kharif pulse crop (Moong, Mash) 2 irrigations were saved each on sowing, flowering & pod formation. Total saving is Rs 1800-2000 Rs 900-1000/acre

i) FASAL Project:

Crop yield forecasting of maize crop during Kharif-*2019:*

a. Crop yield forecasting (F1) was carried out for 5 selected districts during *kharif* season for maize crop. The grain yields predicted were 20.48, 25.49, 22.49, 14.45 and 22.14 q ha^{-1} for Jammu, Kathua, Udhampur, Doda and Rajouri during *kharif* 2019 of Jammu region.

b. Crop yield forecasting (F2) was carried out for 5 selected districts during *kharif* season for maize crop. The grain yields predicted were 21.78, 26.44, 24.59, 13.95 and 27.96 q ha^{-1} for Jammu, Kathua, Udhampur, Doda and Rajouri during *kharif* 2019 of Jammu region.

c. Crop yield forecasting (F3) was carried out for 5 selected districts during *kharif* season for maize crop. The grain yields predicted were 21.15, 28.16, 23.44, 14.19 and 20.75 q ha^{-1} for Jammu, Kathua, Udhampur, Doda and Rajouri during *kharif* 2019 of Jammu region.

Crop yield forecasting of wheat crop during *Rabi-2019-20*:

Crop yield forecasting of wheat crop (F1, F2, & F3 stage) was carried out for 5 districts during *rabi* season. The grain yields predicted were 23.55, 21.12, 14.56, 16.15 and 22.14 q ha^{-1} at F1 stage, 24.05, 19.89, 15.10, 15.48 and 21.98 q ha^{-1} at F2 stage and 24.16, 21.16, 14.59 and 20.75 q ha^{-1} at F3 stage for Jammu, Kathua, Udhampur, Doda and Rajouri districts of Jammu region during *rabi* 2019-20.

ii) NICRA-AICRPAM :

Preparation and dissemination of block-level

Agromet advisory bulletin specific to the region

a. In the NICRA-AICRPAM selected village Sherpur, Hiranagar block of Kathua district has 103 number of Agromet Advisory Bulletins were formulated based on real time monitoring of crop perperfamce and the same disseminated by different mode to the farmers of this village.

b. Under this project the Agromet Advisory Bulletins were also formulated for the village selected under NICRA- TDC by KVK, Kathua and weekly send to PI-NICRA-TDC, KVK, Kathua for dissemination to farmers of selected village of Saida Sohal in Kathua district.

Feedback from Farmers about the Agromet Advisory from time-to-time

More than two-third of the farmers among these villages satisfied with the services under AAS to plan their farm level operations. Further, 84 percent of farmers followed the weather based advisories w.r.t. sowing and harvesting of crop. The operations such as irrigation scheduling, fertilizer application, intercultural operations and spraying pesticides, the 78%, 71%, 69% and 79%, respectively of farmers took the benefit of agromet advisories. Hence, minimize the input cost of the farmers of area and in turn maximize the yield of various crops.

Assessment of Economic Impact of Agromet Advisories

The number of irrigations saved in rice, basmati rice, maize, *kharif* fodder, *kharif* pulses-moong and mash is five, four, four, three and three respectively during *kharif* season where as two irrigations each was saved in wheat and mustard during *rabi* season.

3.1.6 Division of Entomology

Network Project on Conservation of Lac Insect Genetic Resources

It was found that natural occurrence is highly threatened through human intervention. Pruning time is very important for suitable conservation of lac insect on Palas. However, growers need to be motivated for April pruning. Mid hill area may be congenial for summer conservation of lac. For the first time success for lac conservation was observed on Sissam. Summer mortality remained the most serious concern and was minimally observed on kikar (in situ) while in gene bank it remained quite high on Flamengia. In order to sustain the brood availability artificial inoculation on kikar shall be done.

Brood multiplication in the gene bank (Arhar)

Ex-Situ Conservation of lac on flemangia

Conservation of lac insect (insitu) on ber

Biotechnological interventions for forest conservation and climate resilient livelihood in eco fragile hills of J&K

The project was aimed to implement two main strategies to address climate change i.e., climate smart beekeeping and lac cultivation for forest conservation in J&K. Primary data collection revealed a steep decline in population of Pollinators and scavangers in the region. Absconding and migration of native bees viz., *Apis dorsata, A. cerana* increased during summers to cooler areas which is rapidly generating great threats to the forest ecosystem. The major reasons responsible for this decline according to the survey conducted so far is deforestation (48 %), climate change (28 %), use of excessive pesticides (7 %) and others (17 %). The most emerging issue is regarding the population of native pollinators like *Apis dorsata, A. cerana, Bombus imillimus* and *Bombus haemorrhoidali, Andrena leaena* and *Andrena ilerda*. Absconding and migration of native bees viz., *Apis dorsata, A. cerana* increased during summers to cooler areas which is rapidly generating great threats to the forest ecosystem. On the basis of survey, interactive workshops and exposure visits the most critical issues on beekeeping were climatic stress to bees, invasive plants causing bee mortality, floral phenology and bee diseases. Mitigation measures to conserve these bees were initiated such as traditional hives, make their own foundation sheet and use of natural oils. The refinement on floral calender is in progress. A traditional herbal product was found effective against varroa mites of bees. It was also found that lac insect is highly threatened in the forest region of Jammu and to conserve it, mitigation measures like ex situ multiplication,

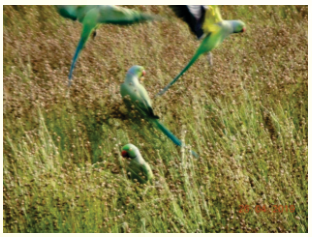
establishment of gene bank and multiplication of brood for artificial inoculation are being implemented.

AICRP on Linseed

In-total 99 entries which were screened against Linseed bud fly. Out of eighteen (AVT) entries from Raipur, were screened against bud fly wherein, BRLS-107 (4.12 %), BRLS-108-1(4.36 %) and T-397 (4.65 %) were found resistant. 15 entries were found moderately resistant and two entries namely Neela (18.08 per cent bud damage) and Neelum (14.77 per cent bud damage) were found susceptible. Out of 81 (IVT) entries, four entries viz., UPN-65, UPN- 66, UPN-67, UPN 68 and UPN-20 (4.68) were found resistant and 76 entries were found moderately resistant against linseed bud fly attack.

Apart from linseed bud fly the infestaion of *H. armigera* was also observed near the maturity of the crop. The flocks of parrots were observed feeding on linseed in morning and evening times. This constitutes the first record of Rose ringed parrot damaging the linseed crops from Jammu region.

Linseed trails



Parrots damaging the Linseed crop

AICRP on Honeybee and Pollinators

Pollination studies

- **Litchi:** The blooming litchi was visited by 23 species of insects belonging to 4 orders and 14 families of class insects. The abundance of pollinators was in the order: *A.mellifera* (47.52%) > *A.cerana* (20.59%)> *A dorsata* >(5.38%) *A. florae* (0.37%). The per cent increase in seed yield was increased to a tune of 183.46 and 177.28 %, respectively in open pollinated and *A.mellifera* introduced crop over pollinator excluded crop of litchi.
- **Berseem:** 14 species of insects belonging to 7 families, 10 genera and 4 orders were recorded. Of all these insects, Honeybees viz. *A. mellifera*, *A. dorsata* and *A. cerana* were the dominant flower visitors. Their abundance was in the order of: *A. mellifera> A. dorsata > A. cerana>A. florea*. The input of bee pollination through open pollination increased seed setting by 152.94 per cent over pollinator's exclusion pollination.
- **Pear:** The blooming pear flowers were visited by 29 species of insects belonging to 4 orders and 14 families of class Insecta. Of these, 14 species belonged to Hymenoptera, 8 to Diptera, 3 to Lepidoptera and 3 to Coleoptera. Their abundance was in the order of : *A. dorsata > A. mellifera> A. cerana > A. florea > Bombus > Halictus* sp. *> Megachile* sp. *> Andraena* sp. Significantly highest fruit yield was recorded in the treatment viz., open pollinated plots (64.70 kg tree^{1}) followed by *A. mellifera* (60.60kg tree^{-1}) plots and caged pollination (20.30 kg tree^{-1}).

Survey and surveillance of honeybee enemies and diseases

The prevalence of high incidence of mites, EFB, sac brood leads to mortality of bees in severe form during the months of February - March/April.

The investigations have revealed the presence dreaded European foul brood disease. The disease was more severe (25-30%) in *A. cerana* colonies compared with *A.mellifera* (6-16.66%). The maximum wasp attack was observed from March-April.

The predatory wasps *Vespa velutina, V. orientalis, V. cincta, V. basali and V. mandarinia*. The *V. velutina* and *V. basalis* were recorded as major enemies of *A. mellifera.* The maximum wasp attack was observed from July -September. The maximum wasp incidence was in morning (9.00-11.00 am).

The maximum per cent infestation of sac brood disease was recorded during March-April. The survey of *A. mellifera* colonies indicated that greater wax moth infestation increased progressively from and acquired its peak in month of August-September.

The presence of ectoparasitic mites, *V. destructor*, *T. clareae*; *T. koenigerum* and stored product mites, *Tyrophagus longior, Caloglyphus indica, Hypopus* and phoretic mites *Neocypholaelaps indica* were observed in debris as well as on the bodies of honeybees. *Varroa destructor* was found associated throughout the year. Peak infestations were observed during the peak brood rearing periods of honeybee colonies. The average number of *V. destructor* mites ranged from a minimum of 8.20 per cent (September) to a maximum of 26.40 per cent (March).

Artificial domiciliation of non – apis pollinators xylocopa species

Nesting hut has been prepared for housing shelters of solitary bees. Different nesting material viz., bamboo stems and castor stems of varying size have been prepared for installation for domestication and rearing of *Xylocopa* species.

Survey and exploitation of bumble bees

The survey conducted in different locations of Jammu division revealed the presence of 7 species of bumble bee: *Bombus tunicatus, B. melanurus, B. haemorrhoidalis, B trifaciatus, B. Simillimus, B. asiaticus* and *Bombus pyrosoma*.

Management of predatory wasps

The low input cost bottle traps were installed in apiary to study their performance against wasps predating *A.mellifera*. Two insecticides belong to different chemical groups were mixed with the bait which recorded the highest numbers of the wasp (Mutton+Spinosad bait). The insecticides were Spinosad and malathion. There were significant differences between percentage mortalities with the insecticides compared with the control. The wasp attracted to mutton and consumed mutton bait more than other baits combinations.

Pesticides residue analysis in bee products

Pesticide residues were analyzed in honey samples. Traces of residues were maximum in Poonch and Rajouri district samples. The results obtained for freshly collected honey samples. Pesticide detected were lambda cyhalothrin (0.65 PPM) and chlorpyrifos (0.22 PPM) which ware above the detection limit (0.1MG/KG).

Effect of plant protection products on honeybees

The population dynamics before and after spraying of insecticides revealed that number of foraging bees was highly reduced in all the insecticidal treatments after 24 hours of spraying. After 3 days of spraying, foraging activities of honeybees were considerably increased and after 7 days, normal foraging activities resumed at par with the control. Methyl demeton and imidacloprid resulted in 100 per cent mortality of the bees within one hour of spraying. After 24 hours of spraying, the bees died in all the treatments except thiamethoxam, which proved to be relatively safer of all the insecticides evaluated.

In-progress

The mite, *Varroa destructor* and wasps viz. *Vespa mandarinia*, *V. basalis* and *V. tropica* remain a serious threat to beekeeping industry in the state. On an average 20–25 % of bee colonies were reported lost due to persistent wasp and *Varroa* attack by beekeepers across the state. The technology developed for Varroa management (February-April: Queen caging + Cinnamon oil; May-July, Sulphur + oxalic acid ; August-October, Formic acid + Cinnamon oil; November-January) resulted in significant reduction in Varroa infestation in bee colonies. Wasps traps (simple wasp trap and double bait wasp trap) were developed. Significant reduction in wasp and mite menace was recorded throughout the state.

Survey and exploitation of bumble bees

The survey conducted in different locations of Jammu division revealed the presence of 5 species of bumble bee: *Bombus tunicatus, B. melanurus, B. haemorrhoidalis, B trifaciatus,* and *B. simillimus*. 48 plants species, belonging to 26 families were recorded visited by Bumble bees for nectar, pollen or both.

Evaluation of bio-efficacy of Thiamethoxam 12.6%+ Lambda cyhalothrin 9.5% ZC against Cumin pests

A study was conducted at Entomology Experimental Farm during 2017-18 and 2018-19 to evaluate the bio-efficacy of Thiamethoxam 12.6+ Lambda cyhalothrin 9.5% ZC against insect pest complex of Cumin. Out of nine treatments including control (check), Thiamethoxam 12.6+ Lambda cyhalothrin 9.5% ZC @ 33.15 (18.9+14.25) g a.i/ha was found to be best in managing the sucking pests especially aphids and thrips of cumin during both the years of study. They were also proved to be safe to the beneficial insects like predators and parasitoids of aphids fauna in cumin ecosystem.

Cumin experimental Plot at Entomology Field, Chatha

Evaluation of Emamectin benzoate 5%+lufenuron 40% WG against fruit borer in okra

A study was conducted to evaluate the bioefficacy of Emamectin benzoate 5%+lufenuron 40% WG against fruit borer in okra at Divisional Research Farm, Chatha, during 2018. There were total 9 treatments including check. Among

them, the lowest infestation was recorded from treatment T_3 (Emamectin benzoate 5%+lufenuron 40% WG @ 31.5 g ai/ha) followed by T_2 (Emamectin benzoate 5%+lufenuron 40% WG @ 27 g ai/ha) which was statistically at par with each other. All the doses of test chemical were also found safe for all natural enemies associated with the Okra crops.

Evaluation of bioefficacy of Thiamethoxam 12.6%+ Lambda cyhalothrin 9.5% ZC against Cluster bean pests

A study was conducted to evaluate the bio-efficacy of Thiamethoxam 12.6+ Lambda cyhalothrin 9.5% ZC against insect pest complex of Cumin during 2018-19. Out of nine treatments including control (check), Thiamethoxam 12.6+ Lambda cyhalothrin 9.5% ZC @ 33.15 (18.9+14.25) g a.i/ha was found to be best in managing the aphids, thrips and whiteflies. Second year trial will be conducted during July-September 2019-20.

3.1.7 Division of Food Science & Technology

Effect of different osmatic agents in preparation of candied whole strawberries.

Osmotic dehydration of whole strawberries can be carried out by using 60^0 Brix sugar solution.The dried strawberries have a shelf life of 3 months with retention of all the phytonutrients.

Shelf life enhancement of guava (Psidium guajava) using herbal edible coatings.

For enhancing the shelf life of guava fruits 20% aloe vera gel treatment was found effective. Aloe vera gel coated guava fruits can be stored upto 21 days at ambient temperature without much of nutritional quality deterioration.

Utilization of waste from kandi lemon for development of value added product.

Osmo-dried galgal peel sticks prepared from 50^0Brix with sugar is organoleptically the best for commercialization purpose. However, it also aids for utilization of galgal peel waste to enhance the economic status of the farmer.

Karonda powder

Karonda powder prepared by cabinet air drying method resulted in better retention of nutrients during 135 days of storage Moisture content, titrable acidity, water activity, ash content, ascorbic acid, antioxidant activity, reducing sugar of karonda powder were found to be 4.33, 5.12%, 0.4180 g; 0.5%, 12.34 mg/100g, 25.5 and 1.27% respectively. The colour value of powder was found to be L* (3.06), a* (4.74) b* (4.02).

Bael-apricot blended powder and leather:

Bael pulp blended with apricot pulp for the development of powder and leather in the ration of 40: 60 was found to be superior followed by 50:50 ratio on the basis of sensory parameters, cost of production of these blended products are economically feasible.

3.1.8 Division of Fruit Sciences

Survey, Selection and Introduction of superior guava germplasm/cultivar.

Allahabad safeda, L-49, Lalit, Shweta and Taiwan Pink varieties of guava were planted at ACRA, Dhiansar during 2019.

Establishment and Evaluation of performance of low chilling cultivars of pear under dry land conditions of Jammu region.

Punjab Nakh, Pathar Nakh, Punjab Beauty and Babugosha varieties of low chilling pear were planted at ACRA, Dhiansar during 2019.

Survey, Selection and Introduction of promising strains of mango.

Dashehari, Dashehari from Mallihabad, Mallika, Chausa, Pusa Arunima, Pusa Shreshtha, Pusa Surya, Pusa Peetamber, and Pusa Lalima varieties of mango were planted at ACRA, Dhiansar during 2019.

Multi locational trials of pecan nut [(Carya illinoensis Wangenheim) C. Koch] selection of SKUAST-J

SKJPP8, SKJPM21, SKJPP25 (Selections of SKUAST-J planted at ACRA Dhiansar along with some commercial cultivars of pecan from CSKV Palampur in 2019.

Demonstration of High Density Planting of Sub-tropical fruit Crops.

A high density block of guava cv. L-49 has been planted at a spacing of 3 x 1.5 m at Chatha in 2019.

3.1.9 Division of Sericulture

Organic based nutrient management in mulberry and its impact on silkworm

The results revealed that, among different treatments, application of vermicompost + *Azospirillum* (4.0g/plant) significantly increased mulberry growth parameters *viz.*, plant girth (7.50 ± 0.13cm), plant height (284.67 ± 7.36cm), number of shoots per plant (15.33 ± 1.20), shoot height (146.63 ± 8.03cm), longest shoot (158.27 ± 6.71cm), internodal distance (5.00 ± 0.40cm), number of leaves per

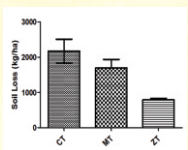
plant (1203.33 ± 60.92), fresh leaf yield (3013.00 ± 71.00g/plant), leaf area index (1.54 ± 0.02), moisture content (72.02 ± 1.05%) and moisture retention per cent after 6 hours (74.43 ± 0.01). Observations on larval traits, cocoon and post cocoon parameters of silkworm were also recorded and the results revealed positive impact in case of vermicompost @ 4kg/plant + *Azospirillum* (4.0g/plant) (T_6) with respect to V instar 10 larval weight (46.69 ± 0.66g), larval survival per cent (97.05 ± 0.58) and shorter total larval duration (27.02 ± 0.01D:H), ERR (By wt.14.26 ± 0.01 and By No. 8987 ± 5.51), single cocoon weight (2.06 ± 0.01g), single shell weight (0.48 ± 0.00g), shell ratio per cent (23.10 ± 0.17), total filament length (1308.00 ± 9.07m), non breakable filament length (1308.00 ± 4.73m), filament size (2.50 ± 0.02d) followed by FYM @ 4kg/plant + *Azospirillum* (4.0g/plant) (T_5), Neem cake @ 2.5kg/plant + *Azospirillum* (4.0g/plant) (T_8), Vermicompost @ 4kg/plant (T_2), Silkworm rearing waste @ 3kg/plant + *Azospirillum* (4.0g/plant) (T_7), FYM @ 4kg/plant (T_1), Neem cake @ 2.5kg/plant (T_4), Silkworm rearing waste @ 3kg/plant (T_3) respectively as compared to control (T_9). Based on the present findings it may be concluded that, the application of vermicompost + *Azospirillum* (4.0g/plant) would be an advisable treatment so as to produce quality mulberry leaves and cocoon crop with improved metric traits.

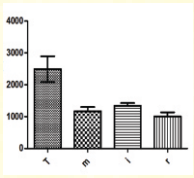
Impact of organic manures on mulberry and its impact on silkworm A. Mulberry Plants B. Silkworm Rearing and C. Cocoons

3.1.10 Division of Soil Science & Ag. Chemistry

Soil Erosion Risk Mitigation and Carbon Sequestration Potential of Climate Resilient Agriculture Practices in Foothill Shivaliks.

In a study on soil erosion under conservation agriculture, it was observed that Zero tillage (ZT) significantly reduced soil erosion over Conventional (CT) and Minimum tillage (MT). While soil cover be it mulching (m), intercropping (i) and residue retention (r) could reduce soil losses irrespective of tillage type.



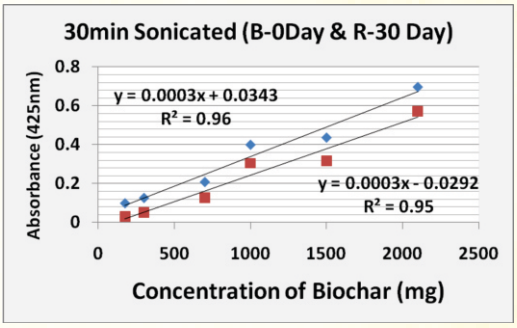


North Indian Centre for Water Technology Research in Agriculture NICWTRA-DST project

Combined application of B10PAM10 recorded significantly higher grain yield of rice than 100% RDF. Highest increase of water productivity (1.28 times) and (1.33 times) in continuous flooding and water deficit, respectively was recorded in plots receiving combined use of B10PAM10 over 100% RDF.

Preparation, characterization and evaluation of the efficacy of nanobiochar based nitrogen and potassium fertilizers- NANO-DST project.

Nanobiochar prepared from biochar ranges from 119nm to 170nm in the biochar concentration range of 2100mg to 175mg and synthesized nanobiochar was found to be colloidal stable.



Isolation and Identification of Phosphate solublizing and diazotrophic bacteria in rhizosphere soil of rice in Jammu district.

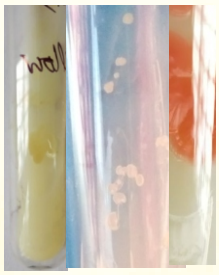


Fig. 1 White (a) and yellow(b) and pink(c) colonies of PSB

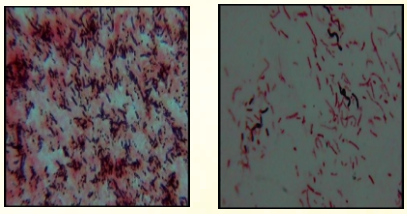
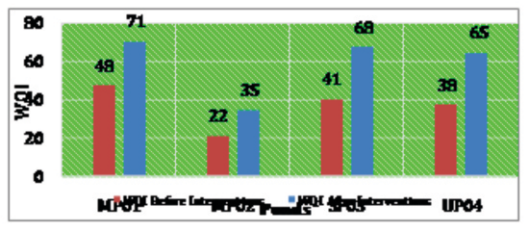


Fig. 2 G +ve (a) and G-ve (b) bacteria

Networking project on revival of village ponds through scientific interventions.

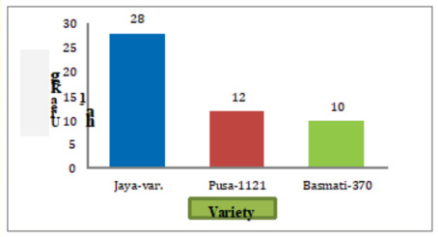
There was improvement in water holding capacity (5-7%), infiltration rate (3 - 4 cm hr^{-1}) & storage capacity (5000-10000 m^3) due to adaptation of resource conservation techniques (RCT's) in the catchment area. There was decline in runoff (30-35 $m^3 ha^{-1} yr^{-1}$) & sediment yield (4.0-5.5 t $ha^{-1} yr^{-1}$) due to adaptation of resource conservation techniques

(RCT's) in the catchment area. There is improvement of WQI after the adaptation of RCT's in the adopted ponds.



Training and demonstration of LCC for real time nitrogen management under climate smart agriculture practices (CSAP) for maintaining ecological integrity through KVK'S".

- Saving of Urea by using Leaf Colour Chart (LCC) is 28 kg ha^{-1} for coarse Var. *Jaya,* 12 kg ha^{-1} for *Pusa 1121*& 10kg ha^{-1} for *Basmati (370).*
- Use of Leaf Colour Chart (LCC) reduces the losses caused by ammonification, nitrification, denitrification & volatilization.
- It is a smart agriculture tool which can reduce the impact of climate change as ammonia, nitrous oxide and nitrate are responsible for the ozone depletion.



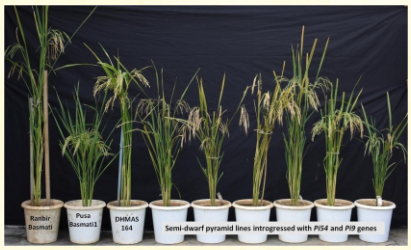
3.1.11 Vegetable Sciences & Floriculture

AICRP (VC)

Cherry tomato variety SJCT-01 nominated in AICRP (VC) for testing under poly house condition during 2019-20 in xxxvii group meeting held at TNAU, Coimbatore

3.1.12 School of Biotechnology

Development of semi-dwarf blast and bacterial blight resistant version of Ranbir Basmati by marker assisted backcross breeding



- Two blast resistance genes, *Pi-9* and *Pi54* and two bacterial blight *xa13* and *Xa21* alongwith semi-dwarfing gene *sd1* were pyramided in the genetic background of a traditional basmati 'Ranbir Basmati' using marker-assisted backcross breeding (MABB).
- The semi-dwarf versions of Ranbir Basmati with inbuilt resistance to bacterial blight and blast shall be available by the end of year 2019. These lines will be evaluated in All India Co-ordinated Rice Improvement programme as well as at the farmers' fields to identify superior lines as a possible replacement for the traditional Ranbir Basmati.
- 16 pyramid basmati lines were found homozygous for genes *Pi-9 + Pi-54 + sd1.*
- 19 pyramided basmati lines were found homozygous for all three genes (*xa13, Xa21* and *sd1*).

Molecular marker assisted pyramiding of white rust resistance genes AcB1-A4.1 and AcB1-A5.1 in Brassica juncea cultivar RSPR-01 recommended in Jammu and Kashmir

Fig.1. BC_2F_1 population in pots for production of BC_2F_2 seeds

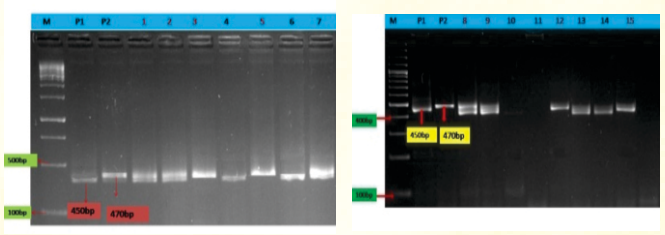


Plate 1: Foreground selection of BC_2F_1 plants using At5g41560 marker (P1=RSPR-01 and P2=Heera; 1 to 15= BC_2F_1 plants)

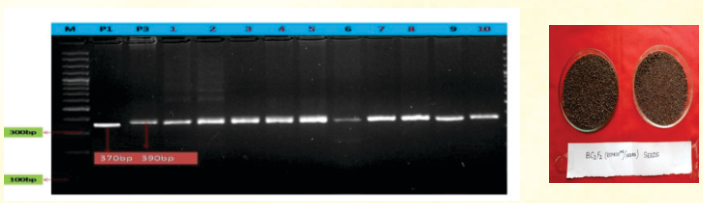


Plate 2: Foreground selection of BC2F1 plants using At2g36360 marker marker (P 1=RSPR-01 and P3=Donskaja; 1 to 17= BC2F1 plants)

3.1.13 Fisheries Unit

Formulation and Evaluation of Low Cost Fish Diet using Locally Available Ingredients

Feed is the single largest input cost in fish farming, accounting for around 60-70% of the total operational cost depending on various factors, such as nature of pond bottom, water quality, culture practice and feed quality. At present, a number of feed industries have been established in India and are producing fish and prawn feeds commercially. But commercial feeds are very costly for the farmers to use for the culture of fish. Considering the importance of supplementary feeding in increasing fish production in semi-intensive and intensive culture systems, the present study evaluated some diets using ingredients available in the local markets for the culture of carps on their growth, survival, yield and economic feasibility. In the present study, major fish feed ingredients available in local market are determined. Experimental trials on formulation and evaluation of standard diets for fish, *Labeo rohita,* was conducted. The effect of diets on growth performance, feed utilization and health profile of fish were also studied. The 2nd trial of the expt. will be conducted during 2020-21.

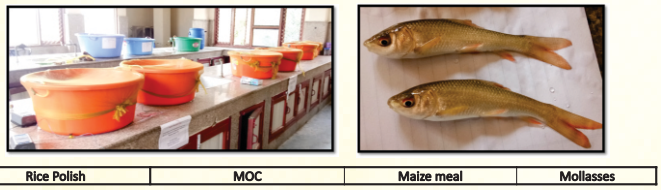
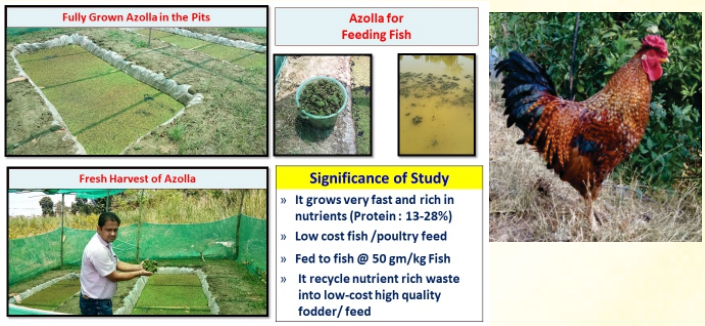


Fig. 1: Some Feed ingredients used for feed formulation
Fig. 2: Lab setup for conducting expt trialsFig. 3: Expt. animal – Labeo rohita

Establishment of Azolla Culture Unit

In order to reduce the total input cost of fish feed, azolla culture unit with two number of pits of size 15x3.0 ft^2 and depth of around 1.0 ft are constructed. The unit is covered with the green net to avoid direct sunlight. The unit is presently function and azolla is fed to the fish cultured in the ponds of water management. Azolla grows very fast and rich in nutrients with protein content of 13-28%. It is low cost fish/poultry/livestock feed. Azolla is fed to the fish @ 50g per kg fish. It also recycle nutrients rich waste into low-cost high quality fooder/ feed.



3.2 Faculty of Veterinary Sciences & Animal Husbandry

3.2.1 Division of Animal Genetics & Breeding

Characterization of Poonchi Chicken

Poonchi chicken population in three districts namely Poonch, Rajouri and Reasi district in their natural habitat were evaluated for phenotypic traits like plumage colour, comb pattern, comb colour, shank colour and growth traits. External and internal egg quality traits carcass traits like meat bone ration dressing percentage etc. were also studied and evaluated. The socio-economic profile of farmers rearing Poonchi Chicken has also been studied Along with their feeding practices and housing management.

Fig. Phenotypic appearance of Poonchi chicken

3.2.2 Division of Animal Nutrition

Prospecting prebiotic potential of rumen liquor:

Work has been carried out to develop and standardize protocol for processing of rumen liquor- its fractionation, concentration and precipitation of soluble fiber.

Functional feed supplement on health and production performance of dairy cattle:

With an objective to evaluate the influence of tanniferous leaf meal mixture based functional feed supplement on nutritional status, health and production performance of dairy cattle, surveys have been conducted in nearby villages of R. S. Pura and Jammu to get relevant information on lactating cows' status, available feedstuffs, existing feeding and management practices, feeding regimen and incidence of gastrointestinal parasites and subclinical mastitis of lactating cows. On the basis of number of lactating cows reared by farmers, 153 lactating cows from 40 farmers of 10 villages were selected and tested for gastrointestinal parasitic infection (GIP) and subclinical mastitis (SCM) through faecal egg counts (FECs) and California mastitis test (CMT), respectively. Out of 153 tested lactating cows, total 36 lactating cows (12 non infected, 12 SCM positive and 12 GIP positive) were randomly divided into three groups i.e. Negative control (NC); Infected control (IC) and Infected Treatment (IT). Overall performance, immune response, milk yield and milk quality parameters viz. lactose, fat, total solids, SNF, pH and acidity were significantly ($P<0.001$) showed better results in IT group as compared to IC group. It was concluded that limited feed resources, un-scientific feeding and management practices results in high incidence of GIP and SCM, poor nutritional status and economic losses. Dietary incorporation of CT containing functional feed supplement act as natural alternative for controlling GIP and SCM and improve overall performance of lactating cattle.

3.2.3 Division of Instructional Livestock Farm Complex

Facilities for hands on training:

Hands on training to 79 BVSc & AH students were given in aspects of dairy production and management with an objective to cultivate capabilities and competence among them to undertake self employment in dairy sector.

3.2.4 Division of Livestock Production & Management

Delineation of heat stress period in buffaloes:

Studies have been carried out to recalibrate temperature humidity index (THI) as an indicator of heat stress for buffaloes of Jammu region where, physiological, biochemical, and gene expressions profile of buffaloes at different THI were evaluated. The result indicated limits of THI indicating degree of heat stress in buffaloes are different than that of cattle. The rectal temperature and pulse rate as well as skin temperature of head and neck region showed a significant increase at THI 68 indicating the onset of mild heat stress. In the THI range 68 to 72 no major deviation was observed indicating the animal could have undergone temporary acclimatization in this range. Significant increase in these parameters was again observed at THI 73 and THI 77. Hematological and biochemical parameters showed major changes in above mentioned THI. Expression studies of heat shock responsive (HSR) showed that both HSP70 family (*HspA2, HspA1A, HspA1l, HspA8*) and Hsf genes (*Hsf1, Hsf2*) were expressed in buffaloes in response to incremental THI .The study concludes onset of that early sign of heat stress occurred at THI 68.The study also reports skin temperature as a potential indicator of monitoring heat stress in dairy buffaloes

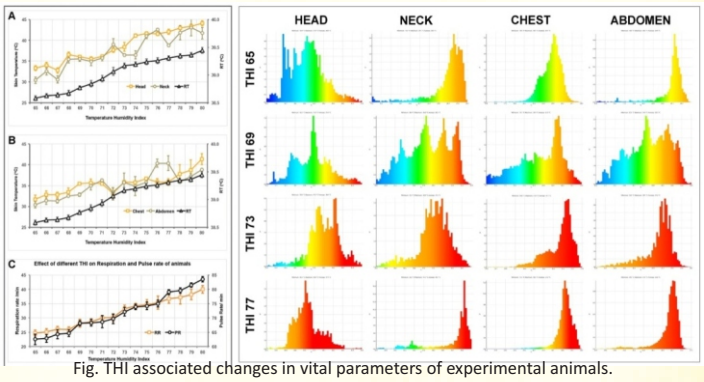
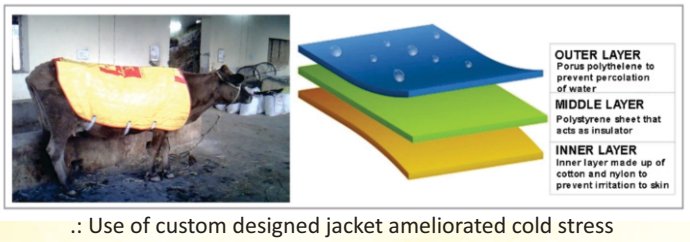


Fig. THI associated changes in vital parameters of experimental animals.
(A) Changes in skin temperature of head and neck region in comparison to RT
(B) Changes in skin temperature of chest and abdominal region in comparison to RT
(C) Changes in pulse and respiration rate.
(D) This dependent changes in temperature histogram of different body regions of experimental buffaloes.

Alleviating cold stress of crossbred cattle through custom designed jacket

Experiments were undertaken during winter to study the effect of jacketing on crossbred dairy cattle during winter by assessing the physiological, profile of core body and skin temperature, haemato-biochemical and gene expressions profile. The animals were divided into two groups of six animals in each group. The treatment groups were jacketed during the night. During the experimental period the THI ranged from 49.75 to 68.82. The treatment group showed significantly higher ($p< 0.01$) rectal temperature. The biochemical parameters AST, ALT, GPX were significantly

(p<0.05) lower while SOD was significantly higher (p<0.05) in treatment than control group. The milk yield did not vary between the treatment and control group. It could be concluded that jacketing of animals during winter has beneficial effect in ameliorating cold stress.



.: Use of custom designed jacket ameliorated cold stress associates production loss in crossbred dairy cattle.

Ameliorated of cold stress mediated production loss of animals with Sorbitol

Supplementation of sorbitol @ 100g/day was found to increase the overall mean value rectal temperature (p<0.05) in treated animals over the control group. Supplementation of sorbitol significantly (p<0.05) increases the overall mean blood glucose level and milk yield over the control group.

Amelioration of heat stress mediated production loss of animals with bypass fat:

The experiment on bypass fat supplementation in crossbred cattle was carried out at THI range of 79.06 to 86.18. The experiment revealed that supplementation of bypass fat decreased the rectal temperature (p<0.01), respiration rate (p<0.05) and significantly (p<0.01) increases the milk yield. The haemato-biochemical parameters, WBC, platelets, SOD and AST were significantly (p<0.01) lower in the treatment group. Chloride decreased significantly (p<0.05) from 2nd to 4th week but overall mean showed no significant difference. Among the behavioural parameters, eating time did not differ significantly while the lying time significantly (p<0.01) higher in treatment group.

Studies on the effect of Flaxseed and Azolla supplementation in poultry:

The study was conducted in laboratory as well as in field condition to study the effect of supplementation of different levels of flaxseed and azolla on poultry and fish rearing under poultry cum fish integration system. Based on the observation it was reveal that 4% azolla showed best results in overall growth performance and net profit/ bird. Water quality of pond was also in favorable. Proximate composition of meat and sensory evaluation of nuggets did not show any adverse change. These results indicated that supplementation of broiler ration with 4% azolla has highest cost benefit ratio without showing any adverse effect on poultry and fish performance

Study on traditional livestock management practices of Gujjars:

The study was undertaken to study the traditional livestock management practices of Gujjars and effect of UMMB supplementation on performance of buffaloes. The study revealed most of farmers were illiterate and were following traditional managemental practices. The current level of productivity remains an area of concern. The poor performance of these animals was attributed to irregular and inadequate availability of quality feedstuffs and imbalance feeding. The urea molasses mineral blocks based on locally available byproducts were made using standard procedure. All supplemented buffaloes gained more body weight, body condition score and heart girth than controls. The UMMB supplementation appeared to have made better difference over controls where animals were already on poor diets. The birth weight of calves born to T1 was significantly more in comparison to T0 (control). Overall, UMMB supplementary feeding during prepartum and postpartum period improved production and reproduction in buffaloes.

Fig: Effect of UMMB supplementation on production and reproduction performances of buffalo. UMMB prepared with locally available ingredients improved pre- and post-partum animal health, production and reproductive performances of animals.

3.2.5 Division of Livestock Products Technology

Development of functional foods for life-style diseases and its entrepreneurial promotion:

Eighteen livestock products (milk, fish and meat products) have been developed and analysed for its quality and antioxidant potential to prevent modern lifestyle diseases.

a) *Grewia asiatica* extract fortified kaladi
b) *Withania somnifera* extract fortified kaladi
c) *Stevia rebudiana* extract fortified kaladi
d) *Commiphora wightii* (*Shuddha guggulu*) extract edible film coated meat nuggets
e) *Rubia cordifolia* (*Manjishtha*) extract edible film coated meat nuggets
f) *Bacopa monnieri* extract fortified seekh kabab
g) *Ocimum sanctum* extract fortified seekh kabab

h) *Artemisia nilagirica* extract fortified fish nuggets
i) *Mentha longifolia.* extract fortified fish nuggets
j) Picorrhiza kurrora extract fortified Mozzarella cheese
k) Bergenia ligulata extract fortified Mozzarella cheese
l) Boswellia serrate extract fortified Mozzarella cheese
m) Glycyrrhiza glabra extract fortified Mozzarella cheese
n) Tinospora cordifolia extract fortified Mozzarella cheese
o) Boerhavia diffusa extract fortified Mozzarella cheese

The functional foods developed with extract fortification of 18 herbs have been tested for its sensory attributes, physiochemical properties and shelf-life. The herbal extracts functionalization of gold nanoparticles to act as vehicle has also been successfully done in order to enhance functionality of food products of livestock origin. After extensive surveys, more than 100 beneficiaries were chosen based on their farming and occupational background for trainings on "functional foods for lifestyle disease prevention".

Fig.: Entrepreneurial promotion of herbal fortified nutraceutical grade functional livestock products

Rural Women Technology Park:

Women Technology Parks were set up in Deoli village, Bishnah Block, Jammu District, Jammu and Kashmir state (Technological interventions in clean meat, milk, fish production and socio economic empowerment of rural women through trainings on value added livestock products). More than 35 trainings were conducted on poultry, fish, dairy farming and value addition of livestock products (105 women beneficiaries). Many women entrepreneurs have started own entrepreneurships in kaladi making (05), khoa making (06), fish processing (04), poultry processing (06) and vermicomposting (02).

Fig.: Project beneficiaries selling livestock products with FSSAI No. on Municipality identified Rehris

3.2.6 Division of Teaching Veterinary Clinical Complex

Urban animal care clinic and pet care services:

Training in aspects of animal care was being imparted to the BVSc & AH final year students and interns for entrepreneurship development. A total of 60 students were trained this year.

Scientific intervention and economic empowerment of rural goat farmers:

The project was intended to empower goat farmers in block R.S. Pura of Jammu Division with enhanced and adequate scientific and managemental intervention. All the objectives of the project have been completed and the final report has been submitted to DBT, Govt. of India.

Another sanctioned project on management of anoestrus in dairy animals through intra-vaginal progesterone devices is underway.

3.2.7 Division of Veterinary Anatomy

Anatomical studies on Poonchi chicken:

For characterization of Poonchi chicken samples were collected and being evaluated for anatomical and biometrical studies of their skeletal and digestive system.

Comparative studies on the morphology of the trachea and lungs and certain blood profiles in adult Pashmina, Bakerwali and non-descript goats of Jammu & Kashmir

Comparative gross, histological, micrometrical, histochemical and immunohistochemical observations were conducted on the trachea and lung of adult Pashmina, Bakerwali and non-descript goats. Number of tracheal rings varied from 38-42 in Pashmina, 41-53 in Bakerwali and 40-49 in non-descript goats. The colour of the lungs was bright pinkish, pinkish red and pinkish in Pashmina, Bakerwali and non-descript goats, respectively. The pulmonary fissures were much deeper in Pashmina goats. Maximum values in regard to majority of biometrical parameters of both trachea and lungs were recorded in non-descript followed by Bakerwali and Pashmina goats. Few biometrical values of trachea and lungs showed significant variations among Pashmina and other two goat breeds. General histomorphological features of the trachea and lungs were similar irrespective of the goat breeds, except that, the tracheal glands were found to be apparently more in Pashmina goats. Various micrometrical parameters of the trachea and lungs were recorded maximum in Pashmina goats except number of alveoli per field of lung tissue. Different histochemical entities showed mixed reactions in the goats. Histoenzymology showed variable reactions but strong reaction of SDH was

observed both in trachea and lung tissue of Pashmina goats. Immunohistochemical count of pulmonary macrophage showed maximum number in Bakerwali followed by Pashmina and non-descript goats. Different immunohistochemical entities showed their variable expressions in trachea and lungs tissues of the goats. Highest values of majority of haematological and biochemical parameters along with a significantly ($P<0.05$) high level of cortisol were found in Pashmina goat. The serum levels of both IgG and total immunoglobulin were found to be highest in Pashmina goat.

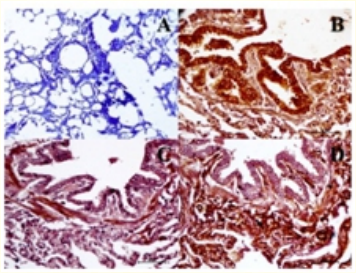


Fig: Immunostaining of goat lungs showing intense reaction of
(A) Basic proteins; (B) PCNA; (C) SMA; and (D) Vimentin in adult Pashmina goats

3.2.8 Division of Veterinary Gynaecology & Obstetrics

Cytological and histopathological evaluation of repeat breeding crossbred cows:

Repeat breeding and anoestrus are major reproductive problems in small scale dairy cow owners and therefore there is a need for cytological and histopathological endometrial evaluation. The use of FOLDSCOPE microscope was evaluated as a tool for its rapid evaluation under field condition. FOLDSCOPE was useful for cervical mucus fern pattern evaluation to assess quality of oestrus in animals before insemination and exfoliative vaginal cytology is possible using FOLDSCOPE tool. It was also useful is useful for pre insemination semen quality evaluation. However, its use for endometrial histological evaluation was limited. FOLDSCOPE microscope is recommended for UG and PG students' practical study involving low magnification tissue/ cell sample study and for field veterinarians for rapid oestrus detection, pre-insemination semen quality evaluation for accessing the precise time of AI services.

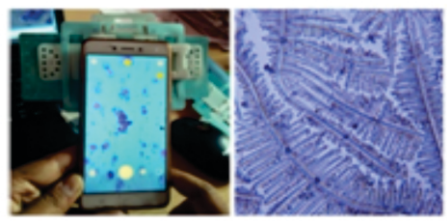


Fig.: Use of Foldscope and Smart Phone for assessment of exfoliative vaginal cytologyin bitch (left) and fern pattern observation on estrous mucous using Foldscope (right)

3.2.9 Division of Veterinary Medicine

Socio-economic upliftment of rural weaker section by amelioration of production diseases:

About 80% survey (600 households) of the socio-economic status of farmers in all targeted villages of Murallian, Chakrohi, Badyal and Suchegarh has been completed and laboratory for the diagnosis of production diseases have been established. Majority of the dairy farmers were found to be amongst the age group of more than 35-50 yrs (39.31%) and comprising of mostly males (81.17%), illiterate, landless to marginal (less than 2 ha land) depending solely on animal husbandry as main occupation. They also comprised of medium sized families with 4-8 members (55.22%). Most farmers have on an average <5 animals and having an average milk yield <10 litres/day. The knowledge level of the farmers regarding animal husbandry practices and the constraints perceived by them were addressed. Clinical camps and training programmes for farmers have been organized and more than 200 mastitis cases were diagnosed.

Fig.: Organization of various camps for rural weaker section
(A) clinical camps (B) training programmes and
(C) interactive advisories for farmers.

Establishment of stem cell lines for the production of proteins of pharmaceutical interest:

Stem cell laboratory has been established. Isolation, culture and purification of goat mammary epithelial/ stem cells and expression of mammary epithelial cells markers using RT-PCR has been initiated.

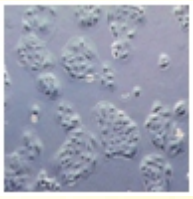


Fig.: Isolation and culture purification of goat mammary epithelial stem cells

Nanoparticles for the treatment of mastitis in dairy animals:

In regards to study on the synthesis, characterisation and evaluation of ciprofloxacin and gentamicin loaded solid lipid–chitosan composites- Bacteria causing mastitis have been isolation and characterized. Studies for antimicrobial

activity of nano-particles against isolated bacteria are showing good *in-vitro* results.

Fig.: Isolation of mastitis pathogen from milk (left) and antimicrobial activity of ciprofloxacin and gentamicin loaded solid lipid–chitosan nano-particles (right)

Iodine deficiency in livestock and its management:

A base line survey was carried and a total of 230 blood samples from various species of animals were collected from various districts of Jammu division. Water content of iodine was found to be very low in all districts of Jammu division and majority of forage fed to animals have low content and therefore iodine deficiency is widely prevalent among the livestock of the region. Parenteral iodine supplementation and *Leucaena leucocephala* feeding trial were conducted at Sheep Breeding farm, Panthal, Udhampur. Injection of iodized oil significantly ($P<0.05$) increases the levels of iodine for 90 days. Body weight and haematological parameters showed non-significant increase among I injected group. Total protein, albumin, phosphorus and T4 levels of animals supplemented with parenteral Iodine showed significant increase post 60 and 90 days. There was significant decrease in cholesterol, HDL and LDL levels observed in group supplemented with parenteral iodine. *Laucenea leucocephala* fed animals showed significant ($P<0.05$) decrease in iodine levels. Significant increase in HDL and non-significant decline in T3 levels of animals fed leaves of *Laucenea Leucocephala* was recorded post 60 days.

Enhancement of livelihood security among livestock rearers through technological interventions

Camps and training programmes were organized for dairy farmers (4), veterinary clinical camps (2), deworming days (2), Urea molasses mineral block (UMMB) and mineral mixture distribution camps (7) as technological interventions for enhancing livelihood security of livestock farmers. The farmers were addressed on the merits and benefits of timely scientific and managemental intervention such as deworming, mineral supplementation, regular vaccination and clean milk production. UMMB was distributed among the farmers.

3.2.10 Division of Veterinary Microbiology

Development of recombinant vaccine against ovine footrot:

A survey was conducted during 2018-19 to determine the prevalence of footrot in Jammu & Kashmir including the districts Anantnag, Pulwama, Shopian, Jammu and two unexplored districts of Samba and Doda of Jammu province. The local non-descript animals were found to be resistant while crossbreds were more prone. Samples from 332 naturally infected sheep showing severe form of disease with a lesion score of 2 (interdigital dermatitis) to 4 (under running of the hard horn of the hoof) were collected and bacterial DNA was extracted and processed for detection of *16S rRNA* gene (783bp product) of *D. nodosus* by PCR and 111 samples were found to be positive. Serogrouping by multiplex PCR using A–I serogroup specific primers was also carried out and revealed serogroups B (84 samples) and E (23 samples) or mixed infection with both (2 samples from districts Pulwama and Jammu). The coding sequence of the *fimA* gene along with the flanking regions of the *D. nodosus* serogroup B and E was amplified and expressed in *E. coli* and sequenced commercially. The sequence of the gene coding for the fimbrial subunit of the serogroup B and serogroup E of *D. nodosus* was established. Sub-cloning of the coding sequence carrying insert in expression vector was aimed at expression of thioredoxin and 6xHis-tagged fimbrial subunit proteins in *E. coli.* Protein samples were separated and analysed in SDS-PAGE. The exact identity of the expressed protein was established by Western transfer analysis and identified by Ni-NTA HRP conjugate. The 6xHis-tagged target protein was purified by Ni-NTA affinity chromatography. In the present study it was confirmed that the expressed protein could not be released from the host without the use of detergent and that the fimbrial proteins did not assemble to mature fimbriae.

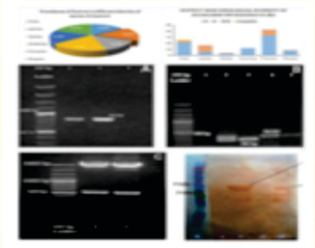


Fig.: Prevalence of footrot in Jammu & Kashmir and its characterization (A) Detection of Dichelobacter nodosus from ovine footrot by PCR by amplification of 783 bp product. (B) Molecular serogrouping of Dichelobacter nodosus from ovine footrot by PCR. Serogroup B is detected by the amplification of 283 bp product while serogroup E by 363 bp product. (C) Release of coding sequences of fimA with restriction site overhangs (D) Western Blotting analysis of target proteins. M: Protein marker; LI: Uninduced control- BL21 carrying D. nodosus serogroup E cdsfimA.L2: Inducedwhole cell lysate of BL21(carrying D. nodosus serogroup E cdsfimA) L3: Uninduced control-BL21carrying D. nodosus serogroup BcdsfimA L4: Inducedwhole cell lysate of BL21(carrying D. nodosus serogroup BcdsfimA)

3.2.11 Division of Veterinary Parasitology

Technological intervention to improve production of dairy and poultry in rainfed areas:

Deworming of livestock was carried in six villages of Jammu Region. Livestock animals showing anoestrus in six animals were treated and synchronised for reproductive cycle. 80 backyard poultry units were established in six villages of Jammu Region. Value addition training were imparted to the farmers of study area. Deworming and mineral mixture administration improved milk yield and reduced anoestrus. It was recorded that input of mere Rs. 1000/ on mineral mixture and dewormers can enhance milk worth Rs. 15,000/ to Rs. 20,000 per animal per lactation. Reduction in intercalving period helps to get extra calf in the life span of a cow. 10-15 birds of backyard poultry unit can give economic returns of Rs. 1,000/bird per year. The value addition of milk and meat products gives 50-100% enhanced income returns.

Fig: Ultrasonographic detection of pregnancy after treatment for anoestrus

Development of sensitive and specific diagnostic assay for the detection of warble fly infestation:

In order to identify the immunogenic molecules in the larvae of goat warble fly some immunogenic molecules were targeted for recombinant protein expression. The recombinant protein Hypodermin B was expressed in prokaryotic expression vector and its immunogenicity was evaluated by western blotting. Hypodermin B, serine protease was found to have good diagnostic potential. Based on the available gene sequences of proteases of myiasis causing flies, the amplification of hypodermin B of goat warble fly, *Przhevalskiana silenus*, was attempted using self designed primers. The 773bp CDS was cloned into pTZ57R/T cloning vector and sent for sequencing. Sequence similarity searches in BLAST revealed that the cloned hypodermin B was 81.80% identical to the *Lucilia cuprina* (Genbank: XM 023445519) annotated protein from genomic sequence available in the database using prediction method. The protein evaluated for its immunogenic potential after recombinant protein expression. In order to explore the native immunogenic proteins in the larvae of goat warble fly somatic antigen of the larvae was prepared. The larvae collected during the previous fly season were processed for somatic antigen preparation. DEAE cellulose column was packed and chromatography of whole somatic antigen was carried out. Three different kinds of serine proteases termed as hypodermin A, B and C were fractionated using different molar concentrations of NaCl. SDS PAGE was standardized with different fractions of somatic antigens. SDS PAGE analysis of the eluted fractions of somatic antigen revealed polypeptides of different molecular weights. Fraction B3, A4 and C2 were observed to be having clear bands of different molecular weights. These fractions were subjected to Western blot with goat warble fly positive field sera and negative (sterile) sera.

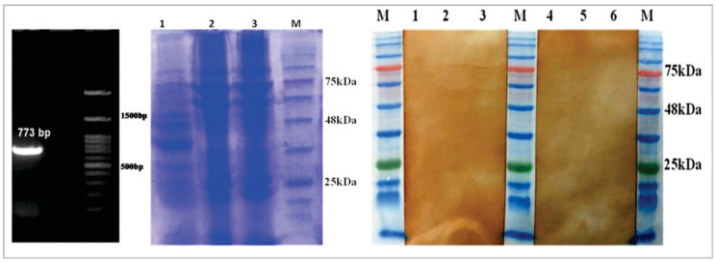


Fig.: Immunogenic determinants for goat warble fly larvae

Status of pyrethroid resistance *Rhipicephalus* (*Boophilus*) *microplus* isolates:

The larval packet test (LPT) was used for evaluation of resistance status against deltamethrin and cypermethrin in *Rhipicephalus* microplus collected from north-western Himalayan region of India. Out of eight isolates, resistance to deltamethrin was detected at level I in three isolates (RFs=2.44-4.06), level II in two isolates (RFs=7.82–18.46) and level III in one isolate (RF=30.02) while two isolates were found susceptible. Against cypermethrin, four isolates with RFs of 1.57-7.52 were found resistant whereas, other four isolates were susceptible. Quantitative analysis of general esterase activity (measured by the production of the metabolite naphthol) revealed a range of 2.466±0.29-8.908±1.68 and 1.279±0.22-5.793±1.24 µmol/min/mg protein for α- and β-esterase activity, respectively in field isolates. Multiple pair wise comparisons of the mean values with susceptible field isolate (Tukey, P=0.05) revealed significant elevated levels of both α- and β-esterases in one tick isolate having highest RFs to both deltamethrin and cypermethrin.The PCR-RFLP assay revealed single product of 372bp, thus indicating absence of point mutation.

Detection of ivermectin resistance and its mitigation in *Rhipicephalus microplus*:

Ticks were collected randomly from the unorganised cattle farms of Chak Shiyan, Tutare, Darsotia, Parmandal and Udhampur. Ticks were brought to the laboratory in vials, closed with muslin cloth to allow air and moisture exchange, washed and dried with filter paper. The ticks were kept individually for oviposition in vials in desiccator in incubator. After oviposition, laid eggs were kept for hatching. Around 21 days larvae were utilised in bioassay to detect resistance against ivermectin and to study the effect of synergists with ivermectin in resistant ticks.

Parasitic infection in domestic (*Rattus rattus*) and Wistar rat (*Rattus norvegicus salvinus*):

A total of 110 domestic rat(*Rattusrattus*) as well as wistar rat(*Rattusnorvegicusalvinus)* were examined for the presence of parasitic infestation during the year 2019-20. Out of which, 10 domestic rat caught lying dead nearby the ground of Faculty of Veterinary sciences &Animal Husbandry, R.S.Pura and another 100 wistar rat were from laboratory of Parasitology division. All the 10 dead animals were collected in different times and post mortem were performed immediately after collection. Faecal samples from wistar rats were also collected for faecal examination. On post-mortem, the parasites were collected from different organs and then fixed and processed and permanent mounts were prepared for morphometric identification. Description of the parasite identified based on the morphology revealed- *Cysticercus fasciolaris* cyst found in the liver and a cestode identified as *Hymenolepis diminuta*from small intestine of domestic rat. On faecal examination of wistar rat, eggs of *Hymenolepis* spp.and on post mortem examination, *Syphacia sp*. foundfrom colon of wistar rat.

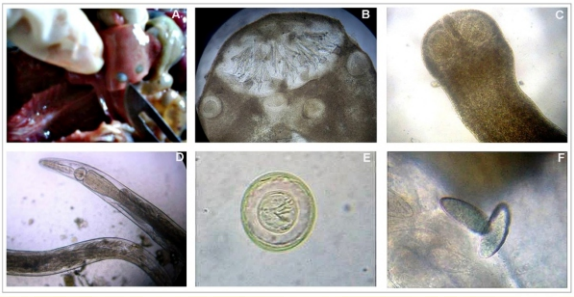


Fig: Parasites of domestic (Rattus rattus) and Wistar rat (Rattus norvegicus salvinus)

Prevalence of helminth parasites affecting livestock in Jammu region:

During the year, 1595 faecal samples of cattle and buffaloes were examined and the positivity observed was 51.11% and 49.3 %, respectively. The predominant gastrointestinal parasite eggs observed were amphistomes (26.03%), *Toxocara vitulorum* (10.82%), strongyles (7.08%), coccidian oocysts (3.8%), *Fasciola* spp. (2.56%) and anoplocephalids (1.26%). The snail examination revealed mainly presence of *Indoplanorbis exustus* which acts an intermediate host for amphistomes. Coprological examination of sheep and goats (150) of R.S. Pura (Jammu) were carried out to determine the prevalence of helminthic infections. Out of these, 55.66% animals were found to be positive for strongyle infection, followed by amphistomes (8.33%) and *Trichuris* spp. (10.00%). The prevalence of amphistome species was determined on the basis of slaughter house samples as well as the presence of larval stages in snails collected from the nearby water bodies and it is concluded that *Cotylophoron cotylophorum* is highly prevalent in the region.

Prevalence of gastrointestinal helminths in dogs of Jammu:

Stray and owned dogs are generally infected with gastrointestinal parasites and contaminate the environment through their indiscriminate eating and defecation habits. The untreated stray dogs cause contamination of the soil of garden, public grounds and kitchen gardens in cities and agricultural fields in rural areas. In rainy season, the eggs are discharged in faeces of dog, attach to vegetables and become important source of infection of many zoonotic diseases of parasitic origin. The prevalence of gastrointestinal helminths in dogs of Jammu was recorded by faecal examination of stray (n=240) and owned (n=240) dogs. The study revealed an overall positivity of 56.8% for gastrointestinal helminthic ova and was significantly ($P<0.01$) higher in stray dogs than owned dogs. Gastrointestinal helminthic ova observed were strongyles (32.40%), ascarids (12.4%), taeniids (6.8%), *Dipylidium caninum* (5.4%), trichurids (2.7%), *Clonorchis sinensis* (1.2%), *Spirometra* spp. (1.2%) Monoparasitism (82.4%) was more frequent than mixed parasitism (28.2%). The highest prevalence was recorded during monsoon and the lowest during summer season.

Molecular studies on prevalence of haemoprotozoan and rickettsial infections in cattle and vector ticks:

Prevalence of haemoprotozoan and rickettsial infections in

clinically suspected bovines of Jammu region through conventional microscopy and polymerase chain reaction (PCR) was found to be 30.21% (84/276). The overall prevalence of *Anaplasma* spp. was 16.54% (46/2278) followed by *Babesia* spp. (9.71% 27/278) and *Theileria* spp. (0.71%, 2/278). Out of total prevalence, *Anaplasma* was recorded in 54.76% animals followed by *Babesia* (32.14%) and *Theileria* (2.38%). Further, Mixed infection was recorded in 10.71% (9/84) of bovine population. Ten samples each of *Babesia bigemina* and *Anaplasma marginale* were detected samples by single PCR assay and two blood samples were positive for *Theileria annulata*. Six sequences were submitted to NCBI gene bank of which 3 were *Babesia bigemina* (18S rRNA gene) MN566925.1, MN567603 and MN566924.1; 2 were sequences of *Anaplasma* marginale (16S rRNA gene) MH733242.1 and MN567602.1; and 1 *Theileria annulata* (Tams1 gene) under process. Diagnosis of bovine haemoprotozoan and rickettsial infections in vector ticks by molecular methods was performed on ticks (*Rhipicephalus microplus*) collected from 60 animals. Optimisation followed by detection by multiplex PCR on tick larvae and nymph revealed presence of *Babesia bigemina* and *Anaplasma marginale* infection in ticks collected from 16 animals. Presence of 270 bp and 504 bp products by multiplex PCR using primers of *Anaplasma marginale* and *Babesia bigemina*, respectively in vector ticks. gene and 18S rRNA genes confirmed the infection. Results revealed that 10 tick samples were positive for *Anaplasma marginale* whereas *Babesia bigemina*were detected in 6 samples of vector ticks.

Antimicrobial properties of *Chrysomiya megacephala* in chronic wound healing:

There is a growing trend of the use of maggots of blowflies to cleanse wounds and similar lesions in human medicine and is usually called maggot therapy. Contaminated wound in patients is a challenge to treat by standard normal procedures due to antibiotic resistance. The present study was planned to evaluate the therapeutic potential and the antimicrobial properties of *Chrysomyia megacephala* larvae in chronic wound healing of Wister Rat. From the experiment, comparing the healing of wound with antibiotic treated it was found that healing process was hastened and resulted into complete healing in maggot treated group after 14 days of treatment (two weeks) in comparison to antibiotic. The results of the present study clearly demonstrated that the innovative approach of using *C. megacephala* larvae, which possesses a definite antimicrobial action along with removal of dead tissues from wound and induced quick healing, and this is the first time report from this part of the country.

3.2.12 Division of Veterinary Pathology

Pox virus infection in small ruminants:

Occurrence of capripox infection amongst small ruminants through clinical survey and confirmatory laboratory diagnosis was carried out in nine unorganized sheep flocks and ten unorganized goat herds throughout nine districts of Jammu division. The overall morbidity and mortality in sheep was 5.35% and 7.85%, while in goats it was 9.42% and 6.78%. None of the goats were found to be affected in flocks reared along with diseased sheep and *vice versa*. While sheep isolates failed to grow on chorioallantoic membrane (CAM) of chicken embryonated eggs (CEE), goat isolates showed haemorrhages and thickening of membrane with presence of white pock lesions after 2-3 serial passages. PCR amplification of a part of the P32 core protein gene successfully confirmed *Capripoxvirus* (CaPV) in clinical scab samples from both sheep and goats yielded a predicted 192 bp product. Sequencing of one isolate each, from sheep (*Sheeppoxvirus*, SPPV) and goat origin (*Goatpoxvirus*, GTPV) revealed that each isolate were distinct and showed 97.8% identity with each other. The SPPV clustered with respective sheeppox cluster with 100% homology to with other SPPV strains reported within India and abroad and also to vaccine strains Srinagar and Rumanian-Fanar (RF). The GTPV was closely identical (~98-99%) with other strains from India and abroad with some unique residues of its own.

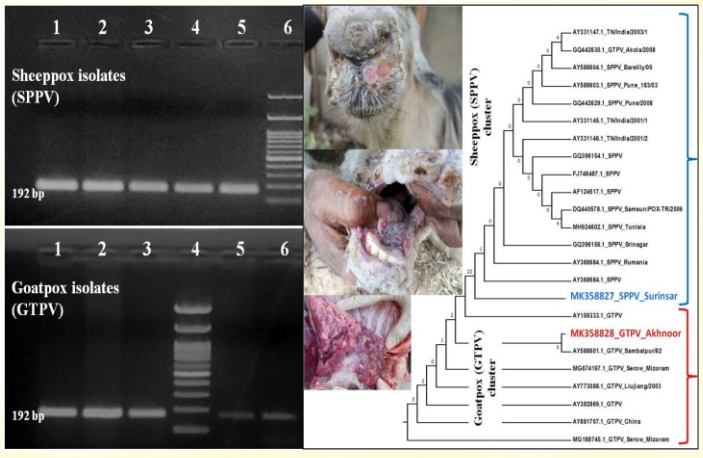


Fig: Diagnosis of Capripoxvirus targeting CaPV P32 gene and phylogenetic analysis of Jammu Sheeppoxvirus (SPPV; MK358827) and Goatpoxvirus (GTPV; MK358828) isolates

3.2.13 Division of Veterinary Pharmacology & Toxicology

Estimation and evaluation of antimicrobial residues in foods of animal origin:

Estimation of Oxytetracycline (642 samples), Enrofloxacin and Ciprofloxacin (145 samples liver) was carried out to evaluation antimicrobial residues in foods of animal origin and to study their impact on human health. The project was concluded in February, 2020 with the findings that most tissues were found positive for oxytetracycline residue [Kidney (83.88%), liver (85%), muscle (74%), egg (33.86%), milk 36.85%, paneer (64.71%)] and for enrofloxacin/ ciprofloxacin [Liver (66.66%), kidney (62.5%), muscle (25.00%) and milk (5.56%)].

WOS-B Project (Mentorship):

Survey for perception and knowledge of farmers regarding cow urine based pesticide and local botanicals in R.S. Pura area was carried out. Interactions with farmers to have first line information regarding the cow urine based pesticides and other related issues. Survey of R.S. Pura area was also carried out for the availability of cow urine and locally available botanicals.

3.2.14 Division of Veterinary Physiology & Biochemistry

Gujjar and Bakarwal Women Empowerment:

With an objective to promote Gujjar and Bakarwal women empowerment, improved managerial practices in livestock rearing was advocated. Besides, awareness in aspects of personal health, hygiene and sanitation was also persuaded. One Vermicompost unit and one silage unit constructed at FVSc and AH campus for demonstration and training of silage and vermicompost production and purchases for equipment were completed. On-site training was given to protect the animals during extreme climatic conditions, preparation of vermicompost, silage making and deworming was done to animal flock before migration. The harmful effects of various milk adulterants were conveyed to the milk producers (Gujjars and Bakerwals). Training was given for clean milk production and hygienic handling of dairy products. Routine veterinary healthcare, clinical camps, diagnosis of disease and mineral feed supplementation were tremendous help to the community. Veterinary First-Aid kits were distributed to those who migrate to remote locations when veterinary health care is not assessable. Sensitization and awareness was initiated regarding zoonosis. Training was given in aspects of personal health, menstrual hygiene etc. Sanitary napkins were distributed among the girls. Kits of personal hygiene was given to the women (comprised of detergent soap, bathing soap, tooth brush, tooth paste, sanitary napkins). Notebooks, writing materials were distributed among the kids and were encouraged for continued education. Regular health check-up was done for women and kids. Severe malnourishment and anaemia was found in majority women and kids. Iron, calcium and multivitamins were supplied regularly with awareness on balanced diet and deworming of the children. About 23 different camps and trainings were organized. Trainings were given on vermicompost preparation and silage making. Various clinical veterinary camps, medical camps, awareness programme on personal health, hygiene and animal husbandry trainings are organized in various parts of Jammu. Free veterinary and

Fig.: Veterinary/ Medical health camps and training on personal hygiene/ sanitation for Gujjar and Bakarwal women

Electrocardiogram and electrolyte changes in dehydrated male bovine calves

Studies on dehydrated male bovine calves of 2-5 months of age revealed a profound bearing on the ECG. Since many electrolytes are invariably lost in the diarrheal fluid, their serum alterations could be readily observed as prominent ECG changes. Heart rates of dehydrated animals were increased. QRS amplitudes were significantly ($P<0.05$) decreased in dehydrated calves (from 0.583 ± 0.070 mV to 0.122 ± 0.007 mV). Cardiac arrhythmias, flat P waves, tall and peaked T waves were commonly observed. Slight non-significant PR segment depression was seen in some cases. Significantly increased QRS durations (0.077 ± 0.007 sec) and decreased ST intervals (0.207 ± 0.007sec) were seen in dehydrated calves. ST elevation was characteristics in the study. The cardiac axis of hydrated and dehydrated animals was 65.67° ± 1.41 and 55.00° ± 2.30 respectively. These alterations were indifferent from those of hyperkalemia, hyponatremia and hypomagnesemia. A significant decrease

in sodium or hyponatremia (127.83 ± 0.48 mEq/l) and magnesium or hypomagnesemia (1.05 ± 0.004 mEq/l) were seen in dehydrated calves. A significant increase of potassium or hyperkalemia (5.70 ± 0.03 mEq/l) was found in dehydrated calves. The study showed ECG as a promising and helpful guide for the clinical veterinarian or those electrocardiographically monitoring supportive therapy of dehydrated animals.

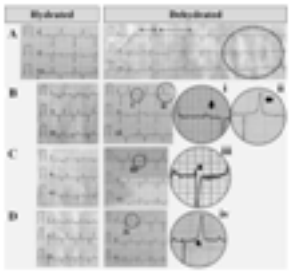


Fig.: Electrocardiographs of different waveform abnormalities associated with dehydrated calves: (A) Cardiac arrhythmias; (B) Progressive flattening of 'P' waves magnified at inset (i), and tall 'T' waves magnified at inset (ii); (D) Broad QRS complex magnified at inset (iii); (D) Elevated ST segment magnified at inset (iv).

Impact of chromium propionate supplementation on stress markers, immune response and productive performance of buffaloes.

The effect of chromium propionate supplementation on morphological, physiological, hemato-biochemical, oxidative, immunological, hormonal, expression pattern of HSP family genes and productive parameters in lactating buffaloes during different seasons were studied. Treatment groups were supplemented with 9 mg & 18 mg chromium propionate/head/day respectively in all the seasons. Blood and milk samples were collected from each animal at an interval of fifteen days during all seasons and assessed for hematobiochemical, oxidative, immune, hormonal and productive parameters. It was observed that chromium propionate supplementation significantly lowered ($P<0.05$) RR, PR, WBC, blood glucose, cholesterol, SOD, LPO, GPx, GST, catalase and cortisol levels in animals; whereas, significantly increased ($P<0.05$) Hb, PCV, RBC, eosinophil, total protein, T_3, T_4, *HSPA8*, milk protein, milk fat and total milk yield recorded in supplemented groups. Chromium supplementation had no effect on hair length, skin thickness, RT, RBC, neutrophil, lymphocyte, basophil, monocyte, ALT, AST, prolactin, total Ig, IgG, SNF and lactose level in any season. Significant higher ($P<0.05$) PR, RR, ALT, AST and cortisol levels were observed in summer season; whereas, Hb, PCV, T_3, T_4, *HSPA2, HSPA1A, HSPA8* and total milk yield were significant higher ($P<0.05$) during winter season. It was inferred that thermal stress negatively affects the parameters, thereby causing a decrease in total milk production and its composition. Chromium supplementation @ 9mg/head/day and 18 mg/head/day was found to ameliorate thermal stress (hot and cold) in lactating buffaloes as observed by improvement in physiological, oxidative, hormonal and production parameters.

3.2.15 Division of Veterinary Pubic Health & Epidemiology

Interventional strategies for prevention and control of common parasitic zoonoses:

For socio-economic upliftment of livestock rearers belonging to schedule caste and schedule tribe population, a project was undertaken for the diagnosis of common parasitic zoonoses and interventional strategies for their prevention and control. A random selection of livestock of SC and ST population of Poonch and Rajouri Districts of J&K state was carried out for study of external and internal parasites of public health importance. Out of 828, 62.5% sheep, 45.45% goats, 40% cattle, 13.33% buffaloes and 23.80% dogs were found positive for different external parasites. For internal parasites samples were collected and attributed to giardiasis, cryptosporidiosis and ancylostomiasis. For giardiasis, out of a total of 240 samples 26.6% in cattle, 28.3% in buffaloes and 30.8% in nomads was seen. Giardiasis was significant in nomads who were using stream water for washing of hands, utensils, ablution, recreational activities (40%) ($p=0.01$), followed unhygienic practices of not washing hands with soap after defecation (40.07%) ($p=0.00$) or not having toilets at home (37.77%) ($p=0.00$). Prevalence was higher in children who ate raw vegetables/fruits etc (41.66%) ($p=0.01$). Some 53 stool samples were also collected from dogs around open areas inhabited by nomadic communities and screened for *Ancylostoma caninum*. It was observed that 39.62% of samples were positive for the intestinal parasites signifying a high risk factor of its transmission. As a road map to control zoonotic diseases number of strategies have been implemented. In the capacity building training programmes, a total of 24 day-long farmer's training cum awareness camps were conducted whereby 752 (549 male and 203 female) beneficiaries were enrolled and trained from the different rural areas. During this year, 230 faecal samples have been processed for identification of intestinal worms and as a health advocacy and communication

strategy seven day-long trainings have been conducted for livestock farmers. Four diagnostic-cum-treatment camps and five awareness camps covering 223 beneficiaries have also been undertaken.

Outreach Programme on Zoonotic Diseases (ORZD):

Rabies: Epidemiological srudies on rabies in Jammu were conducted, whereby a total of 9,261 human cases of post-exposure prophylaxis for rabies were reported in the year 2018 and 10,953 cases in 2019 from Government Medical College, Jammu. The majority of exspoure cases (85%) was attributed to dogs while rest of cases (15%) were attributed to exposure to animals including monkey, cat, cow, mongoose, leopard and other wild carnivores. About two-third cases were in males (73% in 2018; 74% in 2019) indicating increased susceptibility on account of their outdoor activities/ occupation. In 2018 majority of bite cases (79%) had received treatment for category-III exposure (very high risk) requiring ARS besides full course of vaccine and thereby making the cost of treatment high, and sometimes unaffordable followed by 21% in category-II exposure (high risk). The majority of human post-exposure cases were from the young and teenagers. The highest number of cases were from 21-30 years age group followed by 10-20 years and 0-10 years in both years. In 2019, 78.5% of post-exposure cases were of Category-III while 21.2% were of Category-II. Category-II cases included the exposure to suspect rabid animals and ingestion of milk productsfrom suspected rabid animals. Only 0.3% cases were of pre-exposure vaccination. While the epidemiological data related to vaccination of animals from Jammu division has been collected from Animal Husbandry Deptt. Jammu. A total of 5,752 prophylactic vaccinations and 2,369 post-bite vaccinations were carried out in Jammu region in 2018-19,

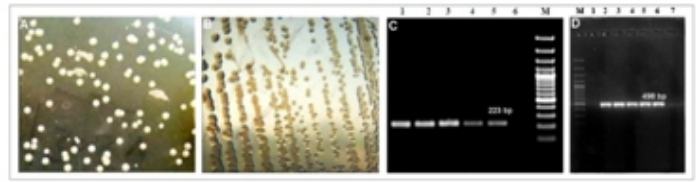


Fig.: Isolation and molecular confirmation of Brucella sp.

Scrub typhus in humans: A total of 92 human serum samples were collected from Rajouri district, J&K. The samples were analyzed by IgG ELISA (Inbios, USA) to detect antibodies against *Orientia tsutsugamushi*. A high occurrence was obtained (25 positive samples) for IgG antibodies.

Brucellosis: A total of 90 human serum samples were subjected to IgG ELISA (Demeditec, Germany) for detection of anti-*Brucella* antibodies in human serum samples. Out of 90 serum samples, 4 samples were positive. A total of 200 samples comprising of vaginal swabs (n=136) and pooled milk samples (n=64) from cattle, buffalo, sheep and goats were processed for isolation of *Brucella* sp. The vaginal swabs were sampled from animals having recent abortion or normal parturition and collected within 7 days of abortion or parturition. Putative *Brucella* sp. isolates were confirmed by PCR while targeting the BCSP-31 gene. The isolates were further characterized for biovar identification and analyzed by Multilocus Variable Number Tandem Repeat Analysis for 16 loci (MLVA-16) to identify genotype variations in the region. Eleven samples (2 isolates from buffaloes and 9 from cattle) were found positive and after biochemical testing designated as *B. abortus* biovar 1. MLVA-16 differentiated eleven isolates into 5 genotypes.

Awareness Camps: A total of 7 zoonoses awareness camps conducted for creating awareness on food hygiene, meat and milk borne zoonoses among the masses. Awareness was also generated amongst school children and rural masses on zoonotic diseases in general and rabies. These outreach activities were also extended throughout Jammu, Rajouri and Poonch districts.

3.2.16 Division of Veterinary Surgery & Radiology

Clinical evaluation of locking compression plate (LCP) in fixation of unstable diaphyseal long bone fracture in dogs

A study was conducted to evaluate the functional outcome after immobilisation of long bone fractures with locking compression plate. All long bone fractures reported were treated with LCP and Locking head screws with standard procedure and the outcome was recorded. The surgical technique of LCP application in long bones was found to be simple and easy and there was no major intra-operative complication.

Studies on the efficacy of radiography and ultrasonography on diagnosis of foreign body syndrome (FBS) in bovines

A clinical study was conducted on bovines suffering from foreign body syndrome. After recording the preliminary data, radiography and ultrasonography was done for the diagnosis of FBS. Haematobiochemical analysis was also done to assess the physical status of animals and the findings were correlated with radiography and ultrasonographic findings. Laboratory diagnosis along with radiography and ultrasonography can be of high diagnostic value in detecting the FBS in bovines.

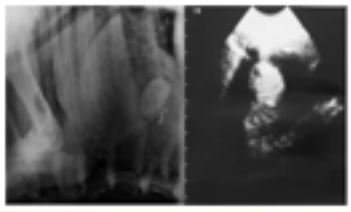


Fig.: Radiograph of bovine showing metallic foreign body (nail) and reticular abscess confirmed by sonogram.

Clinical study on intravenous pyelography (IVP) for diagnoses of urological diseases in dogs

Studies conducted to correlate the findings of IVP with plain radiography, ultrasonography and haematobiochemical parameters in dogs showed that intravenous pyelography using Iohexol 350 mgI/ml @1.5 ml /KG bt. Wt. is better diagnostic technique compared to ultrasonography, plain radiography and haemato-biochemical parameters in the diagnosis of ureteral lesions and evaluation of kidney function.

Fig: Radiograph showing small calculi and distension of urinary bladder, and after 15 min of Iohexol administration showing proximal uretero-hydronephrosis and J configuration of retrocaval ureter of left kidney and right abnormal ureter.

Comparative evaluation of diagnostic modalities in abdominal diseases of dogs

A study was conducted to evaluate and compare the radiographic, B-mode and Doppler ultrasonographic, haematobiochemical and histopathological findings in various abdominal organ diseases in dogs. Signalment, history, physio-haemato-biochemical parameters, urinalysis and radiography, B-mode and Doppler ultrasonography and fine needle biopsy of the affected organs were performed in each dog. Ultrasonography showed more sensitivity than radiography in detecting finer parenchymal detatil. Doppler flow indices (RI and PI) increased in renal failure and hepatic diseases; however no change was recorded in urinary obstruction, splenic affections and prostatic diseases. FNAB showed 100% accuracy for disease diagnosis in the present study. All the three modalities (Radiography, conventional B-mode USG and Doppler USG) complimented each other in decision making and predicting prognosis but the final diagnosis was obtained only with histopathology.

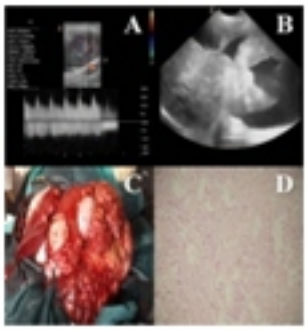


Fig.: Diagnostic modalities in abdominal diseases of dogs (A) Doppler image of left kidney showing normal resistive and pulsatility index; (B-D) Ultrasonogram, intraoperative picture of liver and histopathology showing Chollangiocellular carcinoma (H & E, 100x)

Diagnostic evaluation and surgical management of Kerato-conjunctivitis sicca by parotid duct transposition (PDT) in canines

A study was conducted to evaluate the incidence of Kerato-conjunctivitis sicca (KCS) and to effectively identify KCS by use of various diagnostic aids in canine and their surgical management in canines was seen. The animals were subjected to medicinal treatment using cyclosporine and surgical treatment by parotid duct transposition. PDT should be used as a treatment option for restoring the ocular surface health for KCS in dogs especially when owner compliance is poor.

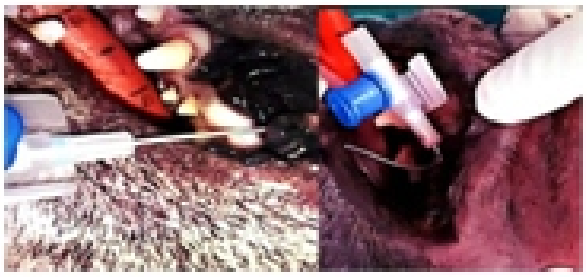


Fig.: Parotid papilla catheterization using 24 G intravenous catheter and suture in place at parotid papilla to prevent its dislodging during dissection

3.3 Faculty of Basic Sciences

3.3.1 Division of Biochemistry

Green synthesis of silver nanoparticles using aqueous leaf extract of *Eucalyptus globulus:* Characterization, antibacterial and anti-yeast activity

The study involves the optimization of various parameters like concentration of silver nitrate ($AgNO_3$), ratio of extract to $AgNO_3$, pH and incubation time for the green synthesis of silver nanoparticles (AgNPs) using aqueous leaf extract of

Eucalyptus globulus (EGE). It was found that 3 mM $AgNO_3$, 0.01:1 ratio of EGE to $AgNO_3$, pH 7.0 and contact time of 24 h were found to be the optimum for synthesis of silver nanoparticles. AgNPs were characterized by UV–Visible spectrophotometer, showing a typical surface plasmon resonance (SPR) peak at 414 nm. SEM and TEM analysis showed that the biosynthesized AgNPs were predominantly spherical with an average size of 23.5 nm. FTIR analysis revealed phenolics, flavonoids and proteins present in the leaf extract acted as reducing and capping agents for the green synthesis of AgNPs. Furthermore, AgNPs significantly disrupted the integrity of gram negative bacteria (*Escherichia coli, Klebsiella pneumoniae*) in comparison to the gram positive bacteria (*Staphylococcus aureus, Bacillus subtilis* and *Micrococcus luteus*). In addition to this, AgNPs also showed dose dependent inhibitory potential against *Candida albicans* and *Saccharomyces cerevisiae*.

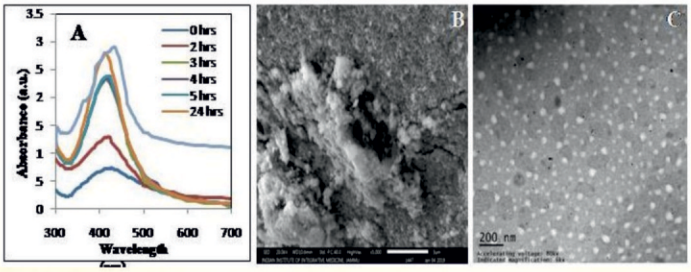


Fig. A. Optimization of green synthesis of AgNPs; A. Scanning electron microscope image; B. Transmission electron microscope image of AgNPs synthesized from aqueous leaf extract of *Eucalyptus globulus.*

Characterization of green synthesized silver nanoparticles from aqueous leaf extract of *Cinnamomum camphora* and investigation of their antibacterial, antifungal and α-amylase inhibitory activity

This study involve green synthesis of silver nanoparticles (AgNPs) using *Cinnamomum camphora*' aqueous leaf extract (CCE) by optimizing reaction parameters like silver nitrate ($AgNO_3$) concentration, extract to $AgNO_3$ ratio, pH and incubation time. It was found that 5 mM $AgNO_3$, 0.12:1 ratio of $AgNO_3$ to CCE, pH 7.0 and reaction time of 24 h were optimum for the synthesis of AgNPs. Surface plasmon resonance peak was observed at 418 nm. Phytochemicals namely proteins, polyphenols and flavonoids present in the CCE acted as reducing and capping agents for the synthesis of AgNPs as revealed in the FTIR analysis. SEM and TEM analysis indicated spherical AgNPs having an average size of 50 nm. AgNPs showed dose dependent inhibition of *Alternaria alternata* and also displayed α-amylase inhibitory activity. Further, AgNPs were more effective against gram negative bacteria than the gram positive bacteria as reveled from inhibition zones and bacterial growth kinetics studies.

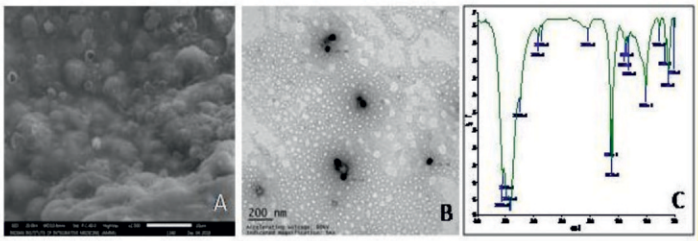


Fig. A. Scanning electron microscope image; **B.** Transmission electron microscope image; **C**. FTIR Spectra of AgNPs synthesized from *Cinnamomum camphora* aqueous leaf extract.

Screening of white rot fungi for toxicity tolerance to pesticides

Pleurotus sajorcaju (DMRP-112), *Trametes versicolor* (DMRO-122 &DMRO-222), *Macrocybe gigantea* (DMR-Macrocye-01) and *Ramaria* spp. (DMRO-1010 & DMRO-1012) used in this study were capable of degrading pesticides by producing enzymes such as laccase, protease, β-glucosidase, and phosphomonoesterase in media amended with chlorpyrifos and carbofuran individually as well as their mixture.

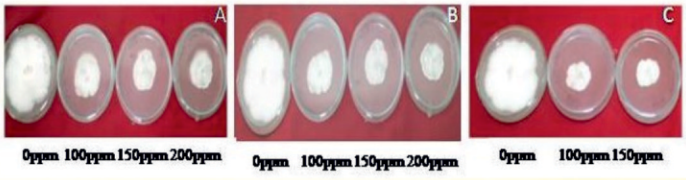
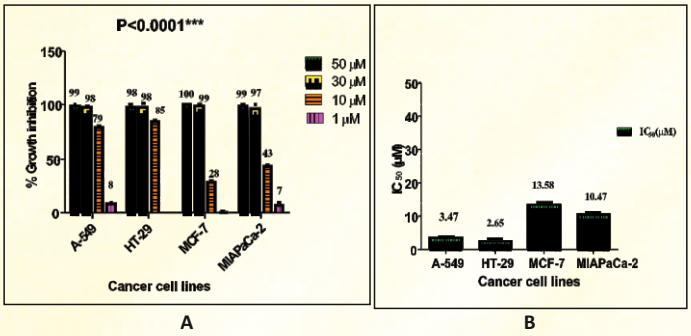


Fig. *Ramaria* spp. II growing in soil extract media supplemented with different concentrations (0-200 mg L^{-1}) of (A) Chlorpyrifos (B) Carbofuran and (C) Mixture of chlorpyrifos and carbofuran

Ursolic acid from chloroform fraction of *Carissa carandas* induced apoptosis *via* activation of caspases

The chloroform fraction of karonda was found to be most cytotoxic against three human cancer cell lines (A-549, HT-29, MCF-7) with IC_{50} values <10 µg/mL. A compound namely ursolic acid (UA) was isolated from chloroform fraction that showed potent *in vitro* cytotoxic effect against lung cancer cell line (A-549) with IC_{50} value of 3.47±0.26 µM. UA induced dose dependent decrease in cell proliferation with reduced mitochondrial membrane potential. The antiproliferative effect of compound confirmed the cell death through ROS generation and also led to the impaired cell migration. For further confirmation, changes in apoptosis associated proteins (caspase-3 and PARP) were also examined through western blotting in A-549 cells. Taken together, the results confirmed the anticancer properties of UA on A-549 cells mediated the induction of apoptosis following the activation of caspases. These findings suggest that it can be a potential agent for lung cancer therapy.



A B

Fig. (A) *In vitro* cytotoxic potential of ursolic acid isolated from *C.carandas* against human cancer cell lines and (B) IC_{50} values of ursolic acid.

3.3.2 Division of Microbiology

a) Evaluation of resident microflora for bio fertiliser potential

- Pure isolates of bacteria were screened for biofertilizer potential (Phosphate solubilizing potential (PSB) & Plant growth promoting properties (PGPR)
- Total 125 bacterial cultures were screened on ***Pikovskaya medium*** and King's B medium
- Five best performers were selected for field trials
- Initial field trials were conducted in association with Division of Vegetable Sciences, FOA, SKUAST-J on Knol Khol Crop
- Crop harvested and data is being generated

b) Mule dung compost studies

Literature collected and permission sought for sample collection from SMVD shrine Board, Katra, Jammu

c) Studies on Plant Growth Promoting (PGP) Activity of Bacteria isolated from Cucumber Rhizosphere

I) Sampling has been done from the following locations

- Vegetable farm Chatha
- Organic farming Research Centre Chatha
- Marh
- Gajansoo

ii) Isolation and purification of isolates was done

iii) Screening of isolates was done

iv) Morphological and biochemical identification of potential isolates was done

3.3.3 Division of Plant Physiology

Standardization of Lettuce production under hydroponics

Ten fit long and 4 inch PVC pipes was used for homemade hydroponics system. In this plan, the plants were placed in cups which were arranged in holders drilled into the pipes. The system was watered using a reservoir and pump. This is a closed system, with the water circulating between the pipes and the reservoir. This plan is ideal for growing a lot of small plants within a small area. The basic system can house anywhere from 150-180 plants. This system can be placed indoors or outdoors. If indoors, grow lights were required. The hydroponics method used in this plant is called NFT. It is an excellent plan for growing plants like tomatoes, brinjal and mostly leafy vegetables.

The research project refered to the construction, operation and management of an integrated Hydroponics in greenhouse vegetable production and particularly the production of sophisticated table tomato and lettuce varieties which are considered as high end products. Advanced technology used in the production process ensures the creation of steadily high production capacity of exceptionally high quality crops. Leafy vegetables viz. lettuce and tomato plants was grown in perlite, cocopeat and vermi compost in combination, the highest ascorbic acid was obtained from perlite; the highest total soluble solids concentration from cocopeat and rich in mineral ions in vermicompost.

ROMAINE GRAND RAPID
Early Growth Stages Of Both Varieties

OFT for Hormonal intervention for mitigating the alternate bearing problem in Mango varieties of Jammu region

In commercial mango varieties, it is desirable to control the vegetative growth and reduce irregular bearing. Biennial bearing mango cultivars do not flower or very less flowering occurs during off year. A growth retarding chemical of triazoles group, Paclobutrazol (PBZ) can stimulate or mimic the effects of the environmental factors in checking vegetative growth is sometimes used to correct situation. Land holding of farmers in Jammu region is small to medium, economic status of the farmers depends on agriculture therefore, in off year farmers get no income from mango orchards. OFT was conducted in the mango orchard of Mr. Baldev Raj (Vill. Simbalwal) and Mr. Karan Singh (Vill. Bri Kamila) in off year season of 2018-2019. Percentage of flowering 45.62% observed when PBZ applied @2.5 ml/m^2 tree area whereas; only 7.25% flowering was recorded in nontreated mango trees. Total yield per plant was recorded 41.87 kg/tree when PBZ applied @2.5 ml/m^2 tree area and on contrary 10.00 kg/tree was noticed in without hormonal treatment.

Application of paclobutrazol (28% SC) through soil drench in alternate bearing varieties of mango @ 2.5 ml/m^2 of tree area is effective in eradicating the problem of alternate bearing.

FLOWERING ANDFRUITING IN PACLOBUTRAZOL TREATRED MANGO TREES

3.4 RESEARCH STATIONS/SUB-STATIONS/CENTRES

3.4.1 REGIONAL AGRICULTURAL RESEARCH STATION, RAJOURI

All India Coordinated Wheat and Barley Improvement Project (Volunteer Centre)

The experiments are laid out as per the technical programme provided by Directorate of Wheat Research, Karnal. One Experiment of Barley was conducted and the treatment NHGBZ 1907 was found best with the average yield of 1581 g/plot followed by NHGBZ 1906 with the average yield of 1087 g/plot

All India Coordinated Research Project on Rice (Volunteer Centre)

The experiments are laid out as per the technical programme provided by Indian Institute of Rice Research, Hyderabad. Three trials were conducted at RARS, Rajouri.

Trial No. 23 : VARIETY TRIALS IVT - E (H) KHARIF 2019

The data of the trial shows that Entry no. 2305 performed better under Rajouri Condition and yielded 42.50 q/ha which was higher than the local check K-39 i.e., 29.50 q/ha. Other entries viz; 2306, 2314, 2317, 2318, 2320, 2321 performed better than the local check.

Trial No. 24 : VARIETY TRIALS AVT 2 - M (H) KHARIF

The data of the trial shows that Entry no. 2402 performed better under Rajouri condition and yielded 40.33q / ha which was higher than the local check K-39 i.e., 29.00 q/ha. Other entries viz; 2405, 2407 and 2401 performed better than the local check.

Trial No. 26 : VARIETY TRIALS IVT - M (H) KHARIF 2019

The data of the trial shows that Entries no. 2611 and 2616 performed better under Rajouri Condition and yielded 47.50 q/ha which was higher than the local check K-39 i.e., 30.50 q/ha. Other entries viz; 2608, 2604, 2603, 2605, 2613, 2614, 2620 and 2619 performed better than the local check.

All India Coordinated Research Project on Forage Crops (Volunteer Centre)

The experiments are laid out as per the technical programme provided by Indian Institute of Grassland and Forage Research, Jhansi. Four trials were conducted with following details.

The green fodder yield of IVTM-1 was found maximun i.e., 291.50 q /ha and dry matter yield was 119.90 q / ha which was statistically at par with IVTM – 16 with 280.80 q /ha

green fodder yield and 109.80 q/ha dry matter. Lowest green fodder and dry matter yield was observed in IVTM – 4 with 96.90 q /ha and 67.20 q /ha respectively.

Trial 2 : AVTM-1: Advanced Varietal Trial of Forage Maize

In this advance varietal trial of forage maize, the green fodder yield of AVTM-1-12 was found maximun i.e., 347.90 q /ha and dry matter yield was 73.87 q /ha which was statistically at par with AVTM-1-3 and AVTM-1-1 with 339.61 and 322.44 q /ha green fodder yield and 71.92 and 67.40 q /ha dry matter yield respectively. Lowest green fodder and dry matter yield was observed in AVTM-1-6 with 211.97 q /ha and 42.33 q /ha respectively.

Trial 5 : IVTC: Forage Cowpea (New)

In this advance varietal trial of forage cowpea, the green fodder yield of IVTC-8 was found best treatment with 178.70 q /ha and 37.80 q /ha dry matter yield which was statistically at par with IVTC-3, IVTC-1 and IVTC-9 with 171.70, 169.60 and 166.10 q /ha green fodder yield and 35.40, 33.20 and 32.20 q /ha dry matter yield respectively. Lowest green fodder and dry matter yield was observed in IVTC-4 with 114.20 q /ha and 17.80 q /ha respectively.

Trial 7 : AVTC-2: Cowpea (HZ)

The result of advance varietal trial of forage cowpea, the green fodder yield of AVTC-2-1 was found best treatment with 154.80 q /ha and 29.10 q /ha dry matter yield followed by AVTC-2-4 with 147.50 q /ha green fodder yield and 26.90 q /ha dry matter yield respectively. Lowest green fodder and dry matter yield was observed in AVTC-2-3 with 130.20 q /ha and 20.80 q /ha respectively.

All India Coordinated Research Project on Maize (Volunteer Centre)

The experiments are laid out as per the technical programme provided by Indian Institute of Maize Research, New Delhi. Four Trials were conducted as per the given details

Trial No. 01 : 71 NHZ (Z-1) Germplasm Evaluation (600)

The result of the trial showed that the treatment no. 6105 was found best treatment with 10.6 kg /ha cob yield followed by treatment no 6112 with 10.27 kg/ ha yield

Trial No. 02 : 71 NHZ (Z-1) AVT-I Normal Maize (590)

The result of the trial showed that the treatment no. 7101 was found best treatment with 13.32 kg /ha Cob yield followed by treatment no 7104 with 11.81 kg /ha

Trial No. 03 : 71 NHZ (Z-1) AVT-I Normal Maize (594)

The result of the trial showed that the treatment no. 8104 was found best treatment with 11.57 kg /ha Cob yield followed by treatment no 8106 with 11.55 kg /ha

Trial No. 03 : 71 NHZ (Z-1) AVT-II Medium Maize Entries Testing in

The result of the trial showed that the treatment no. 20003 was found best treatment with 13.55 kg /ha Cob yield followed by treatment no 20002 with 13.17 kg /ha yield.

3.4.2 ADVANCED CENTRE FOR RAINFED AGRICULTURE, DHIANSAR

Evaluation and development of Alternate Land-use systems for rainfed conditions of Jammu

Sole maize crop grown under maize-wheat system (cereal-cereal) registered maximum yield of 3320 kg/ha with highest values of net returns, B:C ratio and RWUE to the tune of Rs.43896, 2.87 and 6.26 kg/ha-mm, respectively. However, the maize crop recorded grain yield of 2510 kg/ha in treatment Agri-Horti-Silvi-Pastoral System (Guava + *Melia* + *Setaria* sp.+ Maize - Gobhi sarson) wherein the maize crop was sown in the alleys.

Catchment-Storage-Command relationship for enhancing water productivity

Highest grain yield of maize (2800 kg/ha) was obtained with two life saving irrigation at critical stage.

Developing IFS module/ strengthening traditional rainfed IFS for small, medium and marginal farm holdings

Village Tarore (Dera Gandotra), Tehsil and Block Vijaypur, Dist. - Samba adopted under Rainfed Integrated Farming System (RIFS) component of AICRPDA wherein 26 No's of Farmers were selected for laying out different technological demonstrations during *kharif* and *rabi* seasons of 2019-20 with the objective to strengthen the existing / traditional farming systems.

Scientist interacting with farmers regarding the field problems at Tarore village under RIFS

Threshing of Maize using Maize Thresher

Tillage and the nutrient management for resource conservation and improving soil quality

Eighteen years data revealed highest average wheat yield (22.20 q/ha) in 50% conventional tillage + interculture + herbicide followed by conventional tillage and 50% conventional tillage + interculture. Among fertilizer

application treatments, highest grain yield (22.0 q/ha) was recorded in 100% N through inorganic fertilizer which was at par with 50% N through organic sources + 50% N through inorganic.

Evaluation of maize based intercropping systems (strip cropping) under rainfed conditions of Jammu

Among the different intercropping systems, significantly higher maize equivalent yield (MEY) of 4384 kg/ha was obtained in Maize + cowpea (1:1) with the corresponding highest values of net returns, Land Equivalent Ratio (LER), B:C ratio and Rain Water Use Efficiency (RWUE) of Rs. 57042/ha, 1.16, 3.11 and 8.27 kg/ha-mm, respectively. However, among the sole systems, sole cowpea registered highest maize equivalent yield to the tune of 4175 kg/ha while the lowest MEY of 713 kg/ha was obtained in sole cucumber.

Permanent manurial trial in maize based cropping system

The combined data for the last seventeen years revealed highest mean grain yield of 2023 kg/ha with recommended dose of NPK (60:40:20) coupled with 20 kg $ZnSO_4$ /ha followed by application of 50 % recommended NPK + 50% N through FYM and 100 % recommended dose of NPK with grain yield of 1899 and 1888 kg/ha, respectively. The lowest grain yield of 980 kg/ha was found in control (unfertilized).

Effect of soil and foliar application of inorganic and organic sources of nutrients in maize under Rainfed mid hills of North West Himalayas

The results recorded highest grain yield of maize (2842 kg/ha) with the application of 100% recommended NPK +1% $ZnSO_4$ which was statistically at par with 100% recommended NPK + 0.1% Borax, 75% recommended N + 25 N FYM + 1% $ZnSO_4$ and 75% recommended N + 25% N Mule compost + 0.1% Borax and grain yield 2754, 2673 and 2587 kg/ha, respectively.

Screening of pre and post emergence herbicide molecules for weed management in Chickpea (*Cicer arietinum*) under sub-tropical rainfed conditions of Jammu

Among the various weed management treatments in chickpea, significantly higher grain yield of 640 kg/ha in weed free plot while the lowest yield was in weedy check plot. However, among the various herbicidal treatments, significantly highest yield of 425 kg/ha was in the treatment where *Pendimethalin* PE @ 1000g/ha *fb* sand mix of Imazethapyr POE @ 30 g/ha at 2-4 leaf stage were applied.

Agronomic evaluation of *Sesamum* varieties at different sowing dates for higher productivity under rainfed subtropical *Shiwalik* foothill conditions of Jammu

Among the different dates and varieties of sesame crop sown during *Kharif* 2019, the variety *RT-346* showed significantly highest grain yield of 425 kg/ha when sown on 15th of July.

Development of Phytopathological nursery of chick pea

Thirty one different entries of chickpea were screened against chickpea wilt and *Ascochyta* blight. Among these, only three entries were moderately resistant (less than 10% incidence) against the chick pea wilt (9-point scale) and (less than 5% intensity) against the *Ascochyta* blight.

Survey and Surveillance of major insect pests and diseases of rainfed areas of Jammu region

During Rabi 2019-20 mustard was noticed to suffer from white rust (*Albugo candida*), *Alternaria* leaf blight disease and leaf miner and aphids. Yellow rust of wheat was quite serious at few locations. The different weed species present at all these locations were Sitti (*Phalaris minor*), Makoi (*Solanum nigrum*), Doob ghas (*Cynodon dactylon*), Krishna neel (*Anagalis arvensis*), Bathu (*Chenopodium* sp.), Javi (*Avena* sp.) and Chatri matri (*Vicia sativa*). During *kharif* 2019, maize stem borer, Turcicum leaf blight, *Spodoptera* damage, whiteflies, hoppers and sesame phyllody incidence were recorded.

Management of collar rot of lentil and chickpea (*Sclerotium rolfsi*) in rainfed areas

Application of cow urine @ 20% was found to be most effective and recorded 4.80% disease incidence, maximum root length (8.40 cm), shoot length (61.50 cm), root weight (5.60 g), shoot weight (26.70g) and number of pods per plant (56) as compared to untreated control in chickpea. Whereas, in lentil, again application of cow urine @ 20% was found to be most effective and recorded 4.10% disease incidence, maximum root length (4.10 cm), shoot length (40.50 cm), root weight (2.90 g), shoot weight (19.50g) and pods per plant (62).

Evaluation of Oxathiapiprolin 15g/l +Azoxystrobin 155 g/l against Cucumber diseases.

Spray of Oxathiapiprolin 15g/l +Azoxystrobin 155g/l has reduced the downy (63.41%), powdery mildew (62.20%) and leaf spot diseases (52.85%) of cucumber as compared to control.

Evaluation of Oxathiapiprolin 15g/l +Azoxystrobin 155 g/l against watermelon diseases.

Spray of Oxathiapiprolin 15g/l +Azoxystrobin 155g/l has reduced Downy (64.50%), Powdery mildew (62.28%) and

leaf spot (54.70%) diseases of watermelon as compared to control.

Impact assessment of climate change on productivity of different wheat varieties under rainfed condition of Jammu region

Three years pooled data revealed that there was no significant difference between wheat cultivars PBW-175 and JAUW-598 in terms of grain yield. However, among the different planting dates, the crop sown on 31st October was at par with 15th November, while it was found significantly better then rest of the planting dates. The lowest grain yield was noticed when crop sown on 15th January.

Optimization of applied inorganic nitrogen levels in rainfed maize cultivars

The results revealed that between the varieties, JMC-3 recorded significantly higher grain and stover yield of maize crop along with higher net returns and B.C ratio as compared to Mansar variety. Rain Water Use Efficiency (RWUE) was also higher with JMC-3 variety of maize. Among the nitrogen levels, significantly higher grain and stover yield of maize was observed; when the N-level was increased by 25% (75 kg N/ha) from the recommended dose (60 kg N/ha). However, no significant effect on the yield of maize crop was observed when the dose of nitrogen was increased by 50% (90 kg N/ha) from the recommended dose.

Development of Phytopathological nursery of pulses (Urdbean)

Field observations during *Kharif* 2019 w.r.t. incidence of YMV in Urdbean revealed that out of 46 lines only two lines L-17 & L-41 were found highly resistant (less than 10% intensity) against yellow mosaic virus disease (Scale 0 to 5) along with the grain yield of 225 and 205 g/plot, respectively in 1.8 m^2 plot.

Survey and surveillance of major diseases and insect pests of maize and their integrated management under rainfed farming system

Field observations during the *kharif* 2019 revealed that Turcicum leaf blight (*Exserohilum turcicum*) was having 30-47% disease intensity in maize crop at different maize growing areas. Several fungicides and bio-agents were assessed for their efficacy against Turcicum leaf blight at ACRA Farm Dhiansar wherein it was observed that seed treatment with carbendazim @0.1% and two foliar spary at 40 and 50 DAS with carbendazim @0.1% was most effective in reducing the disease intensity of Turcicum leaf blight in maize to 22.33% and found to manage Turcicum leaf blight by 72.50% over the check and there by resulted in 44.85% increase in yield as compare to check.

Effect of mechanized planting on productivity and profitability of major rainfed *rabi* food grains

Significantly higher grain and stover yield of different *rabi* crops like wheat, chickpea, pea and mustard were obtained when these crops were grown with Multi crop seed drill and followed by sowing with recommended practice (line sowing). The lowest grain and stover yield of all the crops were observed in farmer's Practice.

AICRP (Bajra) – Voluntary Centre

Released hybrid and varietal trial (RHVT)

Twenty five hybrids and 5 no's. of composites of pearl millet were evaluated under AICRP on Pearl millet (Cooperative Centre, Rakh Dhiansar). Among the hybrids; GHB 732 recorded the highest grain yield of 3523 kg/ha and followed by GHB 744 and HHB 223 with the grain yield of 3242 and 3188 kg/ha, respectively. Among the composites; Pusa Composite 383 recorded the highest grain yield to the tune of 2889 kg/ha and followed by Pusa Composite 701 with the grain yield value of 2637 kg/ha. However, ICMV 221 recorded the lowest grain yield of 2237 kg/ha.

AICRP (Pigeon Pea) - Voluntary Centre

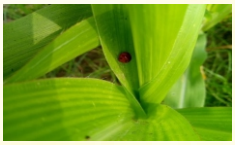
Effect of nipping and spacing on medium duration pigeonpea

Nipping at 45 DAS recorded significantly highest grain yield followed by nipping at 60 and 75 DAS. Statistically higher grain yield of pigeonpea was recorded in case of 45 × 30 cm spacing. However, pigeonpea recorded statistically lowest grain yield with nipping at 75 DAS and spacing 90 x 30 cm.

AICRP (Bio Control) - Voluntary Centre

Bio-ecological engineering of crops for the management of major insect pests of maize

Significantly lower plant damage by *Chilo partellus* in maize was observed under Maize + Cowpea + Napier. Number of *Spodoptera litura* larvae per five intercropped plants and whiteflies per five leaves of various intercrops were significantly lower in Maize + Cowpea + Napier. The natural enemies present in the ecosystem; *Coccinellid* sps. and Spiders were more active in okra and mash intercrops, where the population of whiteflies and *S. litura* larvae were more. Significantly highest maize equivalent yield was obtained in Maize + Cowpea + Napier.



Natural Enemy Lady bird beetle on Maize

Natural Enemy Lady bird beetle on intercropHabitat manipulation/Bio-ecological engineering for the management of *Helicoverpa armigera* in chickpea

Significantly lower *Helicoverpa* larvae and consequent pod damage was in all the intercrops as compared to sole chickpea. Among the different intercrops, linseed and coriander was found to be the best. Significantly highest number of larvae and pod damage was in sole chickpea with no border crops proving the effect of border crops. Among the two border crops, Napier was significantly superior to mustard. Percent parasitization by *Campoletis chloridae* was highest in coriander, followed by linseed and fenugreek. Napier as border crop also proved good in distracting parrots, and the damage by parrots were almost nil.

Chickpea + Linseed + Napier (Border crop)

Chickpea + Fenugreek + Napier (Border crop)

Biological control of guava mealy bug and scales using entomopathogens

Entomopathogenic fungi such as *B. bassiana*, *M. anisopliae* and *L. lecanii* formulations, along with Azadirachtin 10000 ppm were assessed against Guava mealy bug and scale. Significantly highest percent reduction in mealy bug as well as scale population was recorded in *B. bassiana* spray (45.88 and 44.56% reduction in mealy bug and scale population, respectively) that was at par with that of Azadirachtin spray (44.86 and 41.83% reduction in mealy bug and scale population respectively) at 7 DAS.

Biological control of anola mealy bug and scales using entomopathogens

Entomopathogenic fungi such as *B. bassiana*, *M. anisopliae* and *L. lecanii* formulations, along with Azadirachtin 10000 ppm were assessed against Aonla mealy bug. Significantly highest percent reduction in scale population was recorded in Azadirachtin spray (46.01% reduction) followed by *B. bassiana* spray (34.43% reduction) at 7 DAS. At 3 DAS mealy bug population was significantly lowest in Azadirachtin spray (4.93 mealy bug / 10 cm twig).

Surveillance for pest outbreak and alien invasive pests- Crop Pest Outbreak Report (CPOR)

Several villages of district Samba were surveyed for insect pests or disease incidence, as per the information/feedback received from farmers or Department of Agriculture, and remedial measures suggested. Monthly reports were compiled and submitted to the NBAIR, Bengaluru.

Group of beetles infesting pear fruit

Turcicum blight incidence on maize cob

Varietal release programme

- On Farm Testing of under release ***Lobia Super 60*** and its Minikit trials were conducted in collaboration with KVK Samba, Kathua, Jammu and Reasi and Deptt of Agriculture.
- OFTs of two under release varieties of Lentil ***Jammu Lentil 144*** and ***Jammu Lentil 71*** have been laid out in collaboration with KVKs Kathua, Samba and Jammu.

25 mungbean and urdbean varieties of each were tested under rainfed conditions for yield and yield attributing traits for their stability and using in varietal development programme.

3.4.3 ADVANCED CENTRE FOR HORTICULTURAL RESEARCH , UDHEYWALLA :

- Under the Centre of Excellence (Fruits), water tank (4 lakh litre capacity), insect net house for citrus-virus free planting material and uprooting of existing plantation from project site (10 ha) stands completed by The Jain Irrigations.
- Tissue culture laboratory has been established.
- Bio-control Laboratory supplied 2000 kg of bio-control agents to the development departments.
- Protocols of liquid formulations of bio-fertilizers such as Azotobacter and Rhizobium have been developed.

3.4.4 PULSES RESEARCH SUB-STATION, SAMBA

Effect of customized fertilizers (CFG) on scaling up productivity and profitability of chickpea-based cropping systems (1st year)

The first-year experimental findings indicated that among the two varieties of chickpea. GNG1958significantly recorded higher grain yield (1065.93 Kg/ha) than GNG1581 (875.13 Kg/ha).Among, the customized fertilizer treatments where CFG1 was applied recorded significantly higher grain yield of 1208 Kg/ha over rest of the treatments except CFG3 (1034 kg/ha) which showed at par results with the CFG1. However, the minimum grain yield of chickpea was recorded

with the treatment's RDF (919.83 Kg/ha). The net returns as well as benefit cost ratio was also recorded higher with same set of treatments. The higher results in respect of seed yield were also responded due to the frequent rains during the crop growing seasons.

Enhancing input use efficiency in chickpea through hydrogel under rainfed/limited irrigated situation (new):

The results of the experiment indicated that an application of hydrogel @ 5kg/ha significantly influenced seed yield attributes and yield of chickpea crop as compared to control. The seed yield was significantly recorded higher values with application of hydrogel @5.0kg/ha (942.60 Kg/ha) over no hydrogel application (725.13 Kg/ha. This increases in seed yield was to the tune of 29.99 percent over no hydrogel application. The study further revealed that, the foliar nutrition significantly influences yield attributes and yield of chickpea compared to control (water spray). Data indicates that the foliar application of N.P. K 19:19:19 @0.5 % was significantly higher seed yield (1058 Kg/ha) than other foliar applicationstreatment except Salicylic acid 75 ppm spray at flower initiation and pod development where it was at par with the yield potential of 884.80 kg/ha. The per cent increase of NPK (19:19:19) 0.5% spray at flowering and pod development was to the tune of 61.11 and37.40 over, control and salicylic acid 75 ppm spray at designated ages, respectively.

Scalling up productivity in strategic chickpea based intercropping system:

The results of intercropping experiment during first year study showed that chickpea when intercropped with linseed, mustard, wheat, safflower results in non-significant increase in plant height and pods/plant compared to sole chickpea due to the non-comparative habit of the crops. However, the chickpea equivalent yield basis analysis indicated that statistically significant results were recorded with linseed (18.94 q/ha) and LER (1.43) was recorded under chickpea +linseed (6:2) (13.53q/ha) over all other treatments under study which was followed by chickpea + wheat CEY and LER (17.75 q/ha &1.27). Further, the LER values indicates that there is 43% yield enhancement when chickpea was intercropped with linseed whereas the lowest values of LER value(0.76) was recordedwith chickpea + safflower. The increase in CEY due to chickpea + wheat and chickpea +linseed (6:2) were 11.28 and 4.3 percent over sole chickpea, respectively.

Enhancing nutrient and water use efficiency of lentil through hydrogel and foliar nutrients under *rainfed*/ limited irrigated situations.

The second-year experimental findings indicated drilling of hydrogel @ 5.0 Kg/ha before sowing recorded significantly higher number of pods/plant grain yield and net returns with a B:C ratio which registered and over drilling of hydrogel @ 2.5 kg/ha and control, respectively. Foliar application at flower initiation and pod development stages had positive and significant effect on number of pods /plants, net returns as well as B: C ratio over simple water spray. Foliar application of NPK(19:19:19) @ 0.5% at flower initiation and pod development phenophases recorded significantly higher grain yield(1078 Kg/ha) which was statistically at par with Salicylic acid 75 ppm spray (1061 kg/ha) at flower initiation and pod development in recording net returns as well as B:C ratio over simple water spray. The percent increase in grain yield with superior treatments NPK (19:19:19) @ 0.5%, Salicylic acid 75 ppm and Thiourea 500 ppm spray at flower initiation and pod development),) over control was to the tune of 40.46, 38.28 and 14.82 %, respectively.

AICRP on MULLARP:

- **Effect of fertilizer doses, organic manure and biofertilizers for yield maximization of mungbean and their effect on succeeding *rabi* crop (cereal/oilseed)**

  Significant findings: The one season study indicated that the treatment 125 kg/ha fertilizer dose recorded significantly higher yield when coupled with5.0 ton/ha FYM and treated with the Rhizobium and LMn16 strain.

The results also indicated that the similar set of treatment recorded higher number of nodules /plant and dry weight of nodules /plant with cultivar IPM 02-3. The net return of the same treatment was also higher as compared to other treatments tested under investigation. However, the yields were low due to irregular distribution of rains and heavy rains at the time of the flowering and pod formation. Further, the individual effects of the treatments were also higher with the same treatments.

- **M3: Effect of land configuration and foliar spray of nutrients for yield maximization of mungbean (2018)**
  Significant findings: The results of one season indicated that the treatment bed sowing followed by ridge recoded significantly higher yield of 548 kg/ha which was found to be at par with Raised bed treatment with grain yield of 526 Kg/ha. Among the foliar application treatments, the treatment NPK(18:18:18) @ 2% spray at flower initiation recorded higher grain yield of mungbean over all other treatments under investigation The experimental results indicated that the treatment flatbed sowing followed by ridge making coupled with NPK (18:18:18) @ 2% spray at flower initiation recorded higher net return/ha and B:C. However, the yields were low due to irregular distribution of rains and heavy rains at the time of the flowering and pod formation.
- **U2: Effect of fertilizer doses, organic manure and biofertilizer for yield maximization of Urdbean and their effect on succeeding rabi crop (cereal/oilseed)-Modified 2018**
  Significant findings: The one season study indicated that the treatment 125 kg/ha fertilizer dose recorded significantly higher yield when coupled with 5.0 ton/ha FYM and treated with the Rhizobium and LMn16 strain. The results also indicated that the similar set of treatment recorded higher number of nodules /plant and dry weight of nodules /plant with cultivar PU-31. The net return of the same treatment was also higher as compared to other treatments tested under investigation. However, the yields were low due to irregular distribution of rains and heavy rains at the time of the flowering and pod formation. Further, the individual effects of the treatments were also higher with the same treatments.
- **U3: Effect of land configuration and foliar spray of nutrients for yield maximization of Urdbean (2018):**
  Significant finding: The results of one season indicated that the treatment bed sowing followed by ridge recoded higher yields of 877.33 kg/ha followedby Raised bed treatment with grain yield of 873.83 Kg/ha. Among the foliar application treatments, the treatment NPK (18:18:18) @ 2% spray at flower initiation recorded higher grain yield of urdbean over all other treatments under investigation The experimental results indicated that the treatment flatbed sowing followed by ridge making coupled with NPK (18:18:18) @ 2% spray at flower initiation recorded higher net return/ha and B:C. However, the yields were low due to irregular distribution of rains and heavy rains at the time of the flowering and pod formation stages.
- **Agronomic evaluation of promising genotype of cowpea/ horse gram (Medium to long duration)**
  Significant Findings: The results of the one season study indicated that the irrespective of the spacing and nutrient applications the variety PL-1 (1156 Kg/ha) recorded significantly higher seed yield as compared to the PL-3 variety (992 Kg/ha).Among the spacing, the 45x10 cm^2 recorded higher seed yield of 1163 Kg/ha whereas the nutrient application of 125% recorded higher seed yield of 1149 kg/ha as compared to 100 % RDF (999 kg/ha). However, the interaction effects among the different treatment were non-significant.
- **Effect of foliar application of nutrients to enhance productivity through combating the dry spell effect in cowpea**
  Significant Findings: The one season study indicated that among the foliar spray treatments , the foliar spray of soluble NPK (19:19:19) @ 1% at flower initiation & pod formation stage recorded significantly higher seed yield of Cowpea (1136Kg/ha) followed by the treatment foliar spray of soluble KNO_3 @ 0.5% at flower initiation & pod formation stage with the seed yield of 992kg/ha. The lowest treatment yield of cowpea was recorded with theabsolute control with seed yield of 775kg/ha.
  New Research Initiatives: Off season *Rabi* pulses at Potato seed production Farm Nathatop was also intensified during the *kharif* 2019 and various dignitaries appreciated the efforts of the undersigned for providing the new initiatives of off season rabi pulses at Nathatop. Various dignitaries like Director IIPR, Kanpur, Director Agriculture, and Director Research.

PDO and various other allied officers of the allied as well as university. The successful crops of chickpea, lentil and field pea were sown during the current off season at Nathatop.

AICRP-Chickpea

Title of Trial: IVT (Desi-Irrigated timely sown)

Forty-four entries of Chickpea were tested under Initial varietal trial (IVT) during *Rabi* 2019-20 under alpha design in rainfed ecology in three replications and it was found that due to extreme rain fall in the months of December, January and February and epiphytic by wilt disease all the entries were susceptible and decayed.

Trial: IVT (Rainfed)

Thirty-one entries of chickpea were tested in randomized block design (RBD) in three replications under rainfed conditions during *Rabi* 2109-20 at the experimental farm of Pulses Research Sub Station (PRSS)Samba and it was observed that no entry was found resistant against wilt disease and also due to extreme rainfall in the months of January and February majority of the plant population were died.

Trial: Chickpea AVT-1 (Desi Irrigated: Timely sown)

Trial was failed due to extreme raining during the month of December to February and ultimately causes heavy infestation of wilt.

AICRP-MULLaRP:

Trial: IVT (Large seeded) Lentil:

21 entries of lentil were screened for yield and yield attributing traits under IVT in rainfed ecology during *Rabi* 2019-20 at the experimental farm of PRSS Samba in RBD. Maximum harvest index was exhibited by LLS 19-109. LLS 19- 116 exhibited highest seed yield /ha.

Trial: AVT-1 of Lentil:

Five entries of lentil were screened for yield and yield attributing traits under AVT-1 in rainfed ecology during *Rabi* 2019-20 at the experimental farm of PRSS Samba in RBD at the experimental farm of PRSS Samba during *Rabi* 2019-20. Maximum harvest index was exhibited byline LLS 19-78.

Trial: IVT (Small seeded) Lentil: -19 varieties

Post harvested data are given below. Among 23 lines LSS 19-46 exhibited maximum seed yield/ha.

Trial: IVT (Dwarf)Field pea:

Results: Post harvested data are in compilation stage.

Trial: AVT-2 Field pea

Post harvested data are in compilation stage.

Kharif 2019:

- Onfarming Testing of newly under release Lobia Super 60 and its Minikit trials were conducted in collaboration with KVK Samba, Kathua, Jammu and Reasi and Deptt. of Agriculture, respectively.
- OFTs of two under release varieties of Lentil: Jammu Lentil 144 and Jammu Lentil 71 were also tested under OFTs with KVKs Kathua, Samba and Jammu.
- Eighty-kilogram seed of Lobia super 60 was produced at an experimental farm of ACRA Dhiansar SKUAST Jammu during *Kharif* 2019.

Breeding material developed against higher numbers of pod and botrytis grey mold:

Five crosses which were developed through wide hybridization advanced to F_8:F_9 generation at two different locations under rainfed conditions at the experimental farm of ACRA Dhiansar and PRSS Samba of SKUAST Jammu. 179 RILs were screened for targeted traits like resistance against wilt, ascochyta blight and higher number of pods per plant under rainfed conditions. The performance of all the RILs were good even under unfavorable weather conditions of *Rabi* 2019-20. The list of crosses is:

Cross 1: (Pusa 372 x ILWC 229) - *Cicer reticulatum (*Resistant AB and No of Pods)

Cross 2: (PB5 x ILWC 229) - *Cicer reticulatum (Resistant* AB and No of Pods)

Cross 3: (BGD72 x ILWC 246) - *Cicer echinospermum (Resistant* to BGM and No of Pods)
Cross 4: (PB5 x ILWC 246) - *Cicer echinospermum (*Resistant to BGM and No of Pods)
Cross 5: (BGD72 x ILWC 229) - *Cicer reticulatum (*Resistant to AB and No of Pods)

Fig 1: Photographs of crosses (RILs) F_8:F_9

- Seed multiplication oftwo under release varieties of Jammu Lentil 71 and Jammu Lentil 144 at the experimental farm of ACRA Dhiansar and PRSS Samba during *Rabi* 2019-20 for submitting to AICRP MULLaRP under AVT.

Advanced breeding material of *Phaseolus vulgaris* generated with secondary, tertiary and quaternary gene pools at SBT Chatha under adhoc research projects: These hybrids are resistant against anthracnose disease of *Phaseolus vulgaris* L with the back ground of Poonch Local and Bhaderwah local and some of the action photographs are given below

Intra & inter specific hybrids:

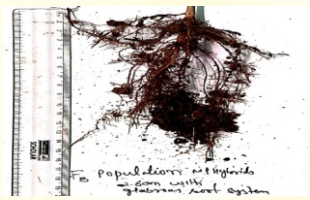



Intra-specific hybrids: BL x PL (F_4) BL x MP(F_3): Inter-specific hybrids

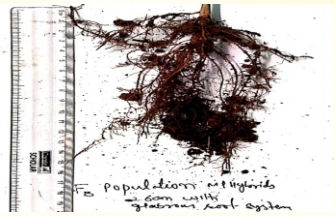
Mutant Populations(M_3) generated under adhoc research project at SBT Chatha


Mutant Population M_3 population of *P. vulgaris* L

Root architectures with nodules of intra and interspecific hybrids generated under adhoc research project:
Intra specific and interspecific hybrids are resistant against drought due to their rooting characteristics as compared to standard checks

Glaborous roots with nodules of Hybrids Heavy nodulation of hybrids

Checks: Fibrous root systems of BL & PL Heavy nodulation of hybrids

3.4.5 RAINFED RESEARCH SUB-STATION FOR SUB-TROPICAL FRUITS, RAYA

Diagnosis and Management of insect-pest and diseases to enhance the production of planting materials under protected condition

The management of Aonla Rust ((*Ravenelia emblicae* Syd)) where in, six fungicides *i.e.* copper oxychloride (0.25%), carbendazim (0.1%), mancozeb (0.2%), Mancozeb+ carbendazim (0.25%), hexaconazole (0.1%) and wettable sulphur (0.25%) were sprayed thrice at monthly intervals commencing in the month of August. The fungicide Mancozeb+ carbendazim was found most efficacious in reducing the disease severity (46.50%). It was followed by hexaconazole (32.5%). The soil drenching of jatti khatti (*Citrus jambhiri*) with metalaxyl + mancozeb after appearance of disease was most effective (46.50%) for management of *Phytophthora* blight in seedlings.


Standardization of rootstocks for Kinnow Scion wood under rainfed conditions

During investigation in the year 2019-20, it was observed that kinnow scion wood plants have shown better vegetative growth on different citrus rootstocks. Results showed that different citrus rootstock has different effect on scion and root diameter ration in kinnow mandarin budded plants.

Maximum increment in scion (64.53%) and root diameter (60.36%) was recorded in *jatti khatti* budded rootstock plants. Whereas the lowest vegetative growth of scion (19.85%) and root diameter (18.85%) in rainy and (5.89%) and (5.92%) in the winter was observed in carrizo and citrange rootstock.

Impact of kinnow scion wood on citrus rootstocks

Performance of anti-transpirants and drip trickle irrigation on kinnow mandarin under rainfed conditions of Jammu subtropics

The experiment was started on farmer field of Sh. Joginder Singh R/o. Rahya, district Samba for antitranspirant (kaolin and magnesium carbonate) and water supply through drip trickle irrigation intervals (3 and 6 days) + mulch materials alone and combination of different treatments (15) were testing for their performance of suitable dose. The application of antitranspirant by kaolin and magnesium carbonate were designed of experiment through foliar spray in the first week of April, May and June-2019. The data was recorded during the month of October (after 10 months) as soil moisture content ranged from (12.40 - 22.20 %) and total chlorophyll content (SPAD values) ranged from (42.32-54.64).

Screening of elite germplasm of kazgilime (*Citrus aurantifolia)* in Jammu subtropics

Field study was conducted to identify and assess the naturally superior germplasm of Kazgi lime in winter season during 2019-2020. Among the selected selections after screening of elite germplasm, it was observed that selection code 1001 and selection code 1002 were best in terms of almost all vegetative parameters during investigation and the maximum average plant height (120.0 cm), number of branches (11.0), stock girth (50.0 mm) followed by selection code 1002 the maximum average plant height (115.0 cm), plant spread (N-W= 69.0 cm and S-E= 67.0 cm), number of branches (10.0), stock girth (45.0 mm). The highest incidence of citrus canker was reported in 1002 (18.0%) followed by 1001 (14.00%) and lowest was reported in 1009 (2.5%).

Screening of elite germplasm of red flesh guava in Jammu subtropics

Field study was conducted to identify and assess the naturally superior germplasm of red flush guavas in winter and rainy seasons. The maximum number of fruit (56) per plant, fruit weight (142.00g), fruit length (66.49mm), fruit width (60.90mm), water contents (80.00%), vitamin "C" (281.00 mg/100g), number of seed (132) per fruit, fruit maturity colour (green) pulp colour (Pink) was registered in strain code 2001 during winter season whereas the maximum number of fruit 66 per plant, fruit weight (146g), fruit length (66.79mm), fruit width (60.91mm), water contents (85.00%), vitamin "C" (190.00 mg/100g), number of seed (135) per fruit, maturity skin colour (green) pulp colour (Pink) was registered in rainy season during investigation.

Introduction and Evaluation of Sapota cultivar and screening of existing superior germplasm under Jammu subtopics areas

The project was started during the years 2019-20 at research station under rainfed condition. Two cultivars *viz.*, Kalipatti and Cricket ball were introduced at research station RRSS, Raya with proper pit size, planting distance, application of recommended fertilizers and FYM doses. During the investigation it was observed that 90 % plants survived in Jammu climatic condition under rainfed condition. The maximum plants height 75 cm, average 3-4 number of branches were observed

Sapota cv. Kalipatti

Sapota cv. Cricket

Soil carbon sequestration potential in relation to horticulture landuse systems in the lower shiwaliks of Jammu

The horticulture land-use systems in the lower Shiwaliks of Jammu soil samples collected from different crops *viz*. Aonla, Mango, Citrus, Guava, Phalsa, Inter-cropping-horticulture and Agri-horticulture as of surface soil (0-15 cm) samples in research farm and farmer field. The aggregate size fractions

in the aggregate-associated Organic Carbon (AAOC) content under wet-stable macro-aggregates (>0.250 mm) and micro-aggregates (<0.250 mm) are analyzed. The aggregate associated organic carbon (AAOC) of macro-aggregates was higher in inter- horticulture crops (11.34 g kg^{-1}) and followed by agri-horticulture (10.14 g kg^{-1}) Guava (9.76 g kg^{-1}), Aonla (9.46 g kg^{-1}), Mango (9.05 g kg^{-1}), kinnow (8.79 g kg^{-1}) and was lowest in Phalsa (8.40 g kg^{-1}) crops.

Performance and evaluation of hydrogel and drip trickle irrigation intervals under mulching for horticulture crops under rainfed conditions

The experiment was conducted at RRSS, Raya for hydrogel and drip trickle irrigation intervals under mulching on kinnow and Aonla crops. After one year the total chlorophyll content (SPAD values) ranged from (54.3-62.7), total water content from (55.04-64.88 %) and fruit yield was (20.20 -32.42 kg per tree) and fruit TSS (10.25-13.48 ^{0}brix), total sugars (7.35- 8.12 %). In the Aonla crops after one year on well matured fruit plant the total chlorophyll content (SPAD values) ranged from (28.2 - 35.2), and soil moisture content (13.50 - 22.50 %) and TSS (9.72- 10.75^{0}brix) fruit yield (65.85- 102.46 kg/tree). In both fruit crops of Kinnow mandarin and Aonla treatment T12 of 3 days intervals of water supply through drip trickle irrigation) + 90 g hydrogel + Mulch was higher values of moisture content, fruit yield and quality as compared to other treatments.

3.4.6 ORGANIC FARMING RESEARCH CENTRE

i. International Chickpea Nursery of *Ascochyta* blight disease (ICABD) and *Helicoverpa armigera*:

26 Chickpea lines and 28 lines were evaluated against *Ascochyta* blight and *Helicoverpa armigera*, respectively in 2019-20. Lines ICWA 1642, ICWA 1648 and ICWA 1650 showed resistant against Ascochyta blight disease. Among the 28 different lines screened against *Helicoverpa armigera* along with two checks ICC4991 and L-550,only one line ICWA 1906 was found moderately resistant against pod borer recording the mean percent pod damage of 9.783%. Identification of resistant sources will be benefitted to the farmers, researchers and other stakeholders in increasing production and productivity of chickpea.

ii. Testing of Products- Evaluation of 'DANSH' and VANSH for growth parameters of mungbean crop-two products from M/S Jai Organic India Ltd were tested under organic conditions. Dansh @ 625ml/ha recorded maximum plant height (69.18 cm), total number of pods /plant (53) and yield per hectare (8.97 Q/ha) respectively.

Vansh @ 32ml/Kanal (625 ml/ha) recorded maximum plant height (68.35cm), total number of pods /plant (55),1000 grain weight (26.75 g) and yield per hectare (8.43 q/ha) respectively.

iii. Evaluation of different genotypes of radish under organic system

It can be concluded that Ivory white, Meenakshi, Mino Early and CR-45 shall be taken under organic nutrition management for profitable yield. However, Ivory white, Mino Early and CR-45 were one week earlier to Meenakshi for harvesting of roots therefore offers better option for selection of radish genotypes under organic farming.

iv. Effect of mulching on growth, yield and weed population in cabbage

It is concluded that black polythene mulching has enhanced yields by effectively reducing weed population and crop duration in high density/closed spaced cabbage


Black polythene mulch


Straw mulch


Grey polythene mulch

v. Effect of organic nutrient management on growth and yield in broccoli cv. Jammu Broccoli-07

Maximum yield (198.36q/ha) was recorded in the treatments having incorporation of FYM @10T/ha alongwith vermicompost @ 2.5T/ha followed by the treatment with FYM @25T/ha alone (175.69q/ha)

Development of varieties under Organic farming system.

The 15 improved lines/genotypes of Basmati Rice were evaluated during Kharif season under Organic management. On the basis of yield performance OR 9 (44.21 q/ha.) performs better followed by OR 7 (37.45 q/ha.) and OR 10 (36.87 q/ha.). On the average performance of last three years OR 9 is continuously performing better in yield.

"Development of High-Density Fruit Orchard under Organic Management System"

Experiment 1: Studies on High density guava orchard established under organic management system.

The flowering and fruiting was regulated for winter season guava in high density organic guava cv. L-49 orchard in the third week of May, 2019. Maximum fruit length x breadth (8.56 x 8.06 cm), weight (215.46 g), pulp weight (163.31g) and fruit set (79.31 %) was recorded maximum with the treatment comprising 15 kg FYM + 10 Kg vermicompost + organic mulching applied to the guava plants. Similarly, the same treatment also showed maximum average yield (146.15 quintals ha^{-1}) for winter season guava fruit with TSS (13.26°B), total sugars (8.73 %), Vitamin 'C' (217.83 mg per 100 g of pulp) and pectin (0.77%) respectively, in the month of December, 2019-20.

Experiment 2: Studies on High density mango orchard established under organic management system.

The application of organic manures was applied during the first week of July, 2019-20 and also in the month of February, 2019-20. Application of Panchgavya solution @3.0% around the basins of the mango tree in fortnight intervals. Spraying of neem oil @0.2% around the plants on the newly emerging leaves.

Experiment 3: Studies on High density aonla orchard established under organic management system.

Application of organic manures was carried out in the first week of July, 2019. Spraying of neem oil @2.0% around the plants and Irrigation during fortnight intervals. Application of Panchgavya @ 3.0% solution around the basins of the plants. Pruning of aonla plants to develop the canopy architecture. Pasting of fresh cow dug on the cut ends to protect them from fungal disease. Cleaning and basin preparation around the plants. Creating smoke in the orchard to make the orchard insect free.

Experiment 4: Comparative evaluation of pecan cultivars under Jammu sub-tropics.

Out of all the varieties planted at OFRC, Weeding and basin preparation around the plants. Application of Panchgavya @ 3.0% solution around the basins of the plants. Irrigation of the orchard at fortnight intervals.

3.4.7 REGIONAL HORTICULTURAL RESEARCH SUB-STATION , BHADERWAH

Exploitation of natural variability of walnut of export related traits

- Surveyed and collected indigenous walnut germplasm from different parts of erstwhile Doda district for introduction conservation and evaluation at RHRSS, Bhaderwah

Walnut germplasm

Survery of Ambri apple variants in Doda district

- Ambri apple gremplasm with superior traits from erstwhile Doda district is being surveyed and three genotype have been collected for conservation and evaluation at RHRSS, Bhadarwah.

Ambri Apple

Collection, evaluation and selection of quality Rajmash for commercial cultivation in Doda District.

- Trial on Collection, evaluation and selection of quality Rajmash for commercial cultivation in Doda District was laid down at RHRSS, Bhadarwah, farm during kharif 2018 on different lines collected from different places of Jammu region, were evaluated. Response of the crop was very poor due to unfavorable climatic conditions.
- Seed was multiplied of five entries, pole type Rajmash BR104, BR 301 and bush type BR39, BR 33 , BR 35 , BR37 at RHRSS Bhaderwah.

Rajmash grown in between two rows of maize

Effect of integrated use of organic and inorganic fertilizers on productivity of apple crop

Research experiment observed that out of six treatments (Control, 100% NPK, 50% NPK+50% FYM, 50% NPK+50%VC, 100% VC and 100% FYM) application, of 50% NPK+50%VC per pit in the basin of Lal Ambri apple trend to show the best

and resulted in the highest pH (5.7) EC (0.135 dsm-^{1}), OC (7.6 g/kg) soil moisture (31.0%), available N (322 kg/ha), available P (18 kg/ha), available K (205kg/ha), fruit weight (110.5 g), fruit length (70.8 mm), fruit breath (73.9 mm), TSS (17.6 deg.brix), Firmness (10.9 kg) and yield (26.5 kg/plant) while the lowest values was observed of corresponding registered to be the lowest pH (5.3) EC (0.125 dsm-^{1}), OC (6.1 g/kg) soil moisture (17.1%), available N (260 kg/ha), available P (11 kg/ha), available K (165 kg/ha), fruit weight (82.7 g), fruit length (55.2 mm), fruit breath (56.8 mm), TSS (16.3 deg.brix), Firmness (8.2 kg) and yield (20.9 kg/plant) in control treatment.

Studies on integrated nutrient management in Strawberry cv. Chandler under Bhadarwah conditions.

Efficient and judicious use of nutrients for improving physico-chemical environment of soil as well as in yield and quality of the strawberry was laid down in RBD and data was recorded during 2019.

In-situ moisture conservation for higher maize production under rainfed conditions

It has been revealed from the preliminary observations that higher yield and yield attributes was observed in Conventional; tillage) along with Mulch (mulching with bhang) and RDF (Recommended dose of fertilizers) followed by conventional tillage along with mulching with pine needles and recommended dose of fertilizers.

General view of in-situ moisture conservation for higher maize production experiment

Concluded research projects: TESTING OF AGROPRODUCTS etc.

To evaluate the bio-efficacy and Phyto-toxicity evaluation of Propargite 42%+ Hexythiazox 2% Ec against Mites complex of apple and its impact on natural enemies in apple ecosystem .

Conclusion

Evaluation trail was conducted at RHRSS, Bhaderwah "To evaluate the bio-efficacy and Phyto-toxicity evaluation of Propargite 42%+ Hexythiazox 2% Ec against Mites complex of apple and its impact on natural enemies in apple ecosystem" and concluded that T_4 i.e. Propargite 42% + Hexythiazox 2% EC @ 12ml/10 liter which was at par with Treatment T_3 Propargite 42% + Hexythiazox 2% EC @ 10ml/10 literwas quite effective for management of apple mites in Sartingal area. In addition, highest yield was recorded in T_4 i.e. Propargite 42% + Hexythiazox 2% EC @ 12ml/10 liter followed by T_3 Propargite 42% + Hexythiazox 2% EC @ 10ml/10 liter, there were no effect on natural enemies observed in Apple ecosystem and there was no phytotoxicity symptoms observed even on the highest dose of Propargite 42% + Hexythiazox 2% EC and which indicate that the molecule Propargite 42% + Hexythiazox 2% ECis safe to apple.

To evaluate the bio efficacy and Phyto-toxicity of Mancozeb 35% SC against Alternaria blotch , premature leaf fall and scab.(Concluded)

Evaluation trail was conducted at RHRSS, Bhaderwah "To evaluate the bio efficacy and Phyto-toxicity of Mancozeb 35% SC against Alternaria blotch , premature leaf fall and scab"and concluded with the summary given below

- Mancozeb 35% SC @ 15.68 a.i. was also found highly effective against Scab disease of apple during both cropping seasons.
- Mancozeb 35% SC (Eurofil) @31.36 % a.i. and 37.63 % a.i. was found non toxic to apple plant and there was no phytotoxicity recorded in these treatments.
- Mancozeb 35% SC (Eurofil) @ 15.68 a.i. recorded highest yield over untreated control during 2017 & 2018.

Ongoing evaluation trials

Bio efficacy and phyto-toxicity valuation of companion (carbendazin 12% + Mancozeb 63% WP) against leaf fall, scab, powdery mildew and alternaria blight/ spot in apple.

The experiment was laid down as per technical programme given by **M/S Indofill chemical India private ltd. Mumbai** during June 2019 and the observations recorded are:

- Bio efficacy on target diseases
- Phytotoxicity : record any phytotoxicity (Visually) on 0-10 scale for assessment of yellowing, Chlorosis, leaf top injury, Wilting, Hyponasty, Epinasty
- Yield with cost benefit ratio
- Residue sample- residue sample to be collected for fruits and soil from T2, T3, T7, T8 and Tt9 at harvest.
- Metrological data pertaining to experimental period-temperature (Max-Min), rainfall, RH

Studies on bio efficacy of highly refined paraffinic mineral oil (Mega agrispray E30/) for control of pests in apple.

The experiment was conducted as per the technical programme during the cropping season 2019. The present study was undertaken to screen out the effectiveness of the chemical as carrier, spreader and sticker for insecticides and fungicides to ensure the pesticide effectiveness.

To evaluate the bio efficacy of NC -129 (20% wp) against mites infesting apple.

The experiment was conducted as per the technical programme during the cropping season 2019 and the observations recorded

- Motile mite counts on leaves will be recorded one day before application of treatments. The subsequent observations after application of treatments were observed at 3, 10 and 15 day.
- Marketable fruit yield
- Visual assessment of phytotoxicity at 0,1,3,5,7,10 and 15 days after each application.
- Effect on natural enemies present in the eco system including predatory mites.
- For estimation of residue in fruits and cropped soil were transported in dry ice to the residue laboratory.

To evaluate the bio efficacy of G O D –F 002(15% SC)against scab, powdery mildew at pre mature leaf fall in apple

The experiment was conducted as per the technical programme during the cropping season 2019 and the observations recorded

- PDI , disease severity were recorded on 10 tagged twigs from all directions from one tagged plant/ treatment before spraying and 5 and 10 days after spraying.
- Percent leaf infection were recorded by counting healthy and infected leaf on 5 tagged twigs/ plant before spray, 5 and 10 days after spray.
- Percent leaf infection were recorded by counting healthy and infected leaf on 10 tagged twigs/ plant before spray, 5 and 10 days after spray.
- Phytotoxocity were recorded on visual observations.

To evaluate the bio efficacy of G OD –F001 against scab and premature leaf fall in apple.

- PDI , disease severity were recorded on 10 tagged twigs from all directions from one tagged plant/ treatment before spraying and 5 and 10 days after spraying.
- Percent leaf infection were recorded by counting healthy and infected leaf on 5 tagged twigs/ plant before spray, 5 and 10 days after spray.
- Percent leaf infection were recorded by counting healthy and infected leaf on 10 tagged twigs/ plant before spray, 5 and 10 days after spray.
- Phytotoxocity were recorded on visual observations.

3.4.8 MAIZE BREEDING RESEARCH SUB-STATION, POONCH

1. Development of Hybrids/Composites/ Synthetics in maize (*Zea mays* L.) suitable for intermediate hill (rainfed) zone.Survey, collection, conservation, evaluation and utilization of elite maize germplasm suitable under intermediate hill (rainfed) zone
2. Genetic amelioration of specialty corns viz., pop corn, sweet corn and baby corn suitable for intermediate hill region

Evaluation, development and maintenance of Inbred/germplasm lines:

A sum of 280 inbred/germplasm lines available with the station (both white and yellow group) is in different selfing generations. These lines include Germplasm lines, station inbred lines, CIMMYT lines and speciality corn inbred lines including popcorn, sweetcorn and babycorns. These inbreds were advanced through selfing followed by selection between and within progenies during *kharif* 2019. The selfed seed of the aforesaid inbreds have been collected and data has also been recorded to assess their performance during next *kharif* season.

Evaluation of developed station hybrid:

A replicated station trial on 26 new single cross hybrids in white and yellow maize group along with local popular Pvt. Sec.hybrids as check, respectively was carried out during Kharif-2019. Out of these 3 single crosses i.e. C4/13-39/40, C4/13-37/42 and C4/13-23/9, revealed more than 10% superiority over the respective checks with regard to their yield.

Evaluation under FLD trials

Station composite JMC3 was demonstrated under FLDs programme of KVKs of the university. The result of the OFT trial is awaited.

Volunteer centre of AICRP (Maize)

As a volunteer centre of AICRP (Maize), 3 numbers of AICRP hybrid evaluation trials are conducted during *kharif* 2019 at this station.

- AVT-1 Normal Maize (590) MM Kharif 2019, Poonch
- AVT-1 Normal Maize (594) EM Kharif 2019, Poonch
- AVT-1 Normal Maize (600) EE Kharif 2019, Poonch

Data recorded on morpho-physiological and yield traits for all the trials were uploaded to IIMR website with a copy to Directorate of Research.

Breeding programme

- Parent lines of station released hybrid (PHM12) and experimental hybrids have been maintained by producing their seeds in good quantity during *kharif* 2019.
- Qtls TLS seed of station newly released station composite (JMC3) and 0.25 Qtl. each of two station experimental composites have been produced during *kharif* 2019
- 0.45 Qtl. Seed of newly identified station popcorn composite has been produced during *kharif* 2019.

3.4.9 MAIZE RESEARCH STATION, UDHAMPUR

- 10 Kg. Foundation Seed of Til var. RT-351 was produced during Kharif 2019-20, 8.5 Qtl of Breeder seed of Wheat var. HPW-349 & 10 Kg. Foundation seed of Mustard var. RSPR-69 was produced during Rabi 2019-20.
- Thirty local maize germplasm collections (Yellow, white, blue etc.) are being maintained and advanced through selfing, representing Udhampur district and some parts of Reasi, Kathua and Doda district for using in breeding programme.
- 100 numbers of inbred lines are being maintained through selfing for using in breeding programme.

3.4.10 WATER MANAGEMENT CENTRE, CHATHA

Evaluation of Sprinkler Irrigation in basmati rice-wheat sequence

- The results during *kharif*, 2019 suggests that the best responsive phase to rice irrigation (cv. Basmati-370) was found to be from panicle initiation to 15 days before harvest, which exhibited 32% more grain yield than that of conventional irrigation initiating from 15 days after transplanting until harvest. During panicle initiation phase sprinkler irrigation scheduled at 200% ETc can boost the rice yield by 63% over the conventional practice of irrigation.


Evaluation of Sprinkler Irrigation in basmati rice-wheat sequence

Evaluation of drip irrigation on okra-broccoli- tomato crop sequence

During *Rabi* 2018-19, the experiment on broccoli revealed that the maximum yield of broccoli (11.13 t/ha) was realized when irrigation applied through drip to replenish 75% ETc along with 25% recommended fertilizer dose of N, P, and K as solid fertilizer and rest 75% of recommended fertilizer through water soluble fertilizer by fertigation.


Broccoli under drip irrigation cum fertigation.

Evaluation on *in-situ* and *ex-situ* water harvesting methods for up-scaling crop water productivity under sub-tropical area of Jammu

- The performance of supplemental irrigation (through sprinkler) and nitrogen levels was evaluated on rainfed wheat (cv. HD-3086) during *Rabi*, 2018-19 at Dhainsar. Due to sufficient and frequent rainfall, there was no significant difference of irrigation scheduling effect, however, the 100% recommended N resulted in the wheat yield of 25.40 q/ha having water use efficiency of 11.56 kg/ha-mm.



RWH structure at Dhainsar

Experiment on supplemental irrigation with sprinkler was carried out at ACRA, Dhainsar using test crop wheat (cv. HD-3086)

Raised and sunken bed configuration to improve water productivity of water-logged areas.

- In water logged conditions, by changing land configuration, the sequence of Tomato-Mash-Broccoli (Raised Beds) + Fish rearing (Sunken beds) can accrue maximum net returns (Rs.363,390) followed by Moong-Mash-Knolkhol (Raised Beds) + Fish rearing (Sunken beds) recorded comparable net returns of Rs. 363,390/- ha^{-1} and Rs.318,500/- ha^{-1}. The benefit: cost ratio of Moong-Mash-Knolkhol (Raised Beds) in raised bed + fish rearing in sunken beds achieved the highest B : C of 1.44 followed by tomato-mash-broccoli (Raised Beds) + Fish (Sunken beds).

System of rice intensification (SRI) for improving water productivity of rice

- Under limited water supply of tail-end command, the practice of System of Rice Intensification (SRI) of basmati rice (cv. Basmati-370) with irrigation to saturate the soil followed by drying soil surface until appearance of hair-cracking of surface soil (during vegetative phase) and by maintaining shallow ponded depth of water during reproductive phase may save irrigation water input by 41.5% as compared to conventional flood irrigation. Although yield reduction up to 12.6% (24.76 q/ha) was registered with SRI than that of conventional practice (28.32 q/ha), the water use efficiency of 1.68 kg/ha-mm was achieved with SRI as against 1.32 kg/ha-mm for conventional irrigation.

Reconciliation of consumptive use of water for multipurpose UJH irrigation project

- The **Ujh irrigation project** is contemplated to cater the irrigation facility (for about 22,000 ha) in *Kandi* areas of districts Kathua and Samba. AICRP (IWM), Jammu collaborated in this project with Irrigation & Flood Control Department (Jammu) and evaluated various soil hydrological parameters including effective rainfall (318 mm), percolation rate (10 mm day^{-1}) of the site for estimation of projected consumptive water use of rice-based cropping system (766.97 mm). The evaluated parameters were accepted by CWC, New Delhi in order to accord the sanction of multipurpose Ujh canal with a outlay of Rs. 5484 cores for J&K (UT).

3.4.11 MEGA SEED PROJECT-CHATHA

Quality Seed Produced (2019-20)

Season	Crop	Variety	Cat.	Quantity(q)
Kharif	**Paddy**	Basmati 370	BS	8.40
		Giza-14	BS	2.95
		Pusa Basmati -1718	BS	2.22
		Pusa Basmati -1728	BS	2.25
Total				**15.82**
Kharif	**Paddy**	Basmati 370	FS	111.18
		Pusa Basmati 1121	FS	7.08
		Pusa Basmati -1637	FS	1.20
		Pusa Basmati 1718	FS	4.94
	TIL	RT 351	FS	**0.09**
Total				**124.49**
Kharif	**Paddy**	Pusa Basmati 1718	CS	1.68
		Pusa Basmati -1637	CS	0.24
Total				**1.92**
Kharif	**Paddy**	Basmati 370	NS	**0.12**
Rabi	**Wheat**	HPW 349	BS	2.80
		HD 3226	BS	2.00
		DBW 173	BS	2.33
		HD 3237	BS	2.88
		HD 3271	BS	2.80
		WH 1105	BS	26.42
		WH 1080	BS	22.60
		VL-907	BS	0.40
		JAUW-584	BS	4.20
Total				**66.43**

	Coriander	Coriander Jammu-07	BS	**0.08**
	Toria	RSPT 1	BS	0.04
		RSPT 6	BS	0.08
		RSPT 2	BS	0.06
Total				**0.18**
	Mustard	RSPR-03	BS	0.03
		RSPR-69	BS	0.12
Total				**0.15**
Rabi	**Wheat**	HD 3086	FS	297.10
		HD 3237	FS	13.35
		WH 1080	FS	43.20
		WH-1021	FS	3.72
Total				**357.37**
Rabi	**Wheat**	HD 3086	CS	65.05
		WH 1080	CS	14.58
Total				**79.63**

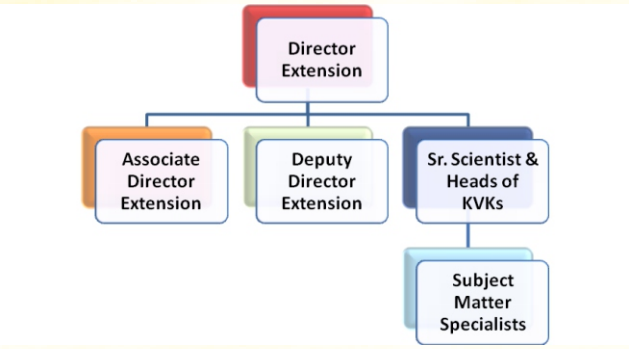
PLANTING MATERIALS :

Crop	Production (Nos.)	Crop	Production (Nos.)
Flowers/Fruits/Vegetable Plants		**Agro forestry Plants**	
Magrigold	3000.0	*Aloe barbadensis*	350.0
Gladiolus (Corms)	150.0	*Azadirachta indica*	300.0
Bottle gourd	2000.0	*Populus deltoids (ETP's)*	500.0
Bitter gourd	2000.0	*Asparagus racemosus*	100.0
Brinjal	1500.0	*Grewia optiva*	200.0
Cucumber	1000.0	*Albizzia lebbeck*	150.0
Tomato	4000.0	*Pongamia pinnata*	150.0
Knol khol	5000.0	*Bauhinia 1omposite*	30.0
Chilli	500.0	*Andrographis paniculata*	50.0
Cauliflower	3000.0	*Gmelina arborea*	30.0
Broccoli	2500.0	*Rauvolfia 1omposite1*	100.0
Pecan nut	250.0	*Melia 1omposite*	60.0
Guava	300.0	*Bacopa monnieri*	50.0
Peach	500.0	*Vetiveria zizanioides (slips)* (Khus grass)	9000.0
Plum	400.0	*Cymbopogon flexusosus (slips)* Lemongrass)	1000.0
Apple	400.0	*Tinospora cordifolia*	50.0
Apricot	400.0	*Ocimum spp.*	30.0
Mango	5500.0	*Terminalia chebula*	100.0
Lime	920.0	*Murrya koengii*	50.0
Sweet lime	150.0	*Wedella chinensis*	50.0
Citrus	4300.0	*Plumbago zeylenica*	15.0
Phalsa	800.0	*Psoralea corylifolia*	20.0
Aonla	750.0	*Tylophora asthmatica*	20.0
Jack fruit	150.0	*Chlorophytum borivilianum*	50.0
Bael	150.0	**Total**	**95668.0**
Walnut	2250.0	*Acorus calamus*	3.0 kg
Custard Apple	250.0		
Cherry	100.0		

EXTENSTION

4

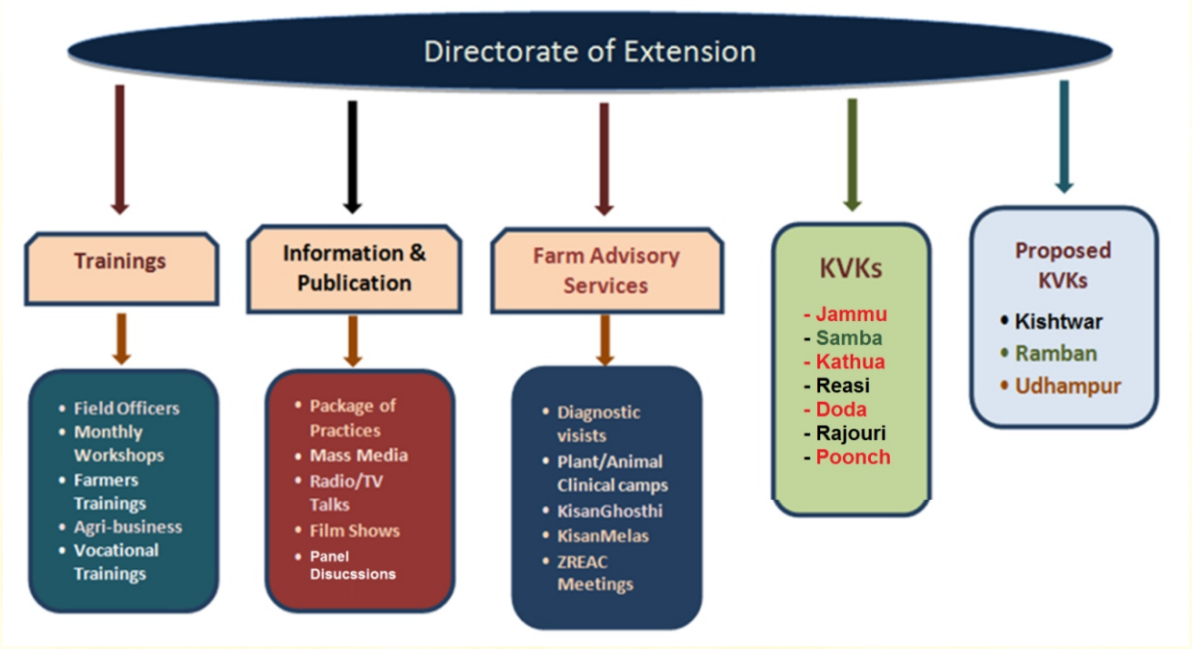
Extension Education is the backbone of agricultural sector and one of the major mandates of agricultural universities in India. Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu caters the needs of the farming community in Jammu region of UT of J&K. The responsibility for planning, organizing, conducting and coordinating the extension activities of the university lies with the Directorate of Extension. It acts as a bridge between extension functionaries on one hand and research sub-system of the University on the other.



The Directorate of Extension is mandated to formulate extension policies, maintain functional linkages with agriculture and allied departments on behalf of the University and strengthen Krishi Vigyan Kendras through technological backstopping.

Directorate of Extension, SKUAST-Jammu is catering the needs of farmers in all the three agro-climatic zones namely Sub-tropical, Intermediate and Temperate existing in Jammu region of UT of J&K. The technologies validated for these zones by research divisions / units of the University, including Faculty of Agriculture, Faculty of Veterinary sciences & A.H. and Faculty of Basic Sciences and research stations are transferred to field functionaries directly as well as through KVKs.In addition, several externally funded research and extension based projects are also implemented by the directorate for demonstrations of research interventions at farmers' fields.

The functional setup of the Directorate has been oriented to face the traditional and new challenges emerging on day to day basis so that the farmers and the field functionaries are benefited. The major activities carried out by the directorate are depicted below:gram of Directorate of Extension is presented below:



4.1 Meetings

Zonal Research & Extension Advisory Committee

ZREAC Kharif 2019

Zonal Research and Extension Advisory Committee (ZREAC) meeting for Kharif 2019 for Jammu region was held on 7th July, 2019 in the conference Hall of SKUAST-Jammu, Main Campus, Chatha under the chairmanship of Hon'ble Vice Chancellor, SKUAST-Jammu.

Senior Scientist and Heads of Krishi Vigyan Kendras, Scientists Incharge Stations, Resource personnel of the officers monthly workshops, Chief Agriculture Officers, Chief Horticulture officers as well as district officers of Agriculture, Horticulture, Floriculture and other line departments participated in the meeting.

Sher-e-Kashmir University of Agricultural Sciences and Technology (SKUAST) -Jammu organized Zonal Research and Extension Advisory Committee (ZREAC) meeting for Kharif season with respect to Agriculture, Horticulture, Sericulture, Floriculture and Command Area Development under the Chairmanship of Dr K S Risam, Vice-Chancellor, SKUAST-Jammu. More than 160 agricultural experts, including officers of line department and scientists from SKUAST-Jammu participated in the meeting.

ZREAC (Kharif 2019)

Dr J P Sharma, Director Research, presented the overview of the research activities of SKUAST-Jammu and described the traits of different varieties developed and notified by the University. P S Rathore, Director Agriculture Department, Jammu, raised different issues faced by officers of Agriculture Department in different districts of Jammu region, including aroma of Basmati – 370, short duration maize varieties, production of pulses and other cash crops.

Riyaz Ahmad Wani, Director, Sericulture Department, requested for provision of Package of Practices for management of sericulture in Jammu region. S Tarvinder Singh, Joint Director Horticulture raised the issue of standardization of strawberry cultivars, olive cultivation, sub-tropical apple, evaluation of Carrizo rootstock and availability of superior cultivars of mango and walnut in Jammu region. Vikrant Sharma, Floriculture Officer, raised the issues of drought tolerant marigold varieties for kandi belt.

In his concluding remarks, Dr. K.S. Risam, Chairman ZREAC meeting thanked the statutory officers, members, representatives of line departments and scientists of the University for their active participation and provision of critical inputs with respect to agriculture and allied sectors. He further suggested departments and University scientists to consider following points for effective implementation of research and extension activities:

- Effective convergence and sharing of information between departments and University.
- Joint visits by department and University officers to problem site for providing effective solution to field issues.
- Testing and recommending new varieties released within last 5 years for achieving high Seed Replacement Rate (SRR).
- Efforts should be made to reduce time gap in providing solution to the field problems.
- KVKs are technological windows of the University, but due to availability of fewer scientific staff, the chairman suggested department to organize collaborative programmes for wider coverage of farmers in Jammu region.
- Consulting Package of Practices issued by the University for solving field problems by extending specific recommendations to the farmers.

Dr. R K Arora, Associate Director Extension, highlighted the rationale behind organization of ZREAC meeting. During the technical session, actions taken by the University on the issues raised by the line departments during the ZREAC Kharif 2018 were discussed. Heads of divisions from University, officers of the line departments and Subject Matter specialists gave feedback for planning future research issues. Dr A K Sharma, Associate Director Extension (KVKs), presented the vote of thanks.

ZREAC Rabi 2019-20

Zonal Research and Extension Advisory Committee (ZREAC) meeting for Rabi 2019 for Jammu region was held on 6th November, 2019 in the conference Hall of SKUAST-Jammu, Main Campus, Chatha under the chairmanship of Dr. K.S. Risam, Hon'ble Vice Chancellor, SKUAST-Jammu. Among the

statutory officers of university, Dr J P Sharma, Director Research, SKUAST-J; Dr T A S Genai, Director Education; Dr M M S Zama, Dean, Faculty of Veterinary Sciences & Animal Husbandry; Dr D P Abrol, Dean, Faculty of Agriculture; Dr Deepak Kher, Director, Planning & Monitoring were present during the meeting. Sh. Manzoor Ahmad Qadri, Director Sericulture (J&K); Sh. H.S. Mankotia, Joint Director Agriculture (Inputs); Ms. Shafiqa Khalid, Deputy Director Horticulture (Central); Sh. Vikrant Sharma, Floriculture Officer, Jammu represented their respective departments. Dr. R.K. Arora, Associate Director Extension welcomed the chairman, distinguished guests and other participants in the meeting and expressed gratitude to the Hon'ble Vice Chancellor for sparing his valuable time to chair the meeting and also for extending full support for organization of the meeting.

Manzoor Ahmad Qadri, Director Sericulture (J&K)

ZREAC (Rabi 2019)

requested for release of new races of silkworm and improved varieties of mulberry. Deliberating upon the issue, DrRisam suggested to take up issue of constitution of UT Level Release Committee with higher authorities so that the selected races may be released for adoption at farmers' fields.Shafiqa Khalid, Deputy Director Horticulture (Central) highlighted necessity for introducing new cultivars of almond in hilly areas of Jammu region. Joint Director Agriculture (inputs) inquired about rust resistant early and late sown wheat varieties, whereas Floriculture Officer requested for availability of Marigold seed.

In his concluding remarks, Dr. K.S. Risam, Chairman ZREAC focused on better implementation of programmes and schemes in Jammu region for the benefit of farming community. He advocated that scientists of the University and field officers of line departments should work in coordination for obtaining better results on the field. Responding to the queries raised by line departments, Dr. Risam suggested for involvement of farmers in seed production programme for oilseeds, floriculture and other field/horticulture crops to overcome the shortage of quality seed/planting material in different districts of Jammu region. He further advised to formulate crop-wise groups to plan the modalities of ensuing season in terms of requirement of seed and other critical inputs through consultation between line departments and University well in advance. He highlighted the importance of organic horticulture produce of Jammu region and suggested to make best efforts for their popularization to bring greater benefits to the growers. He emphasized upon deliberation of specific problems of farming community for reaching at immediate solutions through research at the University level.

4.2 Officers Monthly Workshops:

Monthly Officer's Workshops are organized every year with the departments of Agriculture and Horticulture in each district of Jammu province on scheduled dates for effecting close coordination of the extension activities of the University with concerned state departments, In the above meetings, Monthly messages compiled crop-wise on the basis of calendar of operations are discussed which are to be conducted in various fields of agriculture and horticulture in the ensuing month. Directorate of Extension conducted 38 Officers Monthly Workshops at various KVKs and district headquarters of the Jammu region during the period 2019-20. The workshops were attended by the district and sub-divisional level officers from Department of Agriculture and Department of Horticulture.

	Districts							
	Jammu	Samba	Kathua	Rajouri	Poonch	Udhampur/ Reasi/ Ramban	Doda/ Kishtwar	Total
No. of workshop	07	10	10	07	08	07	07	56
No. of participants	52	726	680	554	320	254	232	2818

4.3 Trainings organized by Directorate of Extension under Technological backstopping of KVKs

The Directorate is organizing capacity building programmes for scientific staff of all KVKs for providing technological backstopping. Three training programmes in the identified areas were organized for scientific staff of all KVKs by the Directorate of Extension in collaboration with various divisions of Faculty of Agriculture. The details of trainings conducted are as under:

S. No.	Title of the training programmes	Date	Participants
1.	Hydroponics	20th Feb., 2020	36
2.	Impact Analysis of Field Experiments using Statistical Tools	05-06 March, 2020	19

Training on Hydroponics

Training on Impact Analysis

Quarterly Review Meetings of KVKs

Directorate of Extension conducted review meetings for identifying constraints in smooth implementation of approved action plan of KVKs.

No. of meetings	Participants
05	**96**

Sponsored training programmes

Directorate of Extension has organised residential training programmes in collaboration with state and national level organisations. The detail is given hereunder:

Training Programmes	Collaborator	Dates	Participants
15 days Induction programme for rural youths	Nehru Yuva Kendra, Jammu	14 to 28th Oct. 2020	86
30 days certificate course on organic farming	RCOF, Panchkula	25th Nov. 24th Dec. 2020	31

Exposure visits of farmers / youths

Directorate of Extension has organised exposure visit of farmers to different units of the University as per the details given below:

S. No.	Name of Districts	Date(s)	No of participants
1	Samba	18.12.2019	44
2	Samba	20.12.2019	22
3	Poonch	23.12.2019	35
4	Ramban	23 to 24.12.2019	22
5	Jammu	23.12.2019	55
6	Udhampur	26.12.2019	38
7	Udhampur	30.12.2019 to 01.01.2020	25
8	Udhampur	15.01.2020	50
9	Samba	16.01.2020	41
10	Udhampur	15.01.2020 to 17.01.2020	18
11	Jammu	17.01.2020	38
12	Udhampur	21.01.2020 to 22.01.2020	54
13	Poonch	20.01.2020	30
14	Poonch	22.01.2020	28
15	Reasi	22.01.2020 to 24.01.2020	45
16	Ramban	24.01.2020	43
17	Doda	29.01.2020	16
18	Ramban	31.01.2020	50
19	Kishtwar	06.07.2020	46
20	Ramban	09.02.2020 to 13.02.2020	50
21	Udhampur	13.02.2020 to 15.02.2020	32
22	Doda	18.02.2020	27
23	Samba	20.02.2020	40
24	Samba	20.02.2020	40
25	Budgam	22.02.2020	41
26	Poonch	02.03.2020 to 03.03.2020	53
27	Samba	02.03.2020	50
28	Samba	03.03.2020	52
29	Samba	04.03.2020	29
30	Poonch	04.03.2020 to 07.03.2020	20
31	Reasi	06.03.2020	18
32	Udhampur	06.03.2020 to 09.03.2020	25
	Total		**1177**

Training Programmes Organized by the Directorate under State Agricultural Management andExtension Training Institute, Jammu (SAMETI-J):

Under the Sub Mission on Agriculture Extension, a component of National Mission on Agriculture Extension and Technology (NMAET), Directorate of Extension is the nodal agency designated as State Agriculture Management Extension Training Institute for Jammu Division. As per the SEWP ofeach district, the trainings are being organized for the extension functionaries of Agriculture and allied departments. The details of training programmes organized during the financial year are presented below:

4.4 Training Programmes conducted under SAMETI-Jammu (2019-20)

S. No.	Name of the Training	No. of Participants
AGRICULTURE		
1.	Improved Maize production technologies for Hilly and Plain Areas of Jammu region w.e.f 25-26 April, 2019	37
2.	Queen Bee Rearing w.e.f3-4 May, 2019	25
3.	Operational Guidelines of Centrally sponsored schemes on 25th May, 2019	61
4.	Management strategies on Fall Armyworm in Maize on 3rd July, 2019	33
5.	One week Induction course for AEA's w.e.f 2 -7 Sep, 2019	72
6.	One day orientation workshop for Input Dealers on 12th Sep,2019	47
7.	Improved production technologies for Rabi/Summer pulses w.e.f 3 - 4 Oct, 2019	30
8.	Improved technological interventions for enhancing production/productivity of wheat crop w.e.f 30-31 Oct, 2019	39
9.	Mushroom cultivation round the year w.e.f 13-14 Feb, 2020	34
10.	Vegetable cultivation round the year w.e.f 19-20 Feb, 2020	25
HORTICULTURE		
1.	High density plantation in fruit crops w.e.f 26-27 Dec, 2019	32
SERICULTURE		
1.	Nutritional Management fo r mulberry leaf production on 26th July , 2019	47
2.	Diagnosis and management of silkworm diseases w.e.f12-13 Dec, 2019	46
ANIMAL HUSBANDRY		
1.	Common surgeries of livestock including practical aspects w.e.f 15 -19 July, 2019	26
2.	Advances in enhancing reproductive efficiency of livestockw.e.f 7 -8 Nov, 2019	28

SHEEP HUSBANDRY	
Diagnosis and management of diseases In Sheep and Goats w.e.f 10 -11 Dec, 2019	30
AGRICULTURE & ALLIED SECTORS	
One day Workshop on How to remain happy and handle stress positively on 14th June, 2019	80
Sustainable soil and water conservation measures for rainfed areas w.e.f23-25 July, 2019	38
Recent trends in physiological aspects of biotic and abiotic stress in cropsw.e.f 20-21 August, 2019.	30
Managing climate risk using climate smart agriculturew.e.f. 18 -19 Sep, 2019	40
Plant tissue culture techniques in quality planting material production w.e.f 18-22 Nov, 2019	21
Nanotechnology in Agriculture : Prospects and Constraints w.e.f 23-24 Dec, 2019	29
Natural Farming w.e.f 9-10 Jan, 2020	32
Urban Agriculture w.e.f 15-17 Jan, 2020	38
Gender Budgeting and Mainstreaming women in agriculture and allied sectors w.e.f 30-31 Jan, 2020	37
Micro-Irrigation Technology for Jammu Region w.e.f. 27-28 Fe bruary, 2020	30
Impact Analysis of Field Experiments using Statistical Tools was organized by SAMETI-J w.e.f. 05-06 March, 2020	35
Total	**1006**

Training programmes and Other Extension activities organized by KVKs (2019-20)

KrishiVigyanKendras (KVKs) working under the administrative control of SKUAST-Jammu are organising training programmes and other extension activities for dissemination of proven technologies. Some of the major activities undertaken by different KVKs of SKUAST-Jammu are mentioned below:

Farmers' Training Programmes

KrishiVigyanKendras (KVKs) of SKUAST-Jammu are organising both on and off campus trainings programmes for benefit of farmers to enrich their knowledge regarding the new agricultural technologies being generated through research and other innovations. The following table indicates the farmers training programmes organised by different KVKs.

Training Programmes	Jammu	Samba	Kathua	Reasi	Doda	Rajouri	Poonch	Total
No.	57	72	37	61	25	38	54	**344**
Participants	1303	1709	870	1228	553	778	1152	**7593**

Farmers' Training programmes

In-service Training Programmes

The In-service training programmes organised by different KVKs during 2019-20 are given below:

Training Programmes	Jammu	Samba	Kathua	Doda	Reasi	Rajouri	Poonch	Total
No.	9	12	8	06	7	06	14	**62**
Participants	172	270	144	96	81	111	309	**1183**

Rural youth/Vocational Training programmes including Skill development trainings

The following table indicates the rural youth/vocational training programmes organised by different KVKs:

Training Programmes	Jammu	Samba	Kathua	Reasi	Doda	Rajouri	Poonch	Total
No.	7	11	4	8	02	06	02	**40**
Participants	179	293	79	198	26	87	31	**893**

Vocational Training programmes

4.5 Technology transferred and assessed (KVK Wise)

S. No.	Name of Technology	Technical Intervention (Treatments)	Economic Benefit (B.C Ratio)
KVK Jammu			
1	Evaluation of disease resistant cabbage varieties	T1 = Farmer's practice T2 = PusaMukta T3 = Pusa Drum Head	2.53 3.16 3.80
2	Evaluation of Maize Composite under Rainfed subtropics of Jammu	T1 = Vijay T2 = PMSY-4	1.76 1.92
3	Evaluation of Knol-Khol varieties under subtropical conditions of Jammu	T1 = Farmer's practice T2 = Green Vienna T3 = PusaVirat	2.31 3.02 3.20
4	Evaluation of different accession of Shataver (Asparagus recemosus)	T1 = IC 471899 T2 = IC 471922 T3 = IC 471923	1.73 3.85 3.97
5	Assessment of Basmati variety of SKUAST-J	T1 = Basmati 370 T2 = Basmati 123 T3 = Basmati 138	1.89 2.57 2.68
6	Assessment of Pusa Basmati varieties	T1 = Pusa 1121 T2 = Pusa 1637 T3 = Pusa 1728	2.34 2.96 2.49
7	Effect of different herbicides mixture on weed density and weed biomass at 60 DAS in maize at farmers field.	T1 = Atrazine 100g/ha at 0-3 DAS T2 = Tembotrione 100g/ha + atrazine 500g/ha T3 = Atrazine 1000g/ha and tembrotrione 100g/ha	2.18 2.46 2.25
8	Impact of feed supplement on fish production	T1 = Home made feed T2 = Rice bran + oil cake (1:1) @3% of body weight T3= Recommended + agrimin forte 20g/kg feed	2.22 2.35 2.83
9	Assessment of floating feed on growth and production of fish	T1 = Home made feed T2 = Rice bran + oil cake (1:1) @3% of body weight T3= Floating feed @ 2% of body weight	2.2 2.8 3.1

KVK Samba			
1	Comparative performance of different varieties of okra.	T1:Farmer Practice (ArkaAnamika)	1.10
		T2: VarshaUphar (recommended)	1.96
		T3:Jammu Okra-05(Intervention)	2.27
2	Assessment of Urd bean in the Ber based Agro-forestry system of kandi area.	T1: Uttra (Farmer Practice	1:25
		T2: PU-31 (recommended)	1.91
		T3: Vallabh Urd-1 (Intervention)	2.62
3	Performance of different Varieties of Oats under Sub-tropical Conditions	T1: Sabzar (Farmers practice)	3.5
		T2: Kent (recommended)	4.2
		T3: 0L-12 (New intervention)	5.6
4	Effect of different organic manures on the yield of knol-khol	T1: Farmer Practice (FYM)	1:3
		T2: FYM (Basal dose)+ Vermi –Compost@2.5 tons/ha(top dressing)(recommended)	2.8
		T3: FYM+ Neem coated Vermi compost @2.0 tons/ha(New intervention)	3.0
5	Effect of different herbicides on the yield of Urdbean	T1: Farmers practice (hand hoeing)	0.85
		T2:Pendimethalin @ 1000 ml/ha(recommended)	1.88
		T3: Imazethapyr + Pendimethalin (R.M) @ 1000 ml/ha(New intervention)	2.15
6	Comparative study of different methods of Maize sowing	T1: Farmer practice	1.80
		T2: Tractor drawn cultivator 2 time + Line sowing(recommended)	2.20
		T3: Tractor drawn cultivator 1 time + Tractor drawn Maize Planter(New intervention)	3.07

7	Economic analysis of tractor drawn seed cum fertilize drill for wheat sowing	T1: Farmer practice	1.95
		T2: Tractor drawn cultivator 1 time + Line sowing (recommended)	2.40
		T3: Tractor drawn zero seed cum fertilizer drill after maize harvesting(New intervention)	3.17
8	Influence of NPK on yield of fine rice cv. PUSA-1121 under sub- tropical conditions of Jammu.	T1: Farmer's practice	0.85
		T2: 30 Kg N/ha: 20 Kg P2O5/ha: 10 Kg K2O/ha (Recommended practice)	1.88
		T3: 60 Kg N/ha: 25 Kg P2O5/ha: 15 Kg K2O/ha (New Intervention)	2.15
9	Influence of NPK on yield of fine rice cv. PUSA-150 under subtropical conditions of Jammu	T1: Farmer's practice	1.81
		T2: 30 Kg N/ha: 20 Kg P2O5/ha: 10 Kg K2O/ha(Recommended practice	2.14
		T3: 75 Kg N/ha: 25 Kg P2O5/ha: 15 Kg K2O/ha(New Intervention)	2.32
10	Influence of NPK on the yield of fine rice variety SJR-129 under subtropical conditions of Jammu	T1: Farmer practice T2: 30kgN/ha,20kg P2O5,10 kg K2O (recommended) T3: 60kgN/ha,25kg P2O5,15 kg K2O(New Intervention)	1.53 1.94 1.98
11	Effect of weed management practices in rainfed maize	T1: Atrazine pre-emergence @1Kg/ha (Farmer practice)	1.03
		T2: Tembotrione @100gm/ha+ Atrazine@500gm/ha at 15-20 DAS (Recommendation)	1.21
		T3:Atrazine pre-emergence @1Kg/ha Tembotrione @100gm/haat 15-20 DAS (New Intervention)	1.08

KVK Kathua			
1	Economic evaluation of GobhiSarson varieties for Kathua district	DGS-1(SKUAST-J)	GSC-7 recorded highest yield 16.5 q per ha with B: C ratio of 6.3.
		RSPN-25 (SKUAST-J)	
		GSC-7 (PAU-Ludhiana)	
2	Evaluation of the effect of feeding maize silage on milk production	T1 – Straw (Farmers practice) T2 – 50 %Maize silage + straw T3 – 100 % Maize silage	Increase in milk production upto 8.6 % in T3 as compared to T1
3	Evaluation of the maize cobs as a replacement for wheat straw	T1 – Straw (Farmers practice) T2 – 50 % wheat straw with maize + 50 % maize cobs T3 - 100 % maize cobs.	Increase in milk production up to 6.1 % in T3 as compared to T1
4	Evaluation of New Fungicides for Management of Sheath Blight in Paddy	T1- Carbendazim @0.1% (Farmers Practice) T2- Propiconazole 25 EC @ 0.1 percent (Recommendation) T3- Tebuconazole 50 % + Trifloxystrovin @0.1 percent (Intervention)	T3 reduced incidence to an extent of 64.13 %
5	Evaluation of different Substratum for Oyster mushroom production	T1 Wheat Straw (Farmers Practice) T2 Wheat Straw& Paddy Straw (chopping) (1:1) (Recommendation) T3 Paddy straw (Chopping)	T3 B:C ratio is 3.7
KVK Reasi			
1	Weed management in maize	T1: Farmer's Practice: Two Hand weedings and hoeing after 20 and 45 DAS T2 :Recommended: Pre-emergence Atrazine 1.5kg / ha T3: Laudis 42% SC (tembotrione) 120 g /ha 25 DAS	T3 was better
2	Integrated weed management in mash	T1-Hand weeding 20 and 40 DAS T2-Imazethapyr@ 100 g /ha 20 DAS T3-Pendimethalin 1.0 kg/ha (PE) fbquizalofop-ethyl 50 g/ha 30 DAS	T3 was better

3	Weed management in wheat Weed management in maize	T1: Farmer's Practice: Two Hand weedings and hoeing after 20 and 45 DAS T2 :Recommended: Pre-emergence Atrazine 1.5kg / ha T3 :Laudis 42% SC (tembotrione) 120 g /ha 25 DAS	T3(38.90q/ha)gavethebest results
4	Performance of Different Varieties Marigold	T1-Local Gutti T2-Pusa NarangiGainda (Orange) T3-Pusa BasanthiGainda (Yellow)	T3(305 q/ha) gave the better results
5	Management of fruit cracking in Litchi var. Dehradun	T0= farmer practice (control) T1=20ppm T2= 30ppm T3= 40ppm	T2 (30ppm) gave the best results(18.75 q/ha)
6	Evaluation of different wheat varieties under Rain fed Agro-Ecological conditions	T1-PBW 175 T2-WH 1080 T3-HD 3043	T3 gave the best result i.e.27.5 q/ha
7	Effect of transplanting time on yield of onion	T0-Farmers practice T1-25th Dec. T2-15th Jan. T3-25th Jan.	T1 was found the best (285q/ha)
8	Effect of sowing time on the seed yield of okra	T1-Farmers practice T2-May 1 T3-May 15 T4-May 30	T2 gave the best results
9	Nutrient management using bio fertilizer organic inputs in ginger.	T1-Farmer's Practice (FYM)-15t/ha T2-Vermicompost 10t/ha T3-Neem Cake 2t/ha + Azospirllium+ wood ash 10kg /ha Top dressing of organic formulation Panchagavaya18 L/600 L water/ha 60,90, 120 DAS	T1- 87 q/ha T2- 123 q/ha T3-148.0 q/ha
10	Weed management in wheat	T1-2,4-D ethyl ester 500 g/ha 30-35 DAS T2-Isoproturon+2,4-D 1000+500 g/ha at 30 DAS.	T3 gave the best result i.e.27.8 q/ha as compared to

11	Organic management of pod borer in chickpea.	T1-farmers practice T2-Spray Neem Oil (3ml/lt. of water) T3-Spray of panchgavya(10%)	T2(20.60 q/ha) gave the best results
12	Organic management of fruit and shoot borer in brinjal.	T1-farmers practice T2-Spray Neem Oil (3ml/lt. of water) T3-Spray of panchgavya(10%) T4-Installation of pheromone traps	T2(180 q/ha) gave the best results
13	Management of mango malformation	T1- farmer practice T2- 15cm clippings T3: NAA 200ppm	T3 gave the better results (4.6 tones/ha)
14	Use of different mulching materials in tomato crop for higher yields	T0- farmers practice T1= Rice straw T2=Maize straw T3=Sawdust	Maize straw gave the best results (270 q/ha)
15	Organic management of insect-pests in cauliflower	T1-farmers practice T2-Spray Neem Oil (3ml/lt. of water) T3-Spray of panchgavya(10%) T4-Installation of pheromone traps.	T2(180qt/ha)gave thebest results
KVK Doda			
1	Weed management in mash	T1: = Farmers Practice (No weed management)	B.C ratio: 1:1.56
		T2= Pendimethalin @ 1 Kg /Ha (0-3 DAS)	B.C ratio: 1:1.65
		T3= Imazathypar + Pendimethalin @ 1 Kg /Ha (20-25 DAS)	B.C ratio: 1:1.77
2	Assessment of mash varieties	T1= Farmers Practice (Local variety)	B.C ratio: 1:1.50
		T2= PU-19 (POP SKUAST-J)	B.C ratio: 1:1.74
		T3= PU-31 (POP GBPUAT, Pantnagar)	B.C ratio: 1:1.84

3	Evaluation of growth performance of Common carp using supplementary feeding (for 60 days)	T1 =Farmers practice (No supplementary feeding)	-
		T2 = supplementary feeding using oil cake and wheat flour (50/50) & 2% vitamin mineral mixture	-
4	Evaluation of impact of feeding schedule on growth performance of Common carp (for 60 days)	T1 =Farmers practice(No timing of feeding)	-
		T2 = management of feeding timing (twice daily at pre-fixed time), daily ration (5% of body weight)	-
KVK Rajouri			
1	Effect of weed management practices in maize crop under rainfed condition of Rajouri	TI. 2 Hand weedings (Farmers Practice)	B.C ratio: 1:1.72
		TII: Atrazine (Pre-emergence) @ 1 kg/ha	B.C ratio: 1:1.93
		TIII: Atrazine (Pre-emergence) @ 1 kg/ha fb. Tembotrione @ 100g/ha at 15-20 DAS	B.C ratio: 1:2.00
2	Effect of weed management practices on yield of Blackgram under rainfed conditions	TI: Two hand weedingd at 20 and 40 DAS (Farmers Practice)	B.C ratio: 1:1.54
		TII: Pendimethalin @ 1.0 Kg a.i./ha (Pre-emergence)	B.C ratio: 1:1.68
		TIII: Imazethapyr + Pendimethalin @ 1.0 Kg a.i./ha (Pre-emergence)	B.C ratio: 1:1.79
3	Techniques for In-situ conservation of kharif moisture for timely sowing of wheat in rabi season.	TI- Sowing after rainfall (Farmer Practice)	-
		TII- After harvest plough and heavy planking	-
		TIII- After harvest plough and heavy planking + Maize straw	-
4	Management of stem borer in paddy	T1: No management (Farmers Practice)	B.C ratio: 1.51:1
		T2: Seedling dip in chlorpyriphos	B.C ratio: 1.68:1
		T3: Carbofuran @ 20 kg/ha	B.C ratio: 1.70:1
		T4 :Seedling dip + Clipping of leaves	B.C ratio: B.C ratio: 1.71:1

5	Effect of CT enriched Multi Nutrient Block supplementation on performance of Goat Kids	T1. Farmers Practice*	B.C ratio: 1:1.60
		T2. T1 + MN Block Feeding	B.C ratio: 1:2.70
		T3. T2 + CT enriched MN Block Feeding	B.C ratio: 1:2.85
6	Effect of Silage feeding on performance of milch animals	T1. Farmers Practice (Hay & Straw feeding)	B.C ratio: 1:1.33
		T2. T1 + 25% Silage Feeding	B.C ratio: 1:2.86
		T3. T2 + 50% Silage Feeding	B.C ratio: 1:2.95
KVK Poonch			
1.	Management of Turcicum leaf blight in maize	Farmers Practice (No measures)	B.C ratio: 2.58
		Three sprays of Mancozeb @2.5 gm/l after the emergence of disease	B.C ratio: 3.29
		Three sprays of Propiconazole @ 1ml/l after the emergence of disease	B.C ratio: 3.85
2.	Management of wilt in chilli	Farmers Practice (No measures)	B.C ratio: 2.97
		Seed treatment with Carbendazim+Thiram (1:1)@ 3 g/Kg seed + Seedling dip before transplanting Carbendazim (0.1%)+Streptocycline (100 ppm) for 30 minutes	B.C ratio: 6.66
		Seedling dip before transplanting Carbendazim (1 gm/lt) for 20 minutes+ Flooding of field with Mancozeb (45 gm/10 lt) or Carbendazim (1 gm/lt)	B.C ratio: 5.94
3.	Effect of weed management practices in maize	Atrazine (Pre emergence)	B.C ratio: 1.44
		Tembotrione @ 100gm/ha + Atrazine @ 500 g/ha at 15-20 DAS	B.C ratio: 1.60
		Atrazine @ 1kg/ha fbtembotrione @ 100gm/ha at 15-20 DAS	B.C ratio: 1.77
4.	Effect of varied pruning intensities on yield and quality of apple	Farmers Practice (More heading back and less thinning out)	B.C ratio: 1.39
		¼ heading back and thinning out (Recommended)	B.C ratio: 4.99
		1/3 heading back and thinning out (Intervention)	B.C ratio: 5.05




Technology Assessment & Refinement

4.6 Front Line Demonstrations

S. No.	Crop/ Enterprise	Variety/ Technology	Area (ha)/ No.	No. of Participants	Crop Impact % Increase
KVK Jammu					
1	Promotion of maize hybrids	Improved variety	10	81	8.41
2	Demonstration of Paddy varieties	Improved variety	13.84	84	35.7
3	Promotion of Chickpea (PBG)	Improved variety	10	109	33.92
4	Promotion of Wheat (WH-1080) in rain-fed area	Improved variety	4.0	29	12.6
5	Promotion of Wheat (HD-3086) in irrigated areas	Improved variety	6.0	29	13.3

6	Introduction of high yielding varieties of Gobi sarson (DGS 1)	Improved variety	1.0	7	Results awaited
7	Introduction of high yielding varieties of Gobi sarson (RSPN 25)	Improved variety	1.0	10	---
8	Promotion of high yielding varieties ofMustard (RSPR 69)	Improved variety	0.4	3	---
9	Promotion of high yielding varieties ofMustard (RSPR 01)	Improved variety	1.6	18	---
10	Varietal evaluation of Mash (PU31)	Improved variety	7.0	108	5.36
11	Promotion of high yielding varieties ofBAJRA (K 19)	Improved variety	1.0	35	---
12	Varietal evaluation of PussaNarangi	Improved variety	2.0	40	28.75
13	Varietal evaluation of Oats (Sabjar)	Improved variety	2.0	25	20.6
14	Varietal evaluation of Berseem(Mascavi)	Improved variety	3.0	50	4.43
15	Varietal evaluation of Poultry birds (Chabro)	Improved variety	500 nos.	27 farmers	---
16	Button Mushroom U3	Improved variety			---
17	Promotion of superior clones of Harad, Aonla and other Medicinal tree	Improved variety			---
KVK Samba					
1	Mash	PU-31 Shekhar	10.0	50	31.1
2	Maize	Deklab Double	5.0	24	37.6
3	Paddy	B-564 SJR-129	8.4	38	54.3




Frontline demonstrations conducted ny KVKs

4.7 Farm Advisory Services (FAS)

KVK Samba

- Farm Advisory Services are provided regarding Horticulture crops, Agroforestry, MAPs, Farm Mechanisation, Livestock Production diseases and pest management, Soil and water testing and weather forecasting

KVK Jammu

- Kisan Mobile Advisory Services provided to 5000 farmers of Jammu region.

KVK Rajouri·

- **Consultancy Services provided to different departments/organizations:** Regular Consultancy & Advisory Services Provided to Line Departments throughMonthly Workshops (12 No.s)
- Consultancy to Govt. PG College, Rajouri for establishment of Mushroom Unit in Department of Botany.
- Consultancy Services to Indian Army Units in establishing Composting Units and Kitchen Gardens.

KVK Doda

- Problem identification in fish ponds at Malnai village, Doda
- Cultivation of Himalayan Poplar at Gutassa village, Doda

KVK Reasi

- More than 300 Farm Advisory Services were provided regarding organic farming, floriculture, horticulture crops, Agroforestry, MAPs, IPM, INM etc.

KVK Kathua

- Technical Guidance provided for different Technical reports pertaining to RKVY/NAME&T and PKVY.
- Scientific Consultancy, Technological backstopping & redress of location specific problem
- Organization of jointly visit with officers of Agriculture and allied departments

- Organization of monthly workshop (T&V) with officers of Agriculture and allied departments
- Diagnosis of the diseased samples received from the Department of Agriculture and suggest the suitable remedial measures by the scientists

S. No.	Department	Type of consultancy	KVK
1.	Agriculture Production Department, J&K Govt. Jammu	Participation in ATMA activities, Deputation of resource persons, organization of in service & farmers and vocational trainings.	All KVKs
2.	Department of Sheep Husbandry, J&K Govt.	Formulation of Annual Action plan in all districts of Jammu region	All KVKs
3.	NABARD	Organizing trainings, collaborative trainings and workshop, Formations of farmer Clubs, SHGs, Planning and execution of exposure visits.	All KVKs
4.	Nehru Yuva Kendra	Formulation of Annual Training Calendar for Capacity building programmes	All KVKs
5.	Department of Floriculture, J&K Govt.	Formulation of Annual Training Calendar for Capacity building of farmers and demonstrations	All KVKs
6.	State Department of Horticulture	Participation in ATMA activities, Deputation of resource persons, organization of in service trainings	All KVKs
7.	RSETI, Kathua	Formulation of Annual Training Calendar for skill development programmes of rural youth	KVK Kathua
8.	District Rural Development Agency, Kathua	Formulation of training programmes for rural youths	KVK Kathua
9.	Himalayan Forest Research Institute, Shimla, HP	Visit to KVK and Farmers field for identifying area for medicinal plants	KVK Doda
10.	District Administration, Doda	Attended Pre- District Board Meeting	KVK Doda

4.8 Farmers Educative Events

Programme	Samba		Rajouri		Jammu		Kathua		Reasi		Poonch		Doda	
	N	P	N	P	N	P	N	P	N	P	N	P	N	P
Field days	06	161	08	189	10	326	2	89	09	247	07	111	4	116
KissanGhoshti / Farmers scientist interaction	08	345	04	98	128	2976	5	75	10	405	06	383	2	76
Awareness programme	09	307	02	80	100	2124	2	61	09	307	17	845	4	259
Animal Health camps	02	489	01	201	1	74	1	34	6	50	03	273	-	-
KissanMelaOrganised/ participated	01	525	01	368	-	-	1	250	05	3100	-	-	1	520
Celebration of important days/weeks	09	993	05	214	10	799	6	193	08	212	08	1401	6	446
Exposure visits	15	288	03	74	6	313	7	189	5	85	04	48	2	100
Diagnostic visits	25	128	34	85	3	6	19	76	61	132	76	584	62	240
Film Shows	0	0	10	651	8	418	6	201	14	290	05	360	4	198

N: No. of Programmes; P: No. of Participants

Educative events carried out by KVKs during 2019-20

INFRASTRUCTURE DEVELOPMENT

5

5.1 Works Completed during 2019-20

S. No.	Name of the work
1	Construction of Girls Hostel (Single occupancy) for P.G. Students along with internal electrification and sanitary fittings complete (Double Storeyed) with provision of 2nd floor at Main Campus, Chatha, Jammu.
2	Construction of Covered Parking Shed near Office-cum-Lab Complex and Veterinary Clinical Complex at FVSc & AH, R.S.Pura.
3	Restoration of roads by way of laying & providing 25 mm thick premix carpeting from Sports Complex to Mega Seed/Farm Section and patch work in existing roads from Gate No. (1) to Museum, Conference Hall, Administration Block and other allied works at Main Campus, Chatha, Jammu
4	Construction of Seed Store facility near Mega Seed Project at Main Campus, Chatha, Jammu
5	Redevelopment of lawns by way of good earth filling in lawns and other sites at Main Campus, Chatha, Jammu.
6	Chain link fencing & providing of struts and PVC sheet roofing & other civil works for Farm Machinery Display Unit of Division of Agricultural Engineering at Main Campus, Chatha.
7	Construction of road leading to Spine near Block No. (1) and repair of path leading to Centre Library at Main Campus, Chatha, Jammu
8	Construction of threshing floor and shed for OFRC at Main Campus Chatha
9	Providing 3 phase power supply for installation of Air conditioners and other allied works in Examination Halls at FOA, Main Campus, Chatha, Jammu
10	Providing 3 phase power supply for installation of Air conditioners and other allied works in Examination Halls at FVSc & AH Campus, R.S. Pura, Jammu.
11	External Electrification including Garden lights, cable laying, Feeder pillar and earthing for Lawn of Vice-Chancellor's Residence at Chatha, Jammu
12	Providing DG Set Shed PVC Power cable changeover switch earthing street light alongwith LT line conductor to Vice Chancellor Residence at Chatha Jammu
13	Construction of Platform of Genset for Vice Chancellor's Residence at Chatha, Jammu

13	Cleanliness of area by way of uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50m outside the periphery of the area cleared at FVSc&AH Campus, R.S. Pura, Jammu
14	Construction of Fabricated structure to be utilized for conservation of Lac Insect Genetic Resources at Division of Entomology, Main Campus, Chatha, Jammu
15	Construction of Soil and Water conservation measures at Village Gargal, Kandi and Godhan in Akhnoor, Distt. Jammu.

5.2 Works in progress during 2019-20

S. No.	Name of the work
1	Construction of Type -III, 3 BHK Residential Quarters (12 sets) for Assistant Professors alongwith internal electrification & sanitary fittings at Main Campus, Chatha, Jammu (Three storeyed).
2	Extension of Spine from Block -8 to Faculty of Basic Sciences at Main Campus, Chatha, Jammu (Double Storeyed).
3	Construction of Deans Residence along with internal electrification and sanitary fittings at FVSc. & AH Campus, R.S.Pura, SKUAST-Jammu
4	Construction of Covered Parking Shed near Office - cum - Lab Complex and Veterinary Clinical Complex at FVSc & AH, R.S.Pura.
5	Construction of Seminar/Meeting Hall in the Administration Block of KVK Samba, Distt. Samba (Balance work)
7	Construction of Seed Store facility near Mega Seed Project at Main Campus, Chatha, Jammu
8	Construction of Training Hall and Testing Laboratory for Division of Agricultural Engineering at Main Campus, Chatha
9	Construction of Brick masonry compound wall around Dean's Residence at FVSc & AH Campus, R.S. Pura
10	Renovation/erection of cubicles/office space & other allied works at the Museum Hall including providing wall paneling to the Seminar/Conference Hall alongwith electrification in Division of Agricultural Economics and Agribusiness Management at Main Campus, Chatha, Jammu.

5.3 New works proposed for the year 2020-21

S. No.	Name of the work
A	**Station:- Main Campus, Chatha, Jammu**
1	Construction of 2nd Floor of Boys Hostel (Sankalp) including sanitary fittings and internal electrification at Main Campus, Chatha, Jammu.
2	Construction of 3 BHK Residential Quarters (12-sets) (G+2) including sanitary fittings and internal electrification at Main Campus, Chatha, Jammu **(Block-C)**
3	Creation of Sports facilities by way of construction of grounds, stadium steps, pavilion tracks, Arboriculture, drainage etc. at Main Campus, Chatha, Jammu.
4	Construction of 2nd Floor of Directorate of Extension building including sanitary fittings and internal electrification at Main Campus, Chatha, Jammu.
5	Supply of 500 KVA 415 DG set with alternator complete with accurate acoustic enclosures loading & unloading complete job (01 No.) as a backup for Baba Jitto Auditorium at Chatha, Jammu.
6	Construction of infrastructure for accommodating Practical Crop Production (PCP) students in the premises of the Research Farm at Main Campus, Chatha, Jammu.
5	Construction of Ex-Situ Gene Bank.
6	Providing fencing to the remaining portion of the Farm
7	Upgrdation of Campus roads by way of WBM laying and premix carpetting
8	Construction of drainage System (remaining portion)
9	Construction of bund from STP onwards
10	Providing DG set to Faculty of Basic Sciences
11	Construction of pathway alongwith Block No. 10
12	Development of pond near Gate No. 1
13	Development of Drainage system
B	**FVSc&AH Campus, R.S. Pura, Jammu**
14	Restoration of HT line SKUAST R.S. Pura (Dedicated feeder) from Sunderpur Receiving Station to Chakroi Morh R.S. Pura
15	Construction of Administrative Building alongwith sanitary fittings & internal electrification at FVSc & AH Campus, R.S. Pura, Jammu.
16	Construction of 3 BHK Residential Quarters (12-sets) (G+2) including sanitary fittings and internal electrification at FVSc & AH Campus, R.S. Pura, Jammu.
17	Construction of Office-cum-Lab space at the 2nd Floor of Division of VAHEE at FVSc & AH Campus, R.S. Pura, Jammu.
18	Creation of Sports facilities at FVSc & AH Campus, R.S. Pura, Jammu.
19	Construction of 2nd Floor of existing Girls Hostel (Pragati) for U.G. Students
20	Construction of new Veterinary Block in lieu of the old Block after completion of 50 years

22	Development of Drainage system
C	**Advanced Centre for Horticulture Research, Udheywalla**
23	Reconstruction of Collapased Brick Masonary Wall in the Residential Complex and Upgradation of the compound wall in front of Main building
24	Development of Drainage system
D	**Advanced Centre for Rainfed Agriculture (ACRA), Dhiansar**
25	Reconstruction of front side compound wall coming under encroachment drive as per the norms of NHAI and raising of existing front boundary wall by 3 feet at Dhiansar.
26	Repair/Renovations by way of Additions/Alterations to Farm Manager Office (Block No. (4))
27	Repair/Renovations by way of Additions/Alterations to the existing infrastructure (Block No. (1) & (2))
E	**Gwari Bhaderwah Distt. Doda**
28	Providing fencing to the remaining portion of the Farm
29	Construction of road and gate in 4-set residential quarters
30	Providing protection work by way of construction of breast walls
31	Construction of water harvesting tank
32	Providing Chain link fencing around the residential quarters.
33	Providing water supply to the Station
F	**KVK Reasi**
34	Construction of front gate, culvert and raising of existing compound wall.
35	Construction of Protection work by way of supplying, filling and laying in position stone filled M.S. wire, crates to arrest erosion of soil/farm land.

NEWLY CONSTRUCTED URJA HOSTEL FOR GIRLS

AWARDS AND RECOGNITIONS

6

Name of Teacher/ Scientist	Name of Award/ Distinction/ Recognition	Awarding Institution/Organization
Dr. A. K. Pathak	Commendation Certificate	National Academy of Veterinary Nutrition and Animal Welfare, PPKS, Bareilly
Dr. A. K. Pathak and Dr. R. K. Sharma	Best Paper Award (Poster)	IPSACON 2019 at CGKV, Durg, Chhattisgarh
Dr. A. K. Pathak, Dr. R. K. Sharma and Dr. Ankur Rastogi	Best Poster Presentation Award	IV Annual Convention of Pashu Poshan Kalyan Samittee (PPKS) organized at ICAR-CIRC, Meerut
Dr. A.K. Pandey, A.K. Pathak, Sunil Kumar, R.K. Sharma, Utsav Sharma and Sudhir Kumar	Second best poster presentation award during National conference on "Women empowerment through agro entrepreneurship for livelihood security"	By Society for integrated development of agriculture, veterinary and ecological sciences (SIDAVES).w.e.f February 07 - 08, 2019 at SKUAST - Jammu, Chatha, Jammu.
Dr. A.K. Singh	Mahima Outstanding Achievement	Banaras Hindu University, Varanasi
Dr. Akash Sharma	Young Horticultural Scientist Award-2019	Society for Horticultural Research and Development during the Indian Horticulture Summit
Dr. Akhil Verma	Reviewer Excellence award	Agricultural research communication centre (ARCC Journal)
Dr. Anil Bhat	Scientist of the Year Award	Gochar Educational and Welfare Soc iety (GEWS), Saharanpur (U.P.), India
Dr. Anish Yadav	Dr. N.S. Ruprah Oration Award	Indian Association for the Advancement of Veterinary Parasitology (IAAVP)
	Conferred Member of National Academy of Veterinary Sciences	National Academy of Veterinary Sciences
Dr. Ankur Rastogi	Associate Fellow	Animal Nutrition Society of India and WBUAFS, Kolkata
Dr. Ankur Rastogi, Dr. R K Sharma and Dr. A K Pathak	Best Oral Presentation Award	Animal Nutrition Society of India and WBUAFS, Kolkata
Dr. Arti Sharma	Eminent Scientist Award (November-2019)	Department of Botany University of Allahabad, Prayagraj
	Best oral presentation award (November-2019)	Department of Botany University of Allahabad, Prayagraj

Dr. AS Charak	Eminent Scientist Award	Agro Environmental Development Society, Rampur (UP) India
	GESA Fellow Award	Global Environment and Social Organization, New Delhi
Dr. Asma Khan, Dr. Dipanjali Konwar, Dr. Biswajit Brahma	Best Poster Award	ISAGB National Symposium held on May 29 - 30, 2019 at SKUAST-Jammu
Dr. Banarsi Lal	'Vedant Academics Bangkok Award-2019'	Kasetsart University, Chatuchak, Bangkok, Thailand
	Best Scientist Award	Education Expo(EET CRS)
	Honourable Jury Mention Certificate Award	Education Expo(EET CRS)
	Eminent Scientist Award	Society for Human Resource and Innovation
	Best Scientist Award	Education Expo(EET CRS)
	Best Extension Professional Award	Society for Biotic and Environmental Research
	Felicitation Award	National Board of Medicinal Plants, Regional - cum-Facilitation Centre
	Best KVK Scientist Award -2019	Agril. & Environmental Tech. Development Society
Dr. Bhav Kumar Sinha	5th J&K Agriculture Science Congress	SKUAST-Jammu
Dr. Brajeshwar Singh	Mahima Outstanding Achievement Award	Mahima Research Foundation and Social welfare
Dr. Devinder Sharma	Best poster Presentation Award	FAAS-2019, Kathmandu, Nepal (2019)
	Young Teacher Award	FAAS-2019, Kathmandu,Nepal (2019)
	Best Reporting Centre	ICAR –New Delhi at Nagaland (2019)
Dr. Dipanjali Konwar, Dr. Asma Khan, Dr. Biswajit Brahma	Best Poster Award	5th J&K Agriculture Science Congress held from August 8-10, 2019 at SKUAST- Jammu (J&K)
Dr. GN Jha	Scientist of the Year Award	Agro Environmental Development Society, Rampur (UP) India
	SFSN Fellowship	Society for Science and Nature, Lucknow
Dr. Gyanendra Kumar Rai	Rashtriya Gaurav Award	India International Friendship Society
Dr. Jonali Devi	Associate member	National Academy of Veterinary Sciences (India)
Dr. Kamal Sarma	Associate Membership of NAVS, 2019	National Academy of Veterinary Sciences (NAVS), India
Dr. M. Rashid	Best Oral Presentation Award	SIDAVES, SKUAST-Jammu-2019
	Appreciation Certificate	In 2nd. National Conference of SIDAVES-2019
	Appreciation Certificate	5th J&K Agriculture Science Congress (JKASC-2019)
	Appreciation Certificate	Funding Agency, DST- Govt. of India -2019
Dr. Manish Sharma	International Sponsorship for	Eurostat, European Commission

Dr. Nazam Khan, Dr. R. K. Sharma and Dr. A. K. Pathak	Best Presentation Award (Oral)	Animal Nutrition Society of India and WBUAFS, Kolkata
Dr. Neelesh Sharma	Outstanding Achievement Award 2020	Association of Animal Scientists, Jabalpur, M.P., India
	Appreciation Award	Veterinary Internal and Preventive Medicine Society (VIPM), Mathura, U.P., India
Dr. Neeraj Gupta	Young Women Scientist	IISR-ICAR, Lucknow, University of Allahabad Susanskriti, Prayagraj, India
Dr. P.K.Rai	SCSI HindiBook Award 2019	Soil Conservation Society of India, New Delhi
Dr. Pawan Kumar Verma	Associate Fellowship 2019	ISVPT (Indian Society of Veterinary Pharmacology and Toxicology)
	Associate Member 2019	NAVS (National Academy of veterinary Sciences)
Dr. Poonam Parihar	Dr. G.S Vidharthi, Memorial Award	ISEE, SKNRAU, Bikanar, Rajasthan, Nov.14-16, 2019.
Dr. Pranav Kumar	Best paper presentation (oral)	Indian Society of Extension Education (ISEE) National Seminar on "Holistic Approach for Enhancing Agricultural Growth in Changing Rural Scenario" held at Swami Keshwanand Rajasthan Agricultural University, Bikaner, Rajasthan w.e.f November 14 – 16, 2019.
Dr. Pratiksha Raghuwanshi	Best oral Presentation Award	International conference on Animal Nutrition 2019 on "Nutritional strategies for improving farm animal profitability and clean animal production" Organized by West Bengal University of Animal & Fishery Sciences, Kolkata in collaboration with ANSI at Kolkata, India *w.e.f* December l7- 19, 2019
Dr. R. K. Sharma	Fellow	National Academy of Veterinary Nutrition and Animal Welfare, PPKS, Bareilly
Dr. R.K. Bhardwaj Dr. Rajiv Singh	1st Best Poster Presentation award	38th Annual convention of ISVM & National symposium 5 - 7th February 2020 at COVSc Hebbal, Bengalauru
Dr. R.K.Bhardwaj Dr. Rajiv Singh Dr. R. Agrawal	2nd Best Poster Presentation award	38th Annual convention of ISVM & National symposium COVSc Hebbal, Bengalauru
Dr. Renu Gupta	International award for women research in the International virtual conference on alternative resources and Technology Based agriculture.	Society of Human Resource & Innovation Agra,(U.P) India
Dr. Rohit Sharma	Scientist of the Year Award(2019)	Dr. Yaswant Singh Parmar University of Horticulture of Horticulture and Forestry/Agro Environmental Development Society
Dr. S.A. Khandi	Selected for International Fellowship on Veterinary Extension.	Govt. of Netherlands in June, 2019.
Dr. Sachin Gupta	Summer Fellowship Award by Indian National Science	Indian National Science Academy

Dr. Sanjay Khar	Chairman, Jammu Local Centre	Institution of Engineers (Kolkata)
Dr. Sharad Kumar	Poster Presentation Award	5th JK Science Congress
Dr. Sudhakar Dwivedi	Excellent Teacher Award	Gochar Educational and Welfare Society (GEWS), Saharanpur (U.P.), India
	Best Oral Presentation Award	Gochar Educational and Welfare Society (GEWS), Saharanpur (U.P.), India
Dr. Sudhir Kumar	Best Ph.D Thesis during National conference on "Women empowerment through agro-entrepreneurship for livelihood security" by Society for integrated development of agriculture, veterinary and ecological sciences (SIDAVES)	Society for integrated development of agriculture, veterinary and ecological sciences (SIDAVES) w.e.f February 07 -08, 2019 at SKUAST - Jammu
Dr. Susheel Sharma	International Travel Grant	DST, Govt. of India, New Delhi
Dr. Sushil Sharma	Chairman, ISAE Chapter J&K	ISAE
Dr. V.S. Wazir Dr. S.R Upadhyay	3rd Best Poster Presentation Award	38th Annual convention of ISVM & National symposium COVSc Hebbal, Bengalauru
Dr. Vikas Sharma	Fellow of the Soil Conservation Society of India	Soil Conservation Society of India, New Delhi
Dr. Vikas Sharma	Distinguish Scientist Award-2019	Gochar Educational and Welfare Society
Dr. Vishal Gupta	Young Scientist	Agro-Environmental Development Society (AEDS) Uttar Pradesh.
Dr. Vishal Sharma	"Best Trainee Award" during 21 Days CAFT Training Programme	MPUAT, Udaipur
Dr. Vivak M. Arya	Best scientist Award, International Conference at Bangkok, Thailand	Gochar Educational and Welfare Society (GEWS)
	Best Research Paper Award in International Conference at Bangkok, Thailand	Gochar Educational and Welfare Society (GEWS)
	Scientific Leadership Award	Soil Conservation Society of India, New Delhi
	Best Research Paper Award in the 5th J&K Agriculture Science Congress	J&K, DST & SKUAST –J
Dr.Abhay Kr.Sinha	Best Extension Scientist Award	SBSRD,PRAYAGRAJ,(U.P.)

Dr.Narinder Panotra, Dr. J.P.Sharma, Dr Vikas Sharma, Dr.S.K.Singh, Dr.Vinod Gupta, Dr.Vivek Arya and Dr.Rohit Sharma	First Poster Award in 2nd International Conference on global Initiatives for Sustainable Development	Issues and Strategies at Hotel Howard Square Boutique, Bangkok, Thialand, June 23-27,2019
Dr.Narinder Paul	Best Oral Presentation Award	Society for Community Mobilization for Sustainable Development, IARI, New Delhi, India.
	Best KVK Scientist Award	Agro Environmental Development Society, Rampur (UP) India
Dr.Pawan Kumar Sharma	Best Paper Presentation	J&K Agri Science Congress
Dr.ShaliniKhajuria	Best Researcher Award	United Lightning Vision AssociationKarnataka, India .
Dr.Vinod Gup ta	KVK Professional Award	Society for CommunityMobilization for sustainable Development
	Poster presentation	Gochar Educational and welfare society, Saharanpur, U.P.
Drs. Sudhir Kumar, Utsav Sharma, Sharad Kumar and Anil Kumar Pandey	Best poster presentation award during National conference on “Women empowerment through agro-entrepreneurship for livelihood security”	Society for integrated development of agriculture, veterinary and ecological sciences (SIDAVES) w.e.f February 07 -08, 2019 at SKUAST - Jammu
Prof. R. K. Gupta	Life Time Achievement Award	Shobhit University (A University established by GOI u/s 3of UGC Act) NH-58 Modipuram, Meerut

ORGANIZATION OF NATIONAL/INTERNATIONAL SEMINARS /SYMPOSIA /CONFERENE / SHORT COURSES/TRAINNINGS/WORKSHOPS/ SUMMER AND WINTER SCHOOLS.

7

- Division of Vegetable Science & floriculture in collaboration with Mega Seed Project, Chatha organized 01 day Vegetable Day on March 5, 2020 in which 75 farmers/ Farm women participated
- Division of Agricultural Economics & ABM, FoA, SKUAST-J, Main Campus, Chatha, Jammu (J&K) organized 02 months' Training Programme for incubatees of PRAGATI & UDGAM, 2019 under RKVY-RAFTAAR project of SKUAST-Jammu in the w.e.f.: Sept. 20-Nov.20, 2019.
- Division of Vegetable Science & Floriculture organized 04 days Farmers Training Programme on "Recent Trends In Vegetable Production" w.e.f. February 3-6, 2020 under CSS- MIDH in respect of district Jammu
- Division of Agricultural Economics & ABM oragnised 08 days' MTC on "Agribusiness Development Planning & Management" sponsored by Directorate of Extension (DOE), Ministry of Agriculture & Farmers' Welfare, Govt. of India w.e.f.: January 21-28, 2020.
- Division of Agricultural Economics & ABM organized training programme on "Role of Marketing Intelligence in Agricultural Marketing" sponsored by CCS, NIAM, Ministry of Agriculture and Farmers Welfare, Government of India, w.e.f.: December 19-21, 2019.
- Division of Agricultural Engineering organized 03 number of one day awareness programme on Conservation of Rainwater on 28, 29 and 30 of August 2019 at village Gargal, Kandi and Godhan of Akhnoor tehsil respectively. About 89 farmers of the project site were attended the awareness programme.
- Division of Animal Genetics & Breeding organized One day refresher training on Phenotypic Characterization of chicken on December 16, 2019.
- Division of Entomology organized 3 days Entrepreneurship Awareness Camp (Beekeeping) November 18-20, 2019
- Division of Entomology organized 5 days training programme for farmers of Jammu region (AICRP Honeybee and Pollinators) February 17-21, 2020
- Division of Entomology organized 7 days training programme on beekeeping for farmers of Una (Himachal Pradesh) July 7-13, 2019
- Division of Entomology organized 7 days training programme on beekeeping for farmers of Kangra (Himachal Pradesh) September 23-29, 2019
- Division of Livestock Production & Management Organized 15 days training programme under Private Partnership Module in Collaboration with ICICI Foundation for social development on "Dairy Farming and Milk Processing w.e.f. September 4-18, 2019. Course coordinators: Dr. Asma Khan, Prof. & Head, Div. of Livestock Production and Management; Dr. Sunil Kumar, Prof. & Head, Div. of Livestock Products Technology. The training comprised of theoretical aspects and hands on practical experiences on hygienic milk production, value addition of milk and adopting modern scientific management practices for doubling income through dairy farming.
- Division of Plant Pathology organized three training programmes on mushroom cultivation under SCSP in collaboration with KVK Jammu, KVK Kathua and KVK Samba.
- Division of Plant Pathology organized two training programmes on mushroom cultivation for army personals of Tiger Artillery Brigade.
- Division of Soil Science & Ag. Chemistry organized one day DBT Workshop on "Use of Foldscope Microscopy- conducted at Govt. High School Raipur Satwari, Jammu on August 29, 2019.
- Division of Soil Science & Ag. Chemistry organized one day DBT Workshop on "Use of Foldscope Microscopy- conducted at Govt. High School old Satwari, Jammu on August 30, 2019.
- Division of Soil Science & Ag. Chemistry organized one day training programme under DST project on revival of village ponds through scientific

interventions at Kathua, on December 15, 2019.

- Division of Teaching Veterinary Clinical Complex organized Training (Under ASCAI, Skill Development Programme) on Artificial Insemination.
- Division of Veterinary & Animal Husbandry Extension Education organized Model Training Course (MTC) sponsored by Directorate of Extension, Ministry of Agriculture and Farmer's Welfare, GOI, New Delhi on Improved Animal Husbandry Practices as a way for doubling Farmer's Income w.e.f. February 3-10, 2020.
- Division of Veterinary Gynaecology & Obstetrics organized Training Programme on Advances in Enhancing Reproductive Efficiency of livestock From November 7-8, 2019 under Samiti, SKUAST-J, Chatha. No. of Participants-28
- Division of Veterinary Parasitology DST meet organised on Technological Interventions to Improve Production of Dairy and Poultry in Rain Fed Areas of Jammu District on December 26, 2019
- Dr Brajeshwar Singh, Assistant Professor organised ICAR sponsored short course (10 days) "Recent advances in production of biofertilizers and biopesticides" from November 13-22, 2019 as Course coordinator at SKUAST-Jammu, Chatha.
- Dr. Vishal Gupta, organized a ten-days short course on "Recent advances in production of bio-fertilizers and bio-pesticides", sponsored by ICAR, New Delhi from November 13-22, 2019.
- Division of Agronomy conducted ICAR sponsored Short course on "Conservation Agriculture Practice for enhancing productivity and resource use efficiency in major cropping systems" the w.e.f. February 4-13, 2020.
- School of biotechnology conducted five day training programme on "Tissue Culture for Production of Quality Planting Material" w. e.f. November 18-22, 2019 at SAMETI, Jammu for Officers of Horticulture/ Floriculture and Agriculture.
- School of Biotechnology organized a seminar on Biotechnology ignition grant (BIG) under BIRAC by IIT Kanpur for inviting new research proposals from scholars and faculty members.

Participation of Scientists in National/ International Seminars / Symposia / Conferences / Short Courses / Training / Workshops / Summer and Winter Schools

8

- Dr. A. K. Pathak attended
  - ICAR Sponsored Short Course (10 days) on "DNA Techniques in Forensic Food Analysis" at ICAR-National Research Centre on Meat, Hyderabad-500092. w.e.f October 14-23 , 2019
  - XXXVI Annual Conference of Indian Poultry Science Association (IPSACON 2019) at CGKV, Durg, Chhattisgarh w.e.f. December 11-13, 2019.
- Dr. A. K. Raina and Dr. Vijay Bharti attended 'Chief Scientists Meet' at IGKV, Raipur, Chhatishgarh w.e.f. July 9-11, 2019
- Dr. A.C. Jhaattended the 21days winter school w.e.f December 3-23, 2019 at GBPAUT - Pantnagar on "Crop Diseases & their Management through Manipulation of Soil Health".
- Dr. A.K Singh attended
  - 5th J & K Agriculture Science Congress on Climate change management for sustainable agricultures, livestock farming and ecological development at SKUAST-Jammu, August 8-10, 2019.
  - training programme on Recent Advances in Production of Bio-Fertilizers and Bio-Pesticides at SKUAST-Jammu, November13-22, 2019.
- Dr. Akash Sharma attended
  - 5th J&K Agriculture Science Congress Conference on "Climate Change Management for Sustainable Agriculture, Livestock Farming and Ecological Development" at SKUAST-Jammu, JKUT, India w.e.f October 14-16, 2019.
  - Indian Horticulture Summit – 2020 on "Mitigating Climate Changes and Doubling Farmer's Income through Diversification" held at Chitrakoot, Madhya Pradesh w.e.f February 14-16, 2020.
  - International Conference on "Recent Advances in Agricultural, Environmental and Applied Sciences for Global Development" at Dr Yashwant Singh Parmar Univeristy of Horticulture and Forestry, Solan, H.P, India w.e.f September 27-29, 2019.
- Dr. Amit Jasrotia attended 5th J&K Agriculture Science Congress Conference on "Climate Change Management for Sustainable Agriculture, Livestock Farming and Ecological Development" at SKUAST-Jammu, JKUT, India w.e.f October 14-16 , 2019.
- Dr. Amitesh Sharma participated in 5 days training programme on "Role of AESA and Ecological Engineering in Pest Management" conducted at National institute of Pant health Management, Hyderabad from November 4-8, 2019.
- Dr. Amrish Vaid, Dr. Anjani Kumar attended annual workshop of ICAR Seed project w.e.f. April 7-9, 2019 at CCSHAU, Hissar
- Dr. Amrish Vaid, Dr. Magdeshwar Sharma and Dr. Vishal Raina participated in Vth J&K Agriculture Science Congress w.e.f. October 14-16, 2019 at SKUAST-Jammu.
- Dr. Anamika Jamwal attended Training of Trainers (TOT) programme under Agriculture Skill Council of India (ASCI) jointly organized by ICAR-Agricultural Technological Application Research Institute, Zone 1 Ludhiana. ICAR-ATARI, New Delhi December 4, 2019.
- Dr. Anil Bhat attended
  - Short Course training programme on: conservation agriculture practices for enhancing productivity and resource use efficiency in major cropping systems From February 4 -13, 2020
  - the Review and Planning Workshop held at NASC complex, New Delhi w.e.f.: November 18-20, 2019.
  - two days Innovation and Incubation Induction program held at NASC complex, New Delhi w.e.f.: May 8-10, 2019.
  - participated in International Conference on Global Initiatives for Sustainable Development: Issues and Strategies at Bangkok, Thailand w.e.f.: June 23-27, 2019.
- Dr. Anil Bhushan attended 5th Global Outreach Conference on "Modern Approaches for Smart

Agriculture (MASA-2020) at Shobhit University, Meeerut (U.P) w.e.f. February 28-29, 2020.

- Dr. Anil Kumar Pandey attended
  - 5th J&K Agriculture Science Congress on Climate Change Management for Sustainable agriculture, Livestock farming and Ecological Development at SKUAST-Jammu, Chatha, Jammu w.e.f. October 14-16, 2019
  - 5th J&K Agriculture Science Congress on Climate Change Management for Sustainable agriculture, Livestock farming and Ecological Development at SKUAST-Jammu, Chatha, Jammu w.e.f. October 14-16, 2019
  - National Symposium on Indian Animal Genetics Resources for enhancing productivity and profitability and XIV Annual Conference of Indian Society of Animal Genetics and Breeding (ISAGB) at FVSc & AH, SKUAST-J,R.S. Pura w.e.f. May 29-30, 2019 at FVSc & AH
- Dr. Anil Kumar attended ISWS Biennial Conference on Weed Management for Enhancing Farmers' Income and Food Security, held at KVK ICAR-Central Coastal Agricultural Research Institute, Old Goa from February 5-7, 2020.
- Dr. Anish Yadav attended
  - 18th Annual Convocation-cum-Scientific Convention of National Academy of Veterinary Sciences at Kamdhenu University, Gandhinagar, Gujarat from December 26-27, 2019
  - 29th National Congress and of Veterinary Parasitology at Nanaji Deshmukh Veterinary University Jabalpur February 5-7, 2020
- Dr. Anjani Kumar participated in National Seed Congress w.e.f. October 14-16, 2019 at IARI -New Delhi.
- Dr. Anju Bhat, Dr. Julie D. Bandral, Dr. Monika Sood and Dr. Neeraj Gupta attended 5th J & K Science Congress on Climate change management for sustainable agriculture, livestock farming and ecological development w.e.f. October 14-16, 2019 organised by SKUAST-Jammu.
- Dr. Ankur Sharma attended 21 days CAFT training programme on the theme "Diagnostic, anaesthetic and surgical intervention in emergency and trauma patients"at GADVASU, Ludhaina (Pb.) w.e.f September 11-October 1, 2019.r. Anuradha Saha Sr. Scientist attended
  - 10 days training entitled "Recent Advances in Resource Conservation Technologies (RCTs) under Aberrant Climate Change Scenario" held on November 14-23, 2019 at ICAR – Central Research Institute for Jute and Allied Fibres, Nilgunj, Barrackpore, Kolkata-700120
  - participated in 5th J&K Agriculture Science Congress on "Climate Change Management for Sustainable Agriculture, Livestock Farming and Ecological Development" w.e.f August 8-10, 2019 at SKUAST-Jammu, Main Campus Chatha
  - participated in the 54th Annual Rice Research Group Meeting at NRRI, Cuttack, w.e.f May 30-June 2, 2019
- Dr. Arti Sharma participated in
  - three days Golden jubilee International conference on "New Millennia in Agriculture Novel trends and Future scenario" held at CCS, HAU Hisar, w.e.f November 6-8, 2019.
  - two days International Conference on Advances in Agriculture under Changing Climate Scenario for Sustainable Global development (AAUCSGD-2019) w.e.f. November 16-17, 2019 organized by jointly by R. S. Krishi Shodh Evam Prashikshan Sansthan, IISR-ICAR, Lucknow University of Allahabad and Susanskriti, Prayagraj, India at D. D. Pant Auditorium, Department of Botany University of Allahabad, Prayagraj
- Dr. Arvind Kumar attended three-day 14th JK Science Congress Jammu University December 20-22, 2019
- Dr. Ashok Kumar and Dr. R.B. Kushwaha attended 43rd ISVS conference on "Recent advances on amelioration of Anaesthetic and Surgical sties in Farm and companion animals. At COVS, LLRUVAS, Hissar-125004, Haryana w.e.f. November 14-16, 2019
- Dr. B.R. Bazaya & Dr. R. Puniya attended XXVI Annual Review Meeting of AICRP-Weed Management held at Jorhat (Assam) w.e.f October 15-16, 2019.
- Dr. B.R. Bazaya attended ISWS Biennial Conference on Weed Management for enhancing farmer income and food security held at Goa w.e.f February 5-7, 2020.
- Dr. Balbir Dhotra Participated in
  - Conference - 5th J&K Agriculture Science Congress on "Climate change management for sustainable agriculture, livestock farming and ecological development" w.e.f October 14-16, 2019 at SKUAST-Jammu, Chatha, Jammu, J&K.

- short course Training programme - 10 days short course training programme on "Recent advances in production of bio-fertilizers and bio-pesticides" w.e.f. November 13-22, 2019 at SKUAST-Jammu, Udheywalla, Jammu, J&K.
- Training programme - 21 days training programme on "Organic agriculture and soil health" w.e.f. Febraury 20-March 11, 2020 at Department of soil science, FoA, Assam Agriculture University, Jorhat, Assam.

- Dr. Bharat Bhusan Gupta participated in the 54th Annual Rice Research Group Meeting at NRRI, Cuttack, w.e.f May 30- June 2, 2019.
- Dr. Bhav Kumar Sinha attended 21 days CAFT training Programme on "Physiological and Biotechnological Interventions Towards Climate Resilient Agriculture" at Rajsthan Agricultural Research Institute, Durgapura, Jaipur, India from January 3 -23, 2020.
- Dr. Bikram Singh attended 58th All India Wheat and Barley Research Workers Meet at IARI Regional Station Indore w.e.f. August 26, 2019
- Dr. Berjesh Ajrawat attended
  - XIV Annual Convention of Indian Society of Animal Genetics & Breeding (ISAG&B) & National Symposium at Faculty of Veterinary Sciences SKUAST Jammu w.e.f. May 29-30, 2019
  - Innovative Farmers Meet organized by Extension Education Division at NASC Complex on the occasion of ICAR Foundation Day ICAR-IARI, New Delhi July 16-17, 2019
  - 21 days Training Programme (Summer School) in Centre of Advanced Faculty Training (CAFT) in Division of Agricultural Extension, ICAR-IARI, New Delhi ICAR-IARI, New Delhi. August 16-September 5, 2019.
- Dr. Brajeshwar Singh
  - 10 days National Training Program on "Meta-Omics based Methods and Techniques for understanding Functions" held from December 10-19, 2019 held at ICAR-NBAIM, Mau.
  - 7th International Conference on " Phytopathology in achieving UN Sustainable development goals" held at ICR-IARI, New Delhi from January 16-20,2020.
  - participated in International conference on" Climate change and its impact on global food security and sustainability of agriculture" organised by Mahima Research Foundation and Social welfare during at Banaras Hindu University, Varanasi, U.P. held from November 23-24, 2019.
  - participated in"International Conference on Plant Protection in Horticulture: Advances and challenges (ICPPH2019), on July 24-27, 2019 in collaboration with Association for advancement Pest Management in Horticultural Ecosystem (AAPMHE) organised by Indian Institute of Horticultural Research (ICAR), Hessaraghatta, Bengaluru.
- Dr. Brij Nandan attended International Conference onPulses as the Climate Smart Crops: Challenges and Opportunities (ICPulse2020) (February 10-12, 2020 at Bhopal, Madhya Pradesh, India) jointly organized by Indian Society of Pulses Research and Development (ISPRD) ICAR-Indian Institute of Pulses Research (IIPR), Kanpur 208024, Uttar Pradesh, India, In Collaboration with Indian Council of Agricultural Research (ICAR), New Delhi, India.
- Dr. Bupesh Kumar participated in 5th J&K Agriculture Science Congress on "Climate Change Management for Sustainable Agriculture, Livestock Farming and Ecological Development" w.e.f August 8-10, 2019 at SKUAST-Jammu, Main Campus Chatha
  - 54th Annual Rice Research Group Meeting at NRRI, Cuttack, w.e.f May 30- June 2, 2019
- Dr. D.K. Chauhan visited Tribhuvan University, Kathmandu, Nepal, w.e.f June16-18, 2019, to participate in 3rd International Conference "Global Initiative in Agriculture and Applied Sciences for Eco friendly Environment" (GIAES-2019), at Conference hall, organized by Agriculture Technology Development Society, Ghaziabad, U.P. India.
- Dr. Deep Ji Bhat attended 5th J&K Agriculture Science Congress Conference on "Climate Change Management for Sustainable Agriculture, Livestock Farming and Ecological Development" at SKUAST-Jammu, JKUT, India w.e.f October 14-16, 2019.
- Dr. Devinder Sharma attended
  - 5th J & K Agriculture Science Congress on Climate change management for sustainable

agricultures, livestock farming and ecological development at SKUAST-Jammu, August 8-10, 2019.
  - training programme on Recent Advances in Production of Bio-Fertilizers and Bio-Pesticides at SKUAST-Jammu, November 13-22, 2019.
- Dr. Dhirendra Kumar attended
  - 21 days training programme on "Advance Statistical Analysis of Breeding Data" At ICAR-IASRI, New Delhi w.e.f August 27 -September 16, 2019.
  - Two day workshop on "Intellectual Property Rights-Fostering Innovation Ecosystem in J&K" Bari Brahmana, JKEDI-Jammu December 11, 2019.
- Dr. Dibyendu Chakraborty attended 21 days training programme on "Phenomics and Genomic Evaluation of Dairy Animals for Sustainable Production" ICAR-NDRI, Karnal, Haryana January 2-22, 2020
- Dr. Dileep Kachroo attended
  - meeting for crop planning methodology preparation meeting held at ICAR-IIFSR Modipuram w.e.f. July 19-21, 2019.
- Dr. Dileep Kachroo, Dr. N.P. Thakur and Dr. A.K. Gupta, Chief Scientist (Agronomy) attended Annual Group Meeting of AICRP on Integrated Farming System held at JAU, Junagadh w.e.f. November 27-29, 2019.
- Dr. G.K. Rai and Dr. Ravinder Singh attended 21 days Winter Schools.
- Dr. Gulzar Badroo (Teaching Associate) attended National Conference on "Challenges and Threats of Microbes to Animals and Humans" at IVRI, Bareilly w.e.f. February 6-7, 2020.
- Dr. Gurdev Chand attended Golden Jubilee International Conference on New Millennia Agriculture Novel Trends And Future Scenario Ginma-2019 organized by Chaudhary Charan Singh Haryana Agricultural University, Hisar (Haryana), India. From November 6-8, 2019.
- Dr. H.R. Bhardwaj attended 43rd Annual Congress of Indian Society for Veterinary Surgery and National Symposium on "Recent advances on Amelioration of Anaesthetics and Surgical stress in Farm and Companion Animals" at LLRUVAS, Hisar (Haryana) w.e.f November 14-16, 2019.
- Dr. Hafeez Ahmad attended 5th J & K Agriculture Science Congress on Climate change management for sustainable agricultures, livestock farming and ecological development at SKUAST-Jammu, August 8-10, 2019.
- Dr. Harsh Kumar Sharma attended XIV Biennial National Conference of Association of Public Health Veterinarians DUVASU, Mathura, UP, India w.e.f. January 24-25, 2020
- Dr. Indica Sharma attended National Conference on "Challenges and Threats of Microbes to Animals and Humans" at IVRI, Bareilly w.e.f. Feb 6-7, 2020.
- Dr. J.S. Manhas participated in ISEE National Seminar on "Holistic Approach for Enhancing Agricultural Growth in Changing Rural Scenario" held at SKNRAU, Bikanar, Rajasthan, November 14-16, 2019.
- Dr. J.S. Soodan and Dr. Sharad Kumar attended 5th JK Science Congress on "Climate Change Management for Sustainable Agriculture, Livestock Farming and Ecological Development"at SKUAST – Jammu, Chatha (J&K) from w.e.f. October 14-16, 2019.
- Dr. Julie D. Bandral and Dr. Monika Sood attended short course on "Innovation in functional foods and nutraceuticals for management of chronic diseases" at Banaras Hindu University, Varanasi w.e.f. January 21-30, 2020 .
- Dr. Jyoti Kachroo attended the two days Innovation and Incubation Induction program held at NASC complex, New Delhi w.e.f.:May 8-10, 2019.
- Dr. Kamal Sarma attended 18th Convocation cum Scientific Convention on "Futuristic Technologies in Animal Health and Production" of National Academy of Veterinary Sciences (NAVS), India at Kamdhenu University, Gandhi Nagar (Gujarat) w.e.f December 26-27, 2019.
- Dr. Kamlesh Bali attended 7th Co-ordination meeting of "Network Project on Conservation of Iac Insect Genetic Resources held at CAU, Imphal, w.e.f. February 3-4, 2020.
- Dr. Kawardeep Kour attended training programme on "Phenomics And Genomics Evaluation Of Dairy Animals For Sustainable Production' at Animal Genetics And Breeding Division Centre Of Advanced Faculty Training , ICAR-National Dairy Research Institute, Karnal Haryana. w.e.f. January 2 -22, 2020.
- Dr. Kiran Kour attended 5th J&K Agriculture Science Congress Conference on "Climate Change Management for Sustainable Agriculture, Livestock

Farming and Ecological Development" at SKUAST-Jammu, JKUT, India w.e.f October 14-16, 2019.

- Dr. L M Gupta and Dr.Meenakshi Gupta participated inInternational Conference on "Recent Advances inAgricultural, Environmental & Applied Sciencesfor Global Development"held at Dr. Y.S. Parmar, University of Horticulture & Forestry, Nauni, Solan. w.e.f. September 27-29, 2019.
- Dr. L. M. Gupta participated
  - "Stakeholder Meet cum Workshop on Medicinal Plants" organized by Regional cum Facilitation Centre, North II, NMPB, New Delhi, held at SKUAST-Jammu on February 6, 2020.
  - International Conference on "Responsible Management of Non-Timber Forest Produce: Access and Benefit Sharing" and "International Herbal Fair, 2019" organized by Madhya Pradesh State Minor Forest Produce (Trading and Development) Co-operative Federation at Bhopal (M.P) w.e.f December 18 – 22, 2019.
- Dr. M.K. Pandey attended
  - 58th All India Wheat and Barley Research Workers Meet at IARI Regional Station Indore w.e.f. August 26, 2019
  - participated in "57th All India Coordinated Wheat & Barley Research Workers Meet" held at BAU, Ranchi during August 24-27, 2019.
- Dr. Mahender Singh attended
  - 13th ARM of GKMS held at Rajmata Vijayaraje Scindia Krishi Viswavidyalaya, Gwalior w.e.f: December 18-21, 2019.
  - annual workshop of NICRA-AICRPAM held at ICAR-CRIDA, Hyderabad during May 26-28 2019.
  - annual workshop of AICRPAM-NICRA w.e.f: 02 to 04th March, 2020 and Capacity Enhancement Programme (CEP) of AICRPAM w.e.f: March 4-7, 2020 held at BACA, Anand Agricultural University, Anand Gujarat.
  - Brain Stroming meeting on "Agrometeorological Education and Research-Current Status and Future Trust" held at AAU, Anand on May 10, 2019.
  - working group meeting of AICRP on Agrometeorology (AICRPAM) held at ZARS Solapur, MPKV w.e.f: December 4-6, 2019.
  - presented research paper entitled "Thermal requirement for growth and yield of Basmati rice cultivars under different growing environments" in National Seminar on "Agrometeorological interventions for enhancing farmers' income" held at College of Horticulture, Kerala Agricultural University, Vellanikkara, Thrissur w.e.f: January 20-22, 2020.
- Dr. Mahital Jamwal, Dr. Neeraj Kotwal, Dr. Manoj Kumar, , Dr.Sanjeev Kumar, Dr. D. K. Chauhan and Dr. Rohit Sharma attended three days 5th J & K Agricultural Science Congress on "Climate Change Management for Sustainable Agriculture, Livestock Farming and Ecological Development" at SKUAST-Jammu. w.e.f October 14-6, 2019.
- Dr. Manish Sharma, Professor(Statistics) & Head attended
  - 4th National Conference on Recent Trends in Mathematical Sciences-2019 (NCRTMS-2019) at SMVDU, Katra, J&K to deliver a talk, w.e.f December 13, 2019
  - Eurostat of European Union organized at NASC, New Delhi, w.e.f November22, 2019.
  - Laxmanrao Inamdar National Academy for Cooperative Research and Development(LINAC), New Delhi, to deliver a talk w.e.f November 4, 2019.
  - VIII International conference on Agricultural Statistics (ICAS –VIII) at New Delhi, India hosted by Ministry of Agriculture and farmer welfare for presenting the paper, GoIw.e.f November 18 – November 21, 2019.
- Dr. Manoj Kumar participated in XXXVII Annual Group Meeting of AICRP (VC) held at TNAU, Coimbatore w.e.f. June 22 -25 , 2019
- Dr. Meenakshi Gupta attended ISWS Biennial Conference on Weed Management for Enhancing Farmers' Income and Food Security, held at KVK ICAR-Central Coastal Agricultural Research Institute, Old Goa from February 5-7, 2020
- Dr. Moni Gupta attended 21 days International training workshop on edible and medicinal mushroom production at Shanghai Academy of Agricultural Sciences, sponsored by Ministry of Science and Technology, China w.e.f September 2- 21, 2019.
- Dr. N.P. Thakur and Dr. A.K. Gupta attended International Conference on "Sustainable Agriculture Production for Food, Nutrition and Livelihood

Security: A Challenge for Asian Farmers" held at Pattaya, Thailand w.e.f. September 25-27, 2019.

- Dr. Nawab Nashiruddullah, Professor & Head (Veterinary Pathology) attended Veterinary Pathology Congress-2019 & XXXVI Annual Conference of Indian Association of Veterinary PathologistsCollege of Veterinary Sciences & Animal Husbandry, CAU, Selesih, Mizoram November 6-8, 2019.
- Dr. Neelesh Sharma attended
  - Veterinary and Animal Science Congress and National Symposium at College of Veterinary Sci. & A.H., Mhow, Indore, M.P., India. W.e.f. March 6-8, 2020
  - Annual Convention of Veterinary Internal and Preventive Medicine Society and National Symposium at DUVASU, Mathura, UP, India w.e.f.November 8-9,2019.
  - British Mastitis Conference-2019 at Worcester, Worcestshire, England, UK on November 6, 2019
- Dr. Neeraj Gupta attended International conference on advances in agriculture under changing climate scenario for sustainable global development jointly organised by R.S. Krishi Shodh Evam Prashikshan IISR-ICAR, Lucknow, University of Allahabad Susanskriti, Prayagraj, India. w.e.f. November 16-17, 2019
- Dr. Neetu Sharma attended 5th JK Ag. Science congress held at SKUAST-Jammu w.e.f October 14-16, 2019.
- Dr. Nishi Pande Model Training Course on "Ultrasonography evaluation of ovarian and genital status for evaluation of fertility in dairy farming" Organized by Dept. of Veterinary Gynaecology and Obstetrics, GADVASU, Ludhiana on November 1-8, 2019
- Dr. P.K.Rai attended
  - 5th J&K Agriculture Science Congress on "Climate Change Management for Sustainable Agriculture, Livestock Farming and Ecological Development" held at SKUAST-J, Chatha w.e.f. from October 14-16, 2019.
  - International Conference on "Soil and Water Resources Management for Climate Smart Agriculture, Global Food and Livelihood Security" NASC complex, New Delhi, India organized by Soil Conservation Society of India, New Delhiw.e.f. November 5-9, 2019.
- Dr. Parshant Bakshi attended 5th J&K Agriculture Science Congress Conference on "Climate Change Management for Sustainable Agriculture, Livestock Farming and Ecological Development" at SKUAST-Jammu, JKUT, India w.e.f October 14-16, 2019.
- Dr. Pawan K Verma attended
  - 18th Annual Convocation cum Scientific Convention of NAVS on Futuristic Technologies in Animal Health and Production Kamdhenu University, Gandhinagar, Gujarat w.e.f. December 26-27, 2019.
  - 19th Annual Conference of ISVPT and National Symposium on "Pharmacogenomics in the development and validation of indigenous drugs" College of Veterinary and Animal Sciences, Mannuthy, Kerala w.e.f December 18-20, 2019.
- Dr. Peeyush Sharma attended a training Programme on "Geo-spatial Applications in Hydrology: Theory & Practice" at Western Himalayan Regional Center, Jammu w.e.f December 9-13, 2019.
- Dr. Poonam Parihar participated in ISEE National Seminar on "Holistic Approach for Enhancing Agricultural Growth in Changing Rural Scenario" held at SKNRAU, Bikanar, Rajasthan, November 14-16, 2019.
- Dr. Pranav Kumar
  - acted as resource person in Model Training Course (MTC) sponsored by Directorate of Extension, Ministry of Agriculture and Farmer's Welfare, GOI, New Delhi on "Innovative entrepreneurial approaches in Hill farming systems for doubling farmer's income"at Dr. G.C. Negi College of Veterinary and Animal Sciences, CSK HPKV, Palampur. September 27, 2019
  - attended Indian Society of Extension Education (ISEE) National Seminar on "Holistic Approach for Enhancing Agricultural Growth in Changing Rural Scenario" at Swami Keshwanand Rajasthan Agricultural University, Bikaner, Rajasthan. w.e.f November 14 – 16, 2019
- Dr. Pratiksha Raghuwanshi attended International conference on Animal Nutrition 2019 on "Nutritional strategies for improving farm animal profitability and clean animal production"Organized by West Bengal University of Animal & Fishery Sciences, Kolkata in collaboration with ANSI at Kolkata, India w.e.f December l7- 19, 2019.

- Dr. R. K. Bhardwaj attended
  - 17th Convention of ISACP AND National Symposium on "Maximising diagnosis, therapy and welfare in canine practice in current senario COVSAH, NDVSU-Jabalpur w.e.f January 21-23, 2020
  - advanced training programme on Diagnosis and Management of Chronic Gatroenteropathies and Renal Diseases in Dogs DBT-GADVASU-Canine Research Centre and Networks, Multispeciality Animal Hospital, GADVASU-Ludhiana w.e.f March 2-3, 2020.
- Dr. R. K. Gupta attended
  - QRT of ICAR & AICRP (VC) held at IARI, New Delhi w.e.f. November 20-21, 2019.
  - 5th Global Outreach Conference on "Modern Approaches for Smart Agriculture (MASA-2020) at Shobhit University, Meeerut (U.P) w.e.f. February 28-29, 2020.
- Dr. R. K. Sharma and Dr. A. K. Pathak attended National Conference on Livelihood Improvement through Sustainable Livestock Production & IV Annual Convention of Pashu Poshan Kalyan Samittee; PPKS) at ICAR-CIRC, Meerut w.e.f November 3-4, 2019
- Dr. R. K. Sharma, Dr. Ankur Rastogi & Dr. A. K. Pathak International Conference on animal Nutrition (INCAN-2019) at WBUAFS, Kolkata w.e.f. December 17-19, 2019.
- Dr. R. Puniya attended 27th Asian-Pacific weed science society conference on "Weed science for sustainable agriculture and environment". Kuching, Sarawak, Malaysia September 3-6, 2019.
- Dr. R.B. Kushwaha attended training programme on "Assembly and use of foldoscope" at F.V.Sc & AH, SKUAST-J, R.S. Pura on September 6, 2019
- Dr. R.K. Gupta attended 7th Coordination meeting of NP-CLIGR at CAU, Manipur, February 3-4, 2020.
- Dr. R.K.Srivastava attended
  - Third Group Monitoring Workshop of DST SEED Projects under TIME LEARN Programme held at Wild Life Institute(WII) of India Dehradun on December 26-27, 2019.
  - Training programme on Geospatial Applications in Hydrology: Theory & Practice at National Institute of Hydrology (NIH) Jammu w.e.f.December 9-13, 2019.
- Dr. R.S. Bandral attended 5th J&K Agriculture Science Congress on Climate change management for sustainable agricultures, livestock farming and ecological development at SKUAST-Jammu, August 8-10, 2019.
- Dr. R.S. Sudan participated in 5th J&K Agriculture Science Congress on "Climate Change Management for Sustainable Agriculture, Livestock Farming and Ecological Development" w.e.f August 8-10, 2019 at SKUAST-Jammu, Main Campus Chatha.
- Dr. Rajan Salalia participated in the 54th Annual Rice Research Group Meeting at NRRI, Cuttack, w.e.f May 30- June 2, 2019
- Dr. Rajeev Bharat attended
  - biennial conference entitled organized by Society Indian Society of Weed Science, Jabalpur w.e.f. February 5-7, 2020 at CCARI, Goa, India
  - 3 days 25th Annual group meeting of AICRP (Rapeseed Mustard) organized by DRMR at Birsa Agricultural University, Ranchi, Jharkhand w.e.f. August 3-5, 2019
  - 5th J&K Agriculture Science Congress on "Climate Change Management for Sustainable Agriculture, Livestock Farming and Ecological Development" w.e.f August 8-10, 2019 at SKUAST-Jammu, Main Campus Chatha.
- Dr. Rajesh Godara attended training programme on "Current status, Emerging issues and Future scenario regarding conservation of indigenous breeds of livestock" at CVAS, RAJUVAS, Bikaner November 5-25,2019
- Dr. Rajesh Katoch attended 29th National Congress and of Veterinary Parasitology at Nanaji Deshmukh Veterinary University Jabalpur February 5-7, 2020.
- Dr. Ranbir Singh attended Training programme on "Quarantine pathogens; Seed health testing and Molecular diagnostic Techniques" held at NIPHM Rajendranagar, Hyderabad w. e. f. September 23-27, 2019.
- Dr. Reena attended
  - 10 days training programme w.e.f. November 4-13, 2019 at Assam Agricultural University, Jorhat organized by Department of Plant Pathology, AAU, Jorhat on "Making greater use of biocontrol agents in organic agriculture".
  - participated in 2nd National Conference on "Technological and Emerging Aspects in

Agriculture and Community Science" February 7-8, 2020, held at Conference Hall, International Buddhist Research Institute, Vipin Khand, Gomtinagar, Lucknow (UP) (Organized by Society for World Environment, Food and Technology).

- 28th AICRP Biocontrol Workshop to present and discuss the progress of work done held at AAU-Anand w.e.f. June 6-8, 2019

- Dr. Renu Gupta attended
  - five days conference and Presented paper entitled "A new paradigm towards bacterial diversity in rhizosphere soil" w.e.f June 1-5, 2019 in the International virtual conference on alternative resources and Technology Based agriculture.
  - three days conference (5th - Agriculture Science Congress) on " Climate Change Management for sustainable Agriculture, Livestock Farming and Ecological Development" held at SKUAST,Chatha ,w.e.f October 14-16, 2019.
- Dr. Rohit Sharma Indo Mexico joint research Project entitled "Identification of casual SPNs in promoter sequence of Co-5 and development of functional gene-based markers for anthracnose resistance in common bean (Phaseolus vulgaris L.) visited CINVESTAV-IPN Unidad Irapuato, Irapuato, Guanajuato, Mexico and CIMMYT, Texicoco, Mexico on January 6-11, 2020
- Dr. S. K. Gupta and Dr. L. M. Gupta participated in State level workshop on "Development of Medicinal plants Sector" organized by State Medicinal Plant Board at SKUAST-Kashmir on June 18, 2019.
- Dr. S. K. Gupta participated in one day workshop on "Industrial Agroforestry" organized by the Department of Forestry and Natural Resources, Punjab Agriculture University at Ludhiana March 11, 2020.
- Dr. S. K. Gupta, Dr. L. M. Gupta and Dr.Meenakshi Gupta participated in training programme on "Cultivation of Non-Timber Forest Products (NTFPs) in Jammu Region: A Step Towards Enhancing Farmers Income and Livelihood security" organized by Himalayan Forest Research Institute, Shimla at State Forest Research Institute, Janipur, Jammu on February 26, 2020.
- Dr. S. K. Gupta, Dr. L. M. Gupta, Dr. Sandeep Sehgal and Dr.Meenakshi Guptaparticipated in 5th J&K Agriculture Science Congress held at SKUAST-Jammu w.e.f. October 14-16, 2019.
- Dr. S. K. Gupta, Dr. V S Wazir, Dr. Neelesh Sharma, Dr S R Upadhyay, Dr R K Bhardwaj attended38th Annual Convention of Indian Society for veterinary Medicine & National Symposium at Veterinary College, Hebbal, Bengaluru, India w.e.f. February 5-7, 2020
- Dr. S. K. Gupta, Dr. L. M. Gupta and Dr. Sandeep Sehgal participated in Workshop cum Exhibition on "Bamboo-A Wonder Grass" organized by Ministry of Development of North eastern Region, North Eastern Council, GoI and Govt. of J&K at Jammu on January 11-12, 2020.
- Dr. S. P. Singh participated in 02 days' International Conference held at SMVDU, Kakryal (J&K), w.e.f.: June 6-7, 2019.
- Dr. S. R. Upadhyay attended
  - ICAR Winter School entitled Clinical Application of stem cells in animalsBareilly at IVRI
  - Participated in State level Kisan Mela GADVASU, Ludhiana September 21-22, 2019
- Dr. S.K. Rai attended
  - 3 days 25th Annual group meeting of AICRP (Rapeseed Mustard) organized by DRMR at Birsa Agricultural University, Ranchi, Jharkhand w.e.f. August 3-5, 2019.
  - 5th J&K Agriculture Science Congress on "Climate Change Management for Sustainable Agriculture, Livestock Farming and Ecological Development" w.e.f August 8-10, 2019 at SKUAST-Jammu, Main Campus Chatha.
- Dr. Sachin Gupta attended training on Mushroom Taxonomy organized by ICAR-DMR, Solan from August 10-14, 2019.
- Dr. Sandeep Chopra attended *International Conference* on Applied Biology (ICAB-2019) and first annual convention of Society of Biologists held at Shri Mata Vaishno Devi University, Katra, J&K from November 4 - 6, 2019).
- Dr. Sandeep Sehgal attended National Conference on "Utilization and Conservation of Non-Timber Forest Genetic Resources for Sustainable Development" organised by Navsari Agricultural University, Navsari, Gujrat w.e.f February 27-29, 2020.
- Dr. Sanjay Guleria attended 4th International IUPAC Conference on "Discovery and development of synthetic and natural products for health and pest

management. January 7-10, 2020, New Delhi, India.

- Dr. Sanjeev Kumar international hands on Genome Editing Technologies jointly organized by BioNcube, a BIRAC-bioNEST Ag-biotech incubator at International Crop Research Institute (ICRISAT), Telangana APAARI and GLDC w.e.f. October 14-25, 2019.
- Dr. Sanjeev Kumar attended
  - QRT of ICAR & AICRP (VC) held at IARI, New Delhi w.e.f. November 20-21, 2019
  - participated in XXXVII Annual Group Meeting of AICRP (VC) held at TNAU, Coimbatore w.e.f. June 22-25, 2019
- Dr. Shafiqur Rahman attended XVI Annual Convention of Indian Society for Advancement of Canine Practice (ISACP) and National Symposium on the topic "Exploring New Horizons in Canine Practice and Welfare" at Khalsa College of Veterinary and Animal Sciences, Amritsar, Punjab. w.e.f Febraury 26-28, 2019.
- Dr. Subash Chander attended
  - International Conference, New Millennia Agriculture-Novel Trends And Future Scenario w.e.f November 6-8, 2019 at CCSHAU, HISAR
  - one day training programme "Use of digital field book in wheat" on November 25, 2020 at IIWBR (ICAR), Karnal
  - State level Kisan Mela w.e.f September 21-23, 2019 at GADVASU, Ludhiana
  - 21 days training programme "CAFT on Physiological and biotechnological interventions towards climate resilient agriculture" w.e.f January 3-23, 2020 at GADVASU, Ludhiana
  - participated in 5th J&K Agriculture Science Congress on "Climate Change Management for Sustainable Agriculture, Livestock Farming and Ecological Development" w.e.f August 8-10, 2019 at SKUAST-Jammu.
- Dr. Sudhakar Dwivedi attended
  - a training programme entitled "Intellectual Property Rights for Agri-Startup" held at MANAGE, Hyderabad (Telangana) w.e.f. May 15-17, 2019.
  - participated in 27th Annual Conference of Agril. Economics Research Association (India) at PAU, Ludhiana w.e.f. December 17-19, 2019.
  - participated in International Conference on Global Initiatives for Sustainable Development: Issues and Strategies at Bangkok, Thailand w.e.f.: June 23-27, 2019.
- Dr. Sudhir Kumar attended
  - 5th J&K Agriculture Science Congress on Climate Change Management for Sustainable agriculture, Livestock farming and Ecological Development at SKUAST-Jammu, Chatha, Jammu w.e.f. October 14-16, 2019.
  - Certificate of successfully completion with distinction in a online course on "Conservation Agriculture-based Sustainable Intensification (CASI)" Offered by Centre for Continuing Education (CCE), IIT Kanpur, India and Commonwealth of Learning (COL), Canada. started on Febraury 12, 2020 (6 week).
- Dr. Sunil Kumar attended International Symposium and 9th IMSACON on "Advances in Production, Processing and Quality assurance of muscle foods for Improved Health and Nutritional Security"organised by CSK Himanchal Pradesh Krishi Vishvavidyalaya, Palampur November 6-8, 2019
- Dr. Tuhina Dey attended the 58th All India Wheat and Barley Research Workers Meet at IARI Regional Station Indore w.e.f. August 26, 2019
- Dr. Uma Shankar attended one day on-line training on 'Adopting in uncertainty lessons & insights from lockdowns' on May 7, 2020 organized by World Association for Small & Medium Enterprises (WASME-IEF) webinar.
- Dr. Upma Dutta attended ICAR sponsored short duration training programme on "Innovations in Functional Foods and Nutraceuticals for Management of Chronic Diseases" at Institute of Agricultural Sciences, BHU, Varanasi w.e.f. January 21-30, 2020.
- Dr. Utsav Sharma attended National Symposium on Indian Animal Genetics Resources for enhancing productivity and profitability and XIV Annual Conference of Indian Society of Animal Genetics and Breeding (ISAGB) at FVSc & AH, SKUAST-J,R.S. Pura w.e.f. May 29-30, 2019
- Dr. V.B Singh Participation of 5th J&K Agriculture Science Congress on "Climate change management for sustainable agriculture, livestock farming and ecological development on October 14-16, SKUAST-J.
- Dr. Veena Sharma
  - presented research paper entitled "Accuracy of weather forecast to issue agromet advisory for Jammu district" in National Seminar on "Agrometeorological interventions for enhancing

farmers' income" held at College of Horticulture, Kerala Agricultural University, Vellanikkara, Thrissur w.e.f: January 20-22, 2020.
- attended winter school on "Regional Integrated Assessment of Climate Change on Agriculture" sponsored by Indian Council Of Agricultural Research, New Delhi, conducted by TNAU wef on January 30, 2020. (21days).

- Dr. Vijay Bharti attended
  - Farmers Friendly Soil and Water Conservation Technologies for Mitigating Climate Change Impact at Soil Conservation Society of India, New Delhi and Indian Institute of Soil and Water Conservation, Ooty, Tamil Nadu from January 31- February 2, 2019.
  - International training on Safe Production of Quality Grains at Shenyang Agricultural University, Shenyang China from September 11-30, 2019
- Dr. Vijay Kumar Sharma attended
  - XIV Annual Convention of Indian Society of Animal Genetics & Breeding (ISAG&B) & National Symposium at Faculty of Veterinary Sciences SKUAST Jammu w.e.f. May 29-30, 2019
  - 3rd Winter workshop on development in climate change and sustainable development TISS-Mumbai on November 11 -23, 2019
- Dr. Vikas Abrol presented
  - a paper in 5th - Agriculture Science Congress on "Climate Change Management for Sustainable Agriculture, Livestock Farming and Ecological Development'' held at SKUAST, Chatha w.e.f on October 14-16, 2019.
  - a paper in National Conference on 3rd Agri NANO-Challenges and Opportunities in Agri-nanotechnology (COAN-19)" w.e.f June 13-14, 2019 at Regional Agricultural research Station, ANGRAU, Tirupati.
- Dr. Vikas Gupta attended
  - 5th J&K Agriculture Science Congress at SKUAST-Jammu w.e.f. October 14-16, 2019.
  - Annual Pigeonpea Group Meet, 2019 at Agriculture University Kota, Rajasthan w.e.f May 25-27, 2019.
  - International Conference on Changing Climate Scenario (AAUCSGD-2019), at University of Allahabad, Prayag Raj w.e.f November 12-17, 2019.
  - training programme on "Harnessing New Generation green Technologies from Plant, Microbial and Waste Sources for Sustainable crop, Environment and Human Health" at ICAR-IARI, New Delhi w.e.f December 26-January 15, 2020.
- Dr. Vikas Sharma attended
  - 21 Days ICAR sponsored CAFT programme on "Physiological and biotechnological interventions towards climate resilient agriculture" January 3-23, 2020 at Rajasthan Agricultural Research Institute, Jaipur, SKN Agriculture University, Jobner, Rajasthan
  - International Conference on Global initiatives for sustainable development: Issues and strategies, June 23-27, 2019, Bangkok, Thailand
  - participated in National Conference on Organic and natural farming: A Tool for Sustainable Agriculture and Economic Development, on May 28– 29, 2019, CSK HPKV Palampur
- Dr. Vishal Gupta attended
  - 5th J&K Agriculture Science Congress on "Climate Change Management for Sustainable Agriculture, Livestock Farming and Ecological Development" held at SKUAST-J, Chatha w.e.f. from October 14-16, 2019.
  - workshop on "Agriculture Sciences Dictionary" at New Delhi organized by Scientific & Technical Terminology, Govt. of India w.e.f. September 23-27, 2019
- Dr. Vishal Mahajan attended Annual Zonal Workshop of KVKs, (Zone-I) GBPUAT, Pantnagar (UK). August 3-5, 2019
- Dr. Vivak M. Arya attended
  - DST review meet of externally funded DST project entitled "Networking project on revival of village ponds" December 18, 2019, at IARI, New Delhi.
  - participated and presented paper at 5th J&K Agriculture Science Congress on "Sol & water resource management for climate smart agriculture, global food & livelihood security" November 5 -9 , 2019 at SKUAST-J.
  - participated and presented paper at International conference on "Global Initiatives for Sustainable Development Issues & Strategies" at Bangkok, Thailand, June 23 -27 2019.
  - participated and presented paper at

International conference on "Soil & Water Resource Management for Climate Smart Agriculture Global Food & Livelihood Security" on November 5-9, 2019 at New Delhi, India.

- Dr. Maninder Singh attended workshop on "Rabies Diagnosis" KVAFSU/ CVA Rabies Diagnostic Laboratory, Veterinary College, Bengaluru w.e.f. February 24-25, 2020
- Dr. Neeraj Gupta attended 10 days short course on post harvest management in arid zone at CAZRI Jodhpur w.e.f. December 3-12,2019.
- Dr. Pawan Kumar Sharma SANDEE Research and Training (RnT) Workshop Kunming, China December 13-17, 2019
- Dr. Shalni Khajuria attended International conference on "Food Agriculture and Innovation 2019" Bangkok Pattaya,Thialand w.e.f. June 20-23, 2019
- Dr.Vijay Kumar, Participation of 5th J&K Agriculture Science Congress on "Climate change management for sustainable agriculture, livestock farming and ecological development on October 14-16, 2019 SKUAST-J.
- Dr.Vinod Gupta attended International Conference on "Global Initiatives for Sustainable Development: Issues and Strategies" Bangkok w.e.f. June 23-27, 2019
- Dr.Vinod Gupta, Dr. Sanjay Khajuria & Dr Shalini Khajuria attended 5th J&K Agriculture Science Congress sponsored on "Climate Channge Management for sustainable Agriculture, Livestok Farming and Ecological Development." Jammu w.e.f. October 14-16,2019
- Prof. Vikas Sharma attended
  - 5th J&K Agriculture Science Congress on "Sol & water resource management for climate smart agriculture, global food & livelihood security" November 5-9, 2019 at SKUAST-J.
  - International conference on "Global Initiatives for Sustainable Development Issues & Strategies" at Bangkok, Thailand, June 23-27, 2019.
  - International conference on "Soil & Water Resource Management for Climate Smart Agriculture Global Food & Livelihood Security" November 5-9, 2019 at New Delhi, India.

EXTERNALLY FUNDED ADHOC RESEARCH PROJECTS (as on 31.03.2020)

9

S.No.	Title of the Project	Name of the P.I.	Duration
Department of Biotechnology, GOI			
1.	Molecular Characterization of *Dichelobacternodosus* and development of recombinant vaccine against ovine foot rot	Dr.Mohd. Altaf Bhat / Dr.Anil Taku	2017-20
2.	Molecular marker assisted pyramiding of white rust resistance genes AcB1-A4.1 and AcB1-A5.1 in *Brassica juncea* cultivar RSPR -01 recommended in Jammu and Kashmir	Dr. Manmohan Sharma	2017-20
3.	Synthesis, characterization and evaluation of ciprofloxacin and gentamycin loaded solid lipid chitisan composite Nanoparticles for the treatments of mastitis in dairy animals	Dr. Neelesh Sharma	2018-21
4.	Endometrial cytology and histo-pathological evaluations in repeat breeding crossbred cows.	Dr.A.K.Pandey	2017-21
5.	Isolation and identification of phosphate solublizing and diazotrophic bacteria in rhizosphere soil of rice in Jammu districts	Dr.Renu Gupta	2017-21
6.	Establishment of goat mammary epithelial/stem cell lines for the production of pharmaceutical interest proteins	Dr. Neelesh Sharma	2017-21
7.	Gujjar and Bakarwal women empowerment through improved 1 anagerial practices in Livestock rearing and awareness in Aspects of personal health, hygiene and sanitation.	Dr. Jafrin Ara Ahmed	2017-21
8.	Commercialization of quality potato seed production through tissue culture technology	Dr. R.K. Salgotra	2017-21
9.	Socioeconomic upliftment of rural weaker section (SC/ST) by scientic interventions and amelioration of production disease in dairy animals	Dr. Neelesh Sharma	2017-21
10.	Upliftment of marginal basmati growers through system of rice intensification (SRI) in Jammu region.	Dr.Anuradha Shah	2017-21
11.	Identification &characterization of phytosulfo kine receptor family of rice vis-vis Arabidiopsis & elucidating its role in abiotic stress tolerance	Dr.Sumita Kumari	2018-21
12.	Biotechnological interventions for forest conservation and climate resilient livelihood in eco-fragile hills of J&K	Dr. R.K.Gupta	2019-22

Department of Science & Technology, GOI

13.	Demonstration of techniques for improving productivity of rainfed areas in Jammu district	Dr. R.K. Srivastava	2018-21
14.	Technological interventions to improve production of dairy and poultry in rainfed areas of Jammu district	Dr. Rajesh Katoch	2018-21
15.	Estimation and Evaluation of anti- microbial residues in foods of animal origin in Jammu region and their impact on human health	Dr. N.K. Pankaj	2018-21
16.	Diagnosis and inter ventional strategies for prevention and control of common parasitic zoonoses of livestock and their reares belonging to schedule caste and schedule tribe population for socio-economic upliftment.	Dr. Mohd.. Rashid	2018-21
17.	Assessment of impact of thermal stress on dairy animals of Jammu region and designing low -cost input managemental interventions for its amelioration.	Dr. Dipanjali Kanwar	2018-21
18.	Synthesis of new gene pool following introgression of disease resistance and drought tolerance genes from secondary (*Phaseolus coccineus* L.) and tertiary (*Phaseolus acutifolius* L.) gene pools into cultivated *Phaseolus vulgans* L.	Dr. Sanjeev kumar	2018-21
19.	Enhancement of Livelihood Security among Livestock rearers through Technological Interventions	Dr.Ravleen Kour, Dr. Rajiv Singh (Mentor)	2018-21
20.	Networking project on "Revival of village ponds through scientific interventions" under the theme managing water cycle including, rain water storage for sustain water productivity in plains **(Inter-Institutional)**	Dr.Vivak M. Arya	2018-21
21.	Identification of casual SNP's in promoter sequence of CO-5 and development of functional gene based markers for Anthracnose resistance in common bean (*Phaseolus vulgaris* L.) **(Inter-Institutional)** (Indo-Mexico)	Dr. R. K. Salgotra	2018-21
22.	Identification of candidate genes associated with drought-stress response and tolerance in rice by high-throughput sequencing.	Dr.Mehak Gupta, PDF, SBT, (Mentor) Dr R.K.Salgotra	2018-21
23.	Technological development of functional foods for life style disease prevention and its entrepreneurial promotion among farming community in J&K	Dr. Arvind Kumar	2018-21

24.	Funds for Improvement of S&T Infrastructure in Universities and Higher Educational Institutions (FIST).	Dr. R. K. Salgotra	2017-21
25.	Transcriptome analysis, gene annotation and mining of golder herb (*Allium sativum* L.) expressing resistance to destructive purple blotch (*Alternarria porri*)	Dr. Aejaz A. Dar,(Mentor) Dr.Sushil Sharma	2017-21
26.	Studies on Iodine deficiency in Livestock & its management	Dr. Rajeev Singh	2018-22
27.	Funds for Improvement of S&T Infrastructure (FIST).	Dr. Rajeev Singh	2018-22
28	Identification of Molecular characterization of honeybee diseases in J&K.	Dr. Devender Sharma	2018-22
29	Generation of variation in Sa ffron for economical traits and against fungal pathogens through in vitro mutagenesis	Dr. Manmohan Sharma,	2018-22
30	Preparation, characterization and evaluation of efficacy of Nano- fertilizer, **Inter-Institutional Tirupati, A.P.**	Dr.Vikas Abrol	2019-23
31	Agromorphological characterization of *in vitro* raised saffron corms and screening of variant for resistant against fungal pathogen	Dr.Mamta Sharma, Dr. Man Mohan Sharma	2019-23
32	North Indian Centre for water technology Research in Agriculture. **Inter-Institutional PAU, Punjab**	Dr.Vikas Abrol	2019-23
33	Prospecting prebiotic potential of Rumen Liquor	Dr.Ankur Rastogi	2019-23
34	Efficacy evaluation of indigenous practices for galactose .	Dr.R.C.Bhardwaj	2019-23
	Ministry of AYUSH, GOI, FoA, Wadura		
35	Evaluation and Standardization of agro - techniques of important plants of Jammu Sub-tropics	Dr. Meenakshi Gupta	2019-22
	Ministry of Human Resource Development (MHRD)		
36.	All India Survey on Higher Education (AISHE)	Dr. S.E.H. Rizvi	2011
37.	Unnat Bharat Abhiyan	Dr.R.K.Arora	2018-20
	National Bank For Agriculture and Rural Development (NABARD)		
38.	Dissemination and production technology for quality seed and seedling production of marigold to double farmer's income in Jammu	Dr. R.K.Pandey	2018-21
39.	Economic analysis of marketing of vegetables.	Dr. Anil Bhat	2020-22
40.	Empowerment of Rural Youth - Pig Farming in Kathua District	Dr Vijay Kumar, KVK, Kathua	2020-22

41	Parasitic Disease Management in Migratory Flock & Dairy Animals	Dr. Rajesh Katoch	2020-22
	National Food Security Mission(NFSM)		
42.	Creation of Seed hubs for increasing indigenous production of pulses in India	Dr. B. N.Singh	2017-21
SMAM (Sub-Mission on Agricultural Mechanization) Director(M&T), Ministry of Agriculture and Farmer welfare,Department of Agriculture, Cooperation and Farmer Welfare, Krishi Bhawan , New Delhi			
43.	Promotion and Strengthening of Agricultural mechanization through Training, Testing and Demonstration.	Dr. Sushil Sharma	2017-21
	Department of Atomic Energy(DAE), Board of Research in Nuclear Sciences (BRNS)		
44.	Induction of Anthracnose resistant mutants in locally adopted genotypes of Rajmash (*Phaseolus vulgaris* L.)	Dr. Sanjeev Kumar	2017-21
45.	Development of bacterial blight resistant mutants of locally cultivated Basmati -370 of Jammu region	Dr. Praveen Singh	2018-22
	ICAR funded projects under NAIP, Mega Seed Project, NICRA etc. (All long Term)		
46.	Seed Production in Agricultural Crops	Dr. Amrish Vaid	2010-onwards
47.	National Initiative on Climate Resi lient Agriculture (AICRPAM-NICRA)	Dr.Mahender Singh	2011-onwards
48.	National Initiative on Climate Resilient Agriculture, AICRPDA-NICRA-Component-II	Dr. A.P. Singh	2011-onwards
49.	National Initiative on Climate Resilient Agriculture (AICRP)	Sr. Scientist, KVK, Kathua	2012-onwards
50.	Climate change on lac crop performance (NICRA)	Dr. R. K. Gupta	2012-onwards
51.	Veterinary Type Culture Collection (VTCC) Network Centre	Dr. Anil Taku	2012-onwards
52.	Soil erosion mitigation and carbon sequestration potential of climate resilient agriculture practices in foothill shivaliks of Jammu province.	Dr. Vikas Sharma	2016-onwards
53.	Exploring economic opportunities for farmers of Kandi villages through application of proven rainfed technologies	Dr. R. K. Arora	Jan.,2017 onwards
54.	Development of sensitive and specific diagnostic assay for the detection of warble fly infestation in goats and eradication of disease from Jammu and Kashmir	Dr. Anish Yadav	June,2017 -onwards
55.	NICRA-Strategic Research, Bhaderwah	Dr.Rohit Sharma, A.P. Doda	Sept.,2017 -onwards
56.	NICRA-Strategic Research, Basoli	Dr.Vivek M. Arya, (Centre - Kathua)	Sept.,2017 -onwards
57.	Attracting and Retaining Youth in Agriculture (ARYA)	Dr. Amrish Vaid	2017-onwards

58.	Organic Training Centre, Talwara	Dr. R.K.Arora / Dr Banarasi Lal	2017-onwards
	Indian Meteorological Department		
59.	Forecasting Agricultural Output using ,Space, Agrometerology and Land ,based observations (FASAL), Jammu	Dr. Mahender Singh	2011-onwards
	National Mission on Himalayan Studies (NMHS)		
60.	Availability, utilization an d digital document of non-timber bio -resource for sustainable rural livelihood and decision support systems of rural households in Northwest Himalayas **(Inter-Institutional)**	Dr.Rakesh Nanda	2018-21
	Ministry of Agriculture, Farmer's Welfare, New Delhi		
61.	RKVY-RAFTAAR	Dr. Jyoti Kachroo	2019-22
Rashtriya Krishi Vikas Yojna (RKVY) CSS state level			
62.	Livestock management for health and higher productivity	Dr. R.K. Sharma	2017-20
63.	Live stock management for health and higher productivity.	Dr. Rajeev Singh	2017-20
64.	Large scale demonstrations on bio -pesticides for eco-friendly management of high value crops	Dr.Anil Bhushan/ Dr.S.K.Singh	2017-20
65.	Organic seed production entrepreneurship in cash crops	Dr. Satesh Kumar	2017-20
66.	*In situ* moisture conservation for higher maize production under rainfed conditions	Dr. Rohit Sharma	2017-20
67.	Commercial vegetable seed and seedlings production for remunerative farming	Dr.Sanjeev Kumar	2017-20
68.	Commercial sustainable flower production in Jammu province through dissemination of crop production & protection technologies	Dr.Shahid Ahamad	2017-20
69.	Seed Fair to promote climate Resilient varieties in Jammu division.	Dr. Brij Nandan	2017-20
70.	Establishment of farm machinery testing centre at SKUAST-J	Dr. Sushil Sharma	2017-20
Horticulture Mission for North East Himalayas (HMNEH) (MIDH)			
71	Centre of Excellence for Horticulture (MIDH)	Dr. V. K.Wali	2015-20
72.	Tissue Culture Lab	Dr. V. K.Wali	2015-20
Centre of Excellence in Vegetables			
73.	Centre of Excellence in Vegetables	Dr. R.K.Gupta	2017-20
ICAR, Extra mural (Education)			
74.	Assessment of teaching competencies needed by Agriculture teachers for increasing competency of faculty in SAU's	Dr. J. S. Manhas	2019-22
75.	Economics of IFS under diverse agro-climatic situations in J&K state.	Dr. Pawan. Kr. Sharma	2019-22

AICRP- ICAR, NICRA Projects (Long Term)			
76.	Seed Production in Agricultural Crops	Dr. Amrish Vaid,	2010 onwards
77.	National Initiative on Climate Resilient Agriculture (AICRPAM-NICRA)	Dr. Mahender Singh	2011 onwards
78.	National Initiative on Climate Resilient Agriculture, AICRPDA-NICRA-Component-II	Dr. A.P .Singh	2011 onwards
79.	National Initiative on Climate Resilient Agriculture (AICRP)	Dr. Amrish Vaid	2012 onwards
80.	Climate change on lac crop performance (NICRA)	Dr. R. K. Gupta	2012 onwards
81.	Veterinary Type Culture Collection (VTCC) Network Centre	Dr. Anil Taku	2012 onwards
82.	Soil erosion mitigation and carbon sequestration potential of climate resilient agriculture practices in foothill shivaliks of Jammu province	Dr. Vikas Sharma	2016 onwards
83.	Exploring economic opportunities for farmers of Kandi villages through application of proven rainfed technologies	Dr. R. K. Arora, Dr.Pawan Sharma	2017 onwards
National Horticulture Board ,Gurgaon			
84.	Establishment of mother plant nurseries for high pedigree plant material for fruit crops	Dr. V. K. Wali	2012 onwards
All India Coordinated Research Project Networking/AICRP (ICAR)			
85.	Network Project on Outreach of Technologies for Temperate fruit crops	Dr. Manoj Kotwal	2009 onwards
86.	Networking project on Poonchi Sheep	Dr. R.K. Tagger	2014 onwards
87.	Conservation of Lac Insect Genetic Resources	Dr. R.K. Gupta	2014 onwards
88.	Outreach Programme on Zoonotic Disease	Dr. S.K. Kotwal	2015 onwards
89.	Integrated Agro Advisory Services (Jammu)	Dr. Mahender Singh	1995 onwards
90.	Agro Advisory Services (Rajouri) mid to high intermediate zone of J&K (Gramin Kri shi Mausam Sewa)	Dr Rohit Sharma	2007 onwards
91.	Livelihood opportunities through agro-technological interventions of tribal communities of Budhal Block	Dr. Arvind Ishwar	2014 onwards
92.	Biotic Stress management in wheat triple Rust	Dr. Tuhina Dey	2013 onwards
All India Coordinated Research Project VOLUNTARY CENTRES (Long Term) (ICAR)			
93.	All India Co-ordinated Research Project on Vegetables	Dr R. K. Gupta	2005-onwards
94.	All India Co-ordinated Project on Wheat and Barley, Rajouri	I/C RARS,Rajouri	1998-onwards
95.	All India Co- ordinated Rice Improvement Project, Rajouri	I/C RARS,Rajouri	2005-onwards

96.	All India Co-ordinated Research Project on Linseed	Dr. D.P. Abrol/Dr Uma Shankar	2009-onwards
97.	Coordinating Centre under AICRP on Agroforestry	Head, Div. of Agroforestry	2015-onwards
98.	All India Co-ordinated Maize Improvement Project, Maize	I/C RARS,Rajouri	2005-onwards
99.	All India Co-ordinated Maize Improvement Project, Maize	Dr Praveen Singh	2012-onwards
100.	All India Co-ordinated Project on Wheat and Barley.	Dr. Tuhina Dey	2009-onwards
101.	All India Coordinated Research Project on Nematodes	Dr. Rajan Salalia	2016-onwards
102.	All India Co-ordinated Research Project on Mushroom, Chatha	Dr. Sachin Gupta	2015-onwards
103.	All India Coordinated Project on Pigeonpea (Agronomy)	Dr.Parmendra Singh,	Sept.,2018 -onwards
104	AICRP on Biological Control	Dr.Reena	Jan.,2019-onwards
105	All India Coordinated Project on pearl millet	Dr.Vikas Gupta, Dhiansar	2020-onwards
	AICRP (Main Centre's)		
106	All India Co -ordinated Rice Improvement Project, Chatha	Dr. Anil Gupta	1998-onwards
107	All India Co-ordinated Project on Wheat and Barley, Chatha	Dr. Tuhina Dey	2002-onwards
108	All India Co-ordinated Research Project on Dryland Research	Dr. A P Singh	1972-onwards
109	All India Co-ordinated Research Project on Integrated Farming System, Chatha	Dr. Dileep Kachroo	1982-onwards
110	All India Co-ordinated Research Project on Water Management, Chatha	Dr. A. K. Raina	1984-onwards
111	All India Co-ordinated Research Project on Chickpea	Dr. Sanjeev Kumar	1995-onwards
112	All India Co-ordinated Research Project on Agrometeorology, Chatha	Dr. Mahender Singh	2009-onwards
113	All India Co-ordinated Research Project on Rapeseed and Mustard, Chatha	Dr. S.K. Rai	1998-onwards
114	All India Co -ordinated Research Project on Weed Management	Dr. B.R. Bazaya	2015-onwards
115	All India Co-ordinated Research Project on Honeybee and Pollinators	Dr. Devender Sharma	2015-onwards

	International Projects		
116	International chickppea of *Ascochyta* blight Nursery	Dr. S. K. Singh/ Dr.Shahid Ahamad	2017-21
117	Use of plant health clinic data to explore localized forewarning & surveillance of selected pests and diseases.	Dr.Vishal Gupta,	2018-20
118	Identification of casual SNP's in promoter sequence of CO-5 and development of functional gene based markers for Anthracnose resistance in common bean (*Phaseolus vulgaris*)	Dr. R. K. Salgotra,	2017-21

RESEARCH PUBLICATIONS IN NATIONAL/ INTERNATIONAL JOURNALS

10

- Abrol, V., Sharma, R.K., Sharma, V. P., Sharma, K.R., Sharma, Anil and Sharma, M.2019. Landuse impact on soil physical variability and erodibility in North Western subtropics of India. Journal of Environmental Biology, 40(4): 668-673.
- Abrol, V., Singh,AP., Kumar,A., Chary,R., Srinivasarao, Ch., Sharma,P., Singh,B., Salgotra,S., Kapoor,J., Dadhich,H. 2020. Effect of foliar application of nutrients on wheat crop performance, economics, resource use efficiency and soil properties under rainfed conditions. Indian Journal of Agricultural Sciences, 90 (1): 138–141
- Ahmed, J.A., Nashiruddullah, N., Dutta, D., Hussain, I., Baruah. A. and Dutta, A. 2019. Effect of heat stress and amelioration by antioxidants on expression profile of pro- and anti-apoptotic genes in *in vitro* matured bovine oocytes. International Journal of Current Microbiology and Applied Sciences. 8(2): 2394-2403.
- Ahmed, J.A., Nashiruddullah, N., Kour, J. And Chakraborty, D. 2019. Acute effect of intravenous ethanol on electrocardiogram of New Zealand white rabbits. International Journal of Current Microbiology and Applied Sciences. 8(2): 125-130.
- Ahmed,S., Bagal, Y.S., Sharma, L.K. and Sharma, S. 2019. Factors affecting adoption of farm mechanization in Jammu district of Jammu and Kashmir. Indian Journal of Ecology, 46 Special Issue (7):160-164
- Chakraborty, Anamika, D., Azhar, P.M., Kumar, H., Taggar, R.K., Kumar, D., Mahajan, V., Gupta, P. and Kumar, N. 2019. Non-genetic factors affecting growth rate traits in Rambouillet sheep. Veterinary Research International, 7(2):84-87.
- Archana, Rizvi, S.E.H.; Sharma, M.K. and Bhat, M.I.J. 2019. A Generalized Class of Synthetic Estimator with Application to Estimation of Milk Production for Small Domains. International Research Journal of Agricultural Economics and Statistics. 10(6) : 10(1): 115-121.
- Ganai Arsalan, Naveed Hamid, Sudhakar Dwivedi, Jyoti Kachroo and JS Manhas. 2019. Influence of packaging elements of ready to eat food products on buying behavior, Journal of Pharmacognosy and Phytochemistry. 8(2):189-194.
- Ayoub, A, Sood, M., Singh,Jagmohan, Bandral,J.D, Gupta,N. and Bhat, A.2019 Microencapsulation and its applications in food industry. Journal of Pharmacognosy and Phytochemistry 8(3): 32-37
- Bakshi, M., Guleria, S., Jamwal, S. and Wali, V.K. 2019. Flowering and fruiting behavior of some exotic olive (Olea europaea L.) cultivars in foot hills of Himalayas. Plant Archives 19 (1), 613-617.
- Bana, Ramesh Chand, Gupta A.K., Bazaya B.R., Singh Prabhu 2019 Influence of ZN-fertilization on nutrient uptake and soil nutrient dynamics in basmati rice (O. Sativa L.) International Journal of Chemical studies. 8(1): 279-282
- Banarsi lal and Vikas Tandon 2020 "A study on media preferences of organic farmers of hilly areas of J & K". International Journal of Chemical Studies 8 (2):898-900
- Bandral, J. D., Sood, M., Gupta, N. and Singh, Jagmohan. 2019. Standardization and quality evaluation of osmotically dried whole strawberries. International Journal of current microbiology and applied sciences 8(11): 2126-2135
- Banoo, M., Sinha, B. K., Chand, G., Dogra, S. and Reena 2019. Mode of action of commonly used herbicides and their impact on crops and the environment. Review. International Journal of Current Microbiology and Applied Sciences, 8(12): 527 – 533.
- Banoo, M., Sinha, B. K., Kumar, J., Reena, Chand, G., and Dogra, S. 2019. Effect of paclobutrazol and partial root drying technique on water use efficiency in tomato (Solanum Lycopersicum L.). Indian Journal of Ecology, 7: 86-90.
- Banotra, M., Sharma, B.C. and Kumar, R. 2020. Effect of Differential Substrution of Nutrients on growth, Quality and Economics of Basmati Rice (Oryza sativa)

under Irrigated Sub-Tropiucs of Jammu region. Indian Journal of Ecology.47(2):316-319l

- Banti Kumar and Manish Sharma 2019: "Forecasting of Cotton production in India- An ARIMA Modelling approach, Think India Journal, 22(16):3255-3263.
- Bashir,N., Sood, M. and Bandral, J. D. 2019. Changes in vitamin content of imitation meat nuggets formulated from oyster mushroom, flaxseed and amaranth grain in response to storage, Journal of Pharmacognosy and Phytochemistry, 8(3): 2845-2849
- Bawa, V., Gupta, S.K., Sharma, M., Rai, S.K., Attri, H., Sandhu, R. and Bhat, M.I.J. 2019. Screening for salt-tolerant genotypes of Brassica juncea L. based on growth and physiological attributes. Chemical Science Review and Letters, 8 (31): 148-154.
- Berian S., Gupta S.K., Sharma S., Ganai I., Dua S. and Sharma N._2019. Effect of heat stress on physiological and hemato-biochemical profile of cross bred dairy cattle. Journal of Animal Research, 9(1): 95-101.
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- Bhagat, S., Singh, R., Gupta, S., Sharma, D. and Choskit, D. 2019. Management of mosaic disease of chilli (Capsicum annuum) through host resistance and chemicals. Plant Disease Research. 33: 213-216.
- Bhardwaj, R., Salgotra, R.K. and Sharma, M. 2019. Studies on correlation of amylose content and grain dimensions in Basmati rice (Oryza sativa L.). Electronic Journal of Plant Breeding, 10(2):364-369
- Bhat, D., Wali, V.K., Sharma, N., Bakshi, P., Jamwal, M. and Kumar, R. 2019. Performance of pomegranate (Punica granatum L.) cultivars under sub-tropical conditions of Jammu. International Journal of current Microbiology and Applied Sciences, 8 (7): 2788-2793.
- Bhat, I.H., Devi, J. and Sarma, K. 2019. Serum cholesterol profile and mineral concentration in Toggenberg goats during lactation. Veterinary Practitioner, 20(2): 207-209.
- Bhat, R., Singh, A.K., Salgotra, R.K., Sharma, M., Mushtaq, M., Bagati, S., Hangloo, S. and Singh, A. 2019. Detection of QTL for panicle architecture in F2 population of rice. Journal of Genetics 98:50.
- Bhavna, Pandey, N., Agarwal, R. and Sharma, U. 2019. Modulation of postpartum uterine health using proteolytic enzymes in crossbred dairy cows. Haryana Vet., 58(1): 124-126.
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- Borkataki, S., Islam, S. and Goswami, P. 2019. Risk factor Analysis associated with *Taenia solium* infection in Tribal-vs-non tribal-vs-harizan community in Assam, North East India. Veterinary Practitioner, 20(1): 26-28.
- Borkataki, S., Katoch, R. and Goswami, P. 2019. Developmental time variation of *Lucilia sericata* (Meigen) (Diptera: Calliphoridae) colonization in two bacteriological culture mediavs red meat of sheep. Journal of Entomology and Zoology, 7(6): 1222-1225.
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- Chanoria, A. and Kumar, P. 2019. Empowerment Level of Rural Women Engaged in Livestock Rearing in Kathua District of Jammu and Kashmir. Ruminant Science, 8 (2): 237-242.
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Research 21(2) 167-171.

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- Faisal , S.; Jha, R.N.; Dadhich, S.M., and Thakuri, J.C, 2019. Effect of biomass types and proportion of binding material on strength and burning quality of honey- comb briquette. International Journal of current Microbiology and Applied Sciences, 12: 1930-1938.
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LINKAGES AND COLLABORATION

11

The university has developed strong linkages with national and international organizations with a view to harness the information, materials, expertise and exchange of scientists and students visits. MoUs have been signed by the University with national and international organizations to facilitate the exchange of new technology of mutual interest, students and the faculty.

Given the national leadership in almost all major agricultural research areas, the university has close linkages with following other institutes of the country.

- Cornell University, USA.
- Indian Agricultural Research Institute, New Delhi.
- National Dairy Research Institute, Karnal, Haryana
- CSK HP Agricultural University, Palampur, HP
- Integrated Farming System Research, Modipuram (UP)
- Institute of Himalayan Bio-resource Technology (CSIR), Palampur (H.P)
- State Forest Research Institute, Jammu & Kashmir
- Directorate of Sheep Husbandry, Jammu.
- ICRISAT, Hydrabad
- NBAIM, Mau Nath Bhanjan (UP).
- IPFT, Gurgoan.
- VPKAS, Almora.
- IFGRI, Jhansi.
- IUST, Kashmir.
- IIHR, Banglore.
- BGBSU, Rajouri.
- PAU, Ludhiana.
- National Research Centre on Litchi, Muzaffapur (Bihar)
- CIPHET, Ludhiana.
- NRC on Equines, Hisar.
- SRFI, J&K.

STATUTORY MEETING

12

Board of Management

(a) 31st Board of Management of SKUAST-Jammu on 26.04.2019

(b) 32nd Board of Management of SKUAST-Jammu on 05.02.2020

31st Board of Management of SKUAST-Jammu

VISITS OF IMPORTANT DIGNITARIES

13

(I) Sh. Kailash Choudhary, Union Minister of State for Agriculture and Farmer Welfare, Government of India.

(ii) Sh. Skandan Krishnan, Advisor to Hon'ble Governor, J&K

(iii) Sh. Farooq Khan, Advisor to Hon'ble Lt. Governor, J&K

(iv) Sh. K.K. Sharma, Advisor to Hon'ble Lt. Governor, J&K

(v) Sh. Nirmal Singh, Chairman Legislative Council, J&K

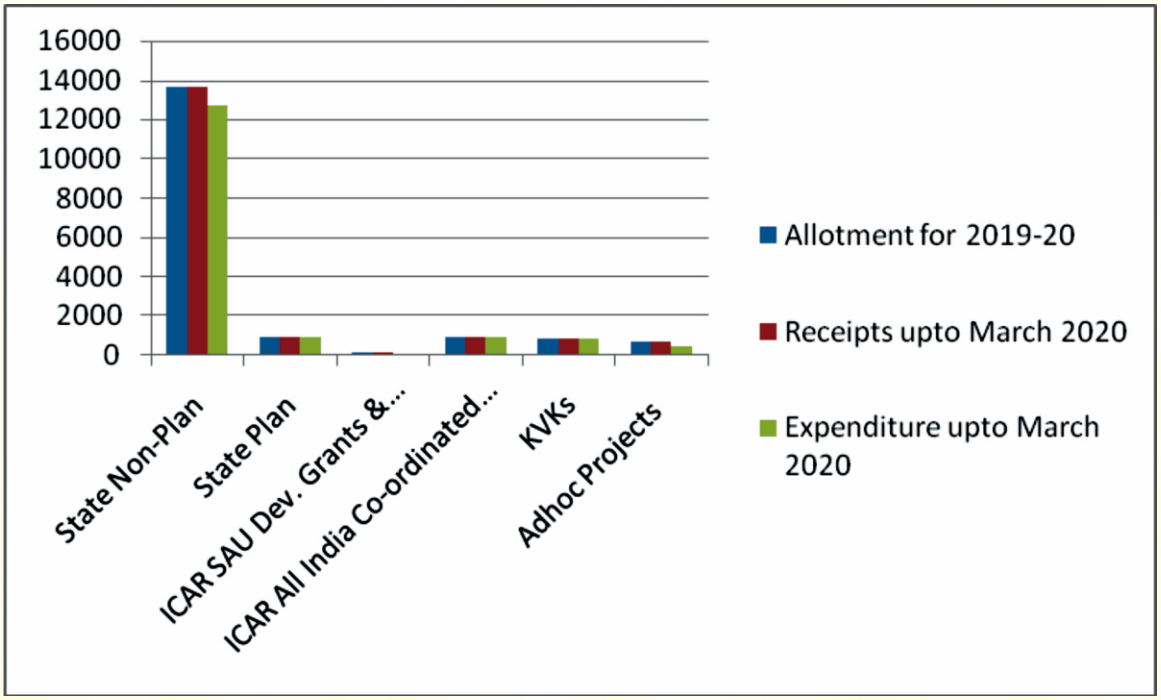
Visit of Sh. Kailash Choudhary, Union Minister of State for Agricutlure and FW, Govt. of India

Visit of Sh. S. Skandan Krishnan, Advisor to Hon'ble Governor, J&K

RESOURCES AND FINANCIAL ESTIMATES (2019-20)

14

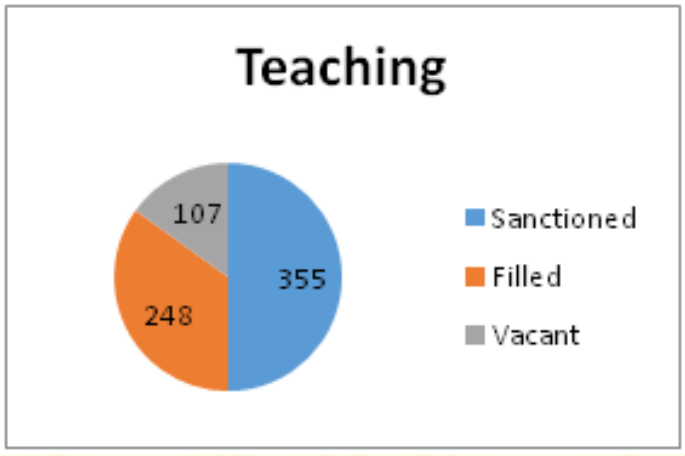
S.No	Particulars	Allotment for 2019-20	Receipts up to March 2020	Expenditure upto March 2020
1	State Non Plan	13642.20	13642.20	12708.75
2	State Plan	969.49	969.49	907.69
3	ICAR SAU Dev.Grants & PM's Special Grant	127.00	127.00	48.22
4	ICAR All India Co-ord. Research Schemes	919.12	948.22	872.70
5	KVKs	861.70	853.59	829.58
6	Adhoc Projects	689.77	689.77	466.36
Total		**17209.28**	**17230.27**	**15833.30**

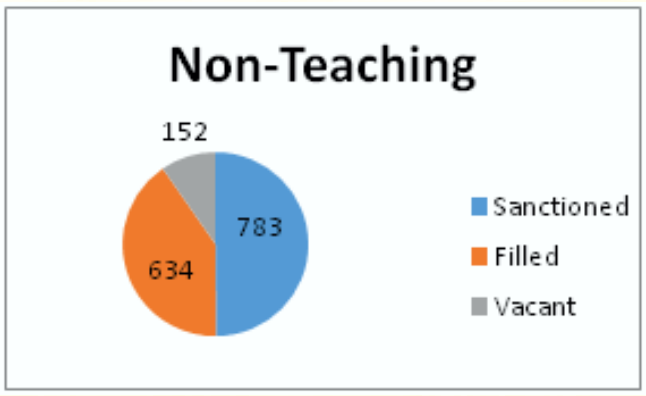


STAFF POSITION
(As on March 31,2020)

15

Category A. Teaching	Sanctioned	Filled	Vacant
Dean	03	01	02
Associate Dean	01	01	0
Professor / Equivalent	34	10	24
Associate Professor / Equivalent	87	57	30
Assistant Professor / Equivalent	230	179	51
Total	**355**	**248**	**107**
B. Non-Teaching			
Administrative Officers	08	4	4
Administrative staff	232	180	52
Technical staff	36	29	7
Auxiliary / supporting staff	507	418	89
Total	**783**	**634**	**152**
Grand Total (A + B)	**1138**	**882**	**256**





APPOINTMENTS, PROMOTIONS AND SUPERANNUATIONS

16

Appointment: Nil

Promotions:

(i) No. of Asstt. Professor/ Jr. Scientists promoted under CAS : 11

(ii) No. of Subject Matter Specialists promoted under CAS : 02

Superannuation

Teaching

S. No.	Name	Designation
1.	Dr. R.R. Jat	Associate Director Research
2.	Dr. Anil Kr. Sharma	Prof. (Agronomy)
3.	Dr. B. S. Jamwal	Chief Scientist (PBG)
4.	Dr. V.K. Razdan	Professor (Plant Pathology
5.	Dr. M.P. Sharma	Professor (Soil Science)
6.	Dr. Anil Kr. Taku	Professor (Vety. Microbiology)
7.	Dr. V.K. Wali	Professor (Fruit Science)
8.	Dr. A.K. Raina	Chief Scientist (Agril. Engg.)

Non-Teaching

S. No.	Name of employee	Designation
01	Sh. Shahjahan	Mali
02	Sh. Tarseem Raj	Asstt. Registrar
03	Sh. Hans Raj	OCC
04	Sh. Surinder Singh	FCLA
05	Sh. Gurdip Singh	FCLA
06	Sh. Ghulam Mohamad	FCLA
07	Ms. Raj Kumari Koul	Head Assistant
09	Sh. Mohd. Shafi	Mali
10	Sh. Harjeet Singh	Driver
11	Sh. Manjeet Singh	Head Assistant
12	Ms. Kiran Bala	Asstt.-cum-Typist
13	Sh. Rash Paul Singh	Mali
14	Sh. Vinoo Kr. Miya	Head Assistant
15	Sh. Inderjeet Sharma	OCC
16	Ms. Girja Koul	Head Assistant
17	Sh. S.K.Handoo	FCLA

PERSONNEL (AS ON 31.03.2020)

* Assistant Professor / Equivalent and above

17

Governance:

Vice Chancellor's Office

S.No	Name	Designation
1	Dr. R.K. Gupta	Vice Chancellor (Additional Charge)
2	Sh. Ajay Sharma	Secretary to Vice Chancellor

Registrar Office

S.No.	Name	Designation
1.	Sh. Rajesh Talwar	Registrar
2.	Dr. Bharat Bhushan	Joint Registrar (Acad.)
3.	Sh. Jatinder Raina	Deputy Registrar (Secy.)
4.	Sh. Keemti Lal	Asistant Registrar
5.	Sh. Devinder Sharma	Assistant Registrar
6.	Sh. Atul Mahajan	Assistant Registrar (Legal)

Comptroller Office

S.No.	Name	Designation
1.	Sh. Rajesh Talwar	Comptroller
2.	Sh. Sohan Lal Sharma	Deputy Comptroller
3.	Smt. Sujata Punjabi	Deputy Comptroller
4.	Sh. R.K. Kapoor	Deputy Comptroller
5.	Sh. Manmohan Singh	Assistant Comptroller
6.	Smt. Veena Gupta	Assistant Comptroller

Estates Division

S.No	Name	Designation
1.	S. Iqbal Singh Sudan	Estates Officer
2.	Sh. Kewal Kumar Raina	Assistant Executive Engineer
3.	Sh. Raman Sharma	Assistant Comptroller

Directorate of Planning & Monitoring

S.No	Name	Designation
1.	Dr. Deepak Kher	Director Planning & Monitoring

Directorate of Education

S.No	Name	Designation
1	Dr. S.K. Gupta	Director Education

Directorate of Extension

S.No.	Name	Designation
1.	Dr. K. S Risam	Director Extension
2.	Dr. R.K. Arora	Associate Director Extension
3.	Dr. Ashwani Sharma	Associate Director Extension
4.	Dr. Pawan Sharma	SMS (Agriculture Extension)

Directorate of Research

S.No.	Name	Designation
1.	Dr. R.K. Gupta	Director Research
2.	Dr. J.P. Sharma	Associate Director Research
3.	Dr. Pradeep Wali	Associate Director Research
4.	Dr. Shahid Ahmed	Chief Scientist
5.	Dr. Mittal Jamwal	Deputy Director Research
6.	Dr. M. C. Dwivedi	Farm Manager/Sr. Scientist
7.	Dr. Satish Sharma	Farm Manager

Library

S.No	Name	Designation
1.	Dr. S.K. Gupta	University Librarian
2.	Sh. Leela Dhar Mengi	Assistant Librarian

Dean Student Welfare

S.No	Name	Designation
1	Dr. Rajesh Katoch	Dean, Student Welfare
2	Dr. A.K.Gupta	Medical Officer
3	Dr. (Mrs.) Sushma Gupta	Medical Officer

Faculty of Agriculture, Chatha

Dean's Office

Sl. No.	Name	Designation
1.	Dr. D. P. Abrol	Dean
2.	Dr. Zameer-ul-Haq	Administrative Officer

S.No.	Name	Designation
Division of Agricultural Econmics & ABM		
1	Dr. Jyoti Kachroo	Professor and Head
2	Dr. Sudhakar Dwivedi	Associate Professor
3	Dr. S.P. Singh	Assistant Professor
4	Dr. Anil Bhat	Assistant Professor

Division of Agricultural Engineering

Sl. No.	Name	Designation
1.	Dr. Sushil Sharma	Professor and Head
2.	Dr. Sanjay Khar	Professor
3.	Er. N.K.Gupta	Associate Professor
4.	Dr. J.P. Singh	Associate Professor
5.	Dr. R.K.Srivastava	Associate Professor
6.	Dr. Sushmita M. Dadhich	Assistant Professor

Division of Agricultural Ext. Education

S.No.	Name	Designation
1.	Dr. Rakesh Nanda	Professor and Head
2.	Dr. Rajinder Peshin	Professor
3.	Dr. P.S. Slathia	Professor
4.	Dr. L.K. Sharma	Associate Professor
5.	Dr. Poonam Parihar	Assistant Professor
6.	Dr. J. S. Manhas	Assistant Professor

Division of Agroforestry

S.No.	Name	Designation
1.	Dr. L. M. Gupta	Professor and Head
2.	Dr. S. K. Gupta	Professor
3.	Dr. K. K. Sood	Professor
4.	Dr. N. S. Raina	Professor
5.	Dr. Sandeep Sehgal	Associate Professor
6.	Dr.Meenakshi Gupta	Assistant Professor

Division of Agronomy

S.No.	Name	Designation
1.	Dr. B.C. Sharma	Professor and Head
2.	Dr. Anil Kumar	Professor
3.	Dr. Meenakshi Gupta	Associate Professor
4.	Dr. Neetu Sharma	Associate Professor
5.	Dr. Manpreet Kour	Assistant Professor
6.	Dr. Rakesh Kumar	Assistant Professor
7.	Dr. B.R. Bazaya	Senior Scientist , Agronomy
8.	Dr. R. Puniya	Junior Scientist (Agronomy)

Division of Entomology

S.No.	Name	Designation
1.	Dr. Hafeez Ahmad	Professor and Head
2.	Dr. R. K. Gupta	Professor
3.	Dr. R. S. Bandral	Professor
4.	Dr. Uma Shankar	Associate Professor
5.	Dr. Amit Kumar Singh	Associate Professor
6.	Dr. Devinder Sharma	Assistant Professor

Division of Food Science & Technology

S.No.	Name	Designation
1.	Dr. Anju Bhat	Professor and Head
2.	Dr. Jagmohan Singh	Professor
3.	Dr. Julie D. Bandral	Associate Professor
4.	Dr. Monika Sood	Assistant Professor
5.	Dr. Neeraj Gupta	Assistant Professor

Division of Fruit Sciences

S.No.	Name	Designation
1.	Dr. V.K. Wali	Professor and Head
2.	Dr. Amit Jasrotia	Associate Professor
3.	Dr. Arti Sharma	Assistant Professor
4.	Dr. Kiran Kour	Assistant Professor
5.	Dr. Deep Ji Bhat	Assistant Professor

Division of Plant Breeding & Genetics

S.No.	Name	Designation
1.	Dr. S.K. Gupta	Professor and Head
2.	Dr. B.B. Gupta	Professor
3.	Dr. Bikram Singh	Professor
4.	Dr. A. K. Razdan	Professor
5.	Dr. Ravinder Singh Sudan	Associate Professor
6.	Dr. Praveen Singh	Assistant Professor
7.	Dr. Subhash Chander	Assistant Professor
8	Dr. Vijay Bahdur Singh	Senior Scientist
9.	Dr. Anuradha Saha	Senior Scientist
10.	Dr. Rajan Salalia	Senior Scientist
11.	Dr. Bupesh Kumar	Junior Scientist
12.	Dr. Tuhina Dey	Chief Scientist
13.	Dr. M.K. Pandey	Senior Scientist
14.	Dr. S.K. Rai	Junior Scientist
15.	Dr. Rajeev Bharat	Junior Scientist

Division of Plant Pathology

S.No.	Name	Designation
1.	Dr. Anil Gupta	Professor and Head
2.	Dr. S.K. Singh	Associate Professor
3.	Dr. Sachin Gupta	Associate Professor
4	Dr. Ranbir Singh	Associate Professor
5	Dr. A.K. Singh	Assistant Professor

Division of Sericulture

S.No.	Name	Designation
1.	Dr. R. K. Gupta	Professor and Head
2.	Dr. R. S. Bandral	Professor (Ento.)
3.	Dr. Magdeshwar Sharma	Senior Scientist (Ento.)
4.	Dr. A.K.Singh	Associate Professor (Ento.)
5.	Dr. Kamlesh Bali	Associate Professor

Division of Soil Science & Ag. Chemistry

S.No.	Name	Designation
1	Dr. Vikas Sharma	Professor and Head
2	Dr. K. R. Sharma	Professor
4	Dr. A. K. Mondal	Professor
5	Dr. Peeyush Sharma	Associate Professor
6	Dr. Vikas Abrol	Associate Professor
7	Dr. Vivak M. Arya	Assistant Professor
8	Dr. Renu Gupta	Assistant Professor
9	Dr. Sarbdeep Kour	Assistant Professor

Division of Vegetable Sciences & Floriculture

S.No.	Name	Designation
1	Dr. R.K. Gupta	Professor and Head
2	Dr. R.K.Samnotra	Professor
3	Dr. R.K. Pandey	Professor
4	Dr. Sandeep Chopra	Professor
5	Dr. Satesh Kumar	Associate Professor
6	Dr. Manoj Kumar	Assistant Professor
7	Dr. Sanjeev Kumar	Assistant Professor
8	Dr. Anil Bhushan	Assistant Professor
9	Dr. Sheetal Dogra	Assistant Professor
10	Dr. Arvinder Singh	Assistant Professor
11	Dr. Nomita Laishram	Assistant Professor

Division of School of Biotechnology

S.No.	Name	Designation
1	Dr. R.K Salgotra	Professor
2	Dr. Vikas Tondon	Professor
3	Dr. A.K Singh	Associate Professor

Faculty of Basic Sciences, Chatha

Dean's Office

S.No.	Name	Designation
1	Dr. S.E.H. Rizvi	Dean

Division of Biochemistry

S.No.	Name	Designation
1.	Dr. Sanjay Guleria	Professor and Head
2.	Dr. Moni Gupta	Associate Professor
3.	Dr. Vikas Sharma	Assistant Professor

Division of Statistics & Computer Sciences

S.No.	Name	Designation
1.	Dr. Manish Kumar Sharma	Professor and Head
2.	Dr. S.E.H. Rizvi	Professor
3.	Dr. M. Iqbal Jeelani Bhat	Assistant Professor

Division of Plant Physiology

S.No.	Name	Designation
1.	Dr. Gurdev Chand	Assistant Professor
2.	Dr. Bhav Kumar Sinha	Assistant Professor

Division of Microbiology

S.No.	Name	Designation
1.	Dr. S.E.H. Rizvi	Professor and Head
2.	Dr. Brajeshwar Singh	Assistant Professor
3.	Dr. Upma Dutta	Assistant Professor

Faculty of Veterinary Sciences & Animal Husbandry, R.S. Pura

Deans Office

S.No.	Name	Designation
1.	Dr. Rajinder Raina	Dean
2.	Dr. M. S. Bhadwal	Associate Dean
3.	Sh. Babu Ram	Account Officer

Division of Animal Genetics & Breeding

S.No.	Name	Designation
1.	Dr. R. K. Taggar	Professor and Head
2.	Dr. Nishant Kumar	Assistant Professor
3.	Dr. Dhirendra Kumar	Assistant Professor
4.	Dr. Dibyendu Chakraborty	Assistant Professor

Division of Animal Nutrition

S.No.	Name	Designation
1.	Dr. R. K. Sharma	Professor and Head
2.	Dr. Ankur Rastogi	Associate Professor
3.	Dr. A. K. Pathak	Assistant Professor

Division of Instructional Livestock Farm Complex

S.No.	Name	Designation
1.	Dr. Akhil Verma	Associate Professor
2.	Dr. Nazam Khan	Assistant Professor
3	Dr. Vikas Mahajan	Assistant Professor

Division of Livestock Production & Management

S.No.	Name	Designation
1.	Dr. Asma Khan	Professor
2.	Dr. Biswajit Brahma	Associate Professor
3.	Dr. DipanjaliKonwar	Associate Professor

Division of Livestock Products Technology

1.	Dr. Sunil Kumar	Professor and Head
2.	Dr. Arvind Kumar	Assistant Professor
3.	Dr. Zuhaib Fayaz Bhat	Assistant Professor

Division of Teaching Veterinary Clinical Complex

1.	Dr. J.S. Soodan	Professor and Head
2.	Dr. Ashok Kumar	Associate Professor
3.	Dr. Sharad Kumar	Assistant Professor
4.	Dr. R.B. Kushwaha	Assistant Professor

Division of Veterinary Anatomy

1.	Dr. Shalini Suri	Professor and Head
2.	Dr. Kamal Sarma	Professor
3.	Dr. Jasvinder Singh Sasan	Assistant Professor

Division of Veterinary & Animal Husbandry Extension Education

S.No.	Name	Designation
1.	Dr. S.A. Khandi	Assistant Professor
2.	Dr. Pranav Kumar	Assistant Professor

Division of Veterinary Gynaecology & Obstetrics

1.	Dr. Utsav Sharma	Professor and Head
2.	Dr. Sanjay Agarwal	Assistant Professor
3.	Dr. Nishi Pande	Assistant Professor
4.	Dr. Sudhir Kumar	Assistant Professor
5.	Dr. A.K. Pandey	Assistant Professor

Division of Veterinary Medicine

S.No.	Name	Designation
1..	Dr. Rajiv Singh	Professor and Head
2.	Dr. S.K. Gupta	Professor
3..	Dr. V.S. Wazir	Professor
4.	Dr. Kafil Hussain	Associate Professor
5.	Dr. Rajesh Agarwal	Associate Professor
6.	Dr. Neelesh Sharma	Assistant Professor
7.	Dr. S.R. Upadhyay	Assistant Professor
8.	Dr. R.K. Bhardwaj	Assistant Professor

Division of Veterinary Microbiology

S.No.	Name	Designation
1..	Dr. A.K. Taku	Professor and Head
2.	Dr. Altaf Bhat	Professor
3..	Dr. Sabahat Gazal	Assistant Professor (Deputed for Ph.D., USA)

Division of Veterinary Parasitology

S.No.	Name	Designation
1.	Dr. Rajesh Katoch	Professor and Head
2.	Dr. Anish Yadav	Professor
3.	Dr. Sanku Borkataki	Assistant Professor
4.	Dr. Rajesh Godara	Assistant Professor

Division of Veterinary Pathology

S.No.	Name	Designation
1.	Dr. Nawab Nashiruddullah	Professor and Head
2.	Dr. Shilpa Sood	Associate Professor
3.	Dr. Shafiqur Rahman	Assistant Professor

Division of Veterinary Pharmacology & Toxicology

S.No.	Name	Designation
1.	Dr Rajinder Raina	Professor and Head
2.	Dr. N.K. Pankaj	Assistant Professor
3.	Dr. Pawan K. Verma	Assistant Professor
Division of Veterinary Physiology & Biochemistry		
1.	Dr. Jonali Devi	Professor and Head
2.	Dr. P.S. Mahapatra	Professor
3.	Dr. Jafrin Ara Ahmed	Associate Professor
4.	Dr. Pratiksha Raghuwanshi	Assistant Professor
5.	Dr. Aditi Lal Koul	Assistant Professor
6.	Dr. Kawardeep Kour	Assistant Professor
Division of Veterinary Pubic Health & Epidemiology		
1.	Dr. M.A. Malik	Professor and Head
2.	Dr. Mohd. Rashid	Associate Professor
3.	Dr. H.K. Sharma	Assistant Professor
4.	Dr. Maninder Singh	Assistant Professor

Division of Veterinary Surgery & Radiology

S.No.	Name	Designation
1.	Dr. H.R.Bhardwaj	Professor and Head
2.	Dr. M.M.S. Zama	Professor
3.	Dr. A.K. Gupta	Professor
4.	Dr. D.K. Dwivedi	Assistant Professor
5.	Dr. Ankur Sharma	Assistant Professor
6.	Dr. Pankaj Gupta	Assistant Professor

Stations/Sub-Stations/Centrally Sponsored Schemes

REGIONAL AGRICULTURAL RESEARCH STATION, RAJOURI

S.No.	Name	Designation
1	Dr. Deepak Kumar	Senior Scientist (Plant Pathology)
2.	Dr. Vikas Sharma	Senior Scientist (Agronomy)
3.	Dr. Sunil Kr. Mishra	Junior Scientist (Agronomy)
4.	Dr Rajesh Kumar	Junior Scientist (Horticulture)
5.	Dr. Manmohan Sharma	Senior Scientist (PBG)
6.	Dr. Rohit Sharma	Technical Officer (AMFU)

ADVANCED CENTRE FOR RAINFED AGRICULTURE, DHIANSAR

S.No.	Name	Designation
1.	Dr. A.P. Singh	Senior Scientist (Agronomy)
2.	Dr. Sanjeev Kumar	Senior Scientist (PBG)
3.	Dr. Reena	Senior Scientist (Entomology)
4.	Dr. Jai Kumar	Junior Scientist (Agronomy)
5.	Dr. Sonika Jamwal	Junior Scientist (Plant Pathology)
6.	Dr. A.C. Jha	Junior Scientist (Plant Pathology)
7.	Dr. A.P. Rai	Junior Scientist (Soil Science)
8.	Dr. Vikas Gupta	Junior Scientist (Agronomy)
9.	Dr. Permendra Singh	Junior Scientist (Agronomy)
10.	Dr. Brinder Singh	Junior Scientist (Soil Science)

ADVANCED CENTRE FOR HORTICULTURAL RESEARCH (ACHR), UDHEYWALLA

S.No.	Name	Designation
1	Dr. V.K.Wali	I/c Head
2	Dr. Parshant Bakshi	Senior Scientist (Horticulture)
3	Dr. P.K.Rai	Senior Scientist (Soil Sciences)
4	Dr. Vishal Gupta	Junior Scientist (Plant Pathalogy)
5	Dr. Akash Sharma	Junior Scientist (Horticulture)

PULSES RESEARCH SUB-STATION, SAMBA

S.No.	Name	Designation
1.	Dr.Sanjeev Kumar	Senior Scientist (PBG)
2.	Dr.Brij Nandan	Senior Scientist (Agronomy)

REGIONAL HORTICULTURAL RESEARCH SUB-STATION (RHRSS), BHADERWAH

S.No.	Name	Designation
1.	Dr. Neeraj Kotwal	Incharge/ Scientist (Entomology & Incharge)
2.	Dr . Manoj Kumar	Junior Scientist (Soil Science)
3.	Dr. D.K. Chauhan	Junior Scientist (PBG)
4.	Dr. Sanjeev Kumar	Junior Scientist (Soil Science)
5.	Dr. Rohit Sharma	Junior Scientist (Agronomy)
6.	Dr. Nirmal Sharma	Junior Scientist (Pomology)

RAINFED RESEARCH SUB STATION FOR SUB TROPICAL FRUITS, RAYA

S.No.	Name	Designation
1	Dr. Rakesh Kumar	Junior Scientist (Fruit Science)
2	Dr. Vijay Kumar	Junior scientist (Soil Science)

MAIZE BREEDING RESEARCH SUB-STATION, POONCH

S.No.	Name	Designation
1	Dr. Praveen Singh	Junior Scientist, (PBG)

ORGANIC FARMING RESEARCH CENTRE (OFRC)

S.No.	Name	Designation
1	Dr. Vikas Sharma	Professor and In charge
2	Dr Sudhir Kumar Singh	Associate Professor (Plant Pathology)
3	Dr. Satesh Kumar	Associate Professor (Agronomy)
4	Dr Narinder Panotra	Assistant Professor (Agronomy)

AICRP-INTEGRATED FARMING SYSTEM, FARMING SYSTEM RESEARCH CENTRE

S.No.	Name	Designation
1	Dr. Dileep Kachroo	Chief Scientist & Head
2	Dr. N P Thakur	Chief Scientist (Soil)
3	Dr. A K Gupta	Chief Scientist (Agronomy)
4	Dr. Vijay Khajuria	Junior Scientist, (Agronomy)

AICRP-IRRIGATION WATER MANAGEMENT, (IWM)

S.No.	Name	Designation
1	Dr. A. K. Raina	Chief Scientist & Head
2	Dr. Abhijit Samanta	Chief Scientist
3	Dr. Vijay Bharti	Senior Scientist

AGROMETEROLOGY

S.No.	Name	Designation
1.	Dr. Mahender Singh	Senior Scientist
2.	Dr.Veena Sharma	Technical Officer (AMFU Chatha)

Krishi Vigyan Kendras

KVK Jammu

S.No.	Name	Designation
1	Dr.Punit Choudhary	SMS (Agro Forestry)
2	Dr.Rakesh Sharma	SMS (Agri Extension)
3	Dr.Ravneet Kour	SMS (Horticutlure)
4	Dr Sheetal Badyal	SMS (Home Science)
5.	Dr Prem Kumar	SMS (Fishries)

KVK Kathua

S.No.	Name	Designation
1	Dr. Vishal Mahajan	SMS (Agronomy)
2	Dr. Berjesh Ajrawat	SMS (Agriculture Ext.)
3	Dr. Anamika Jamwal	SMS (Plant Protection)
4	Dr. Pawan Kumar Sharma	SMS (Agricultural Economics)
5.	Dr. Vijay Kumar Sharma	SMS (Animal Sciences)

KVK Reasi

S.No.	Name	Designation
1	Dr. Banarsi Lal	SMS (Agriculture Ext.)
2	Mr. Lalit Upadhyay	SMS (Agro-Forestry)
3	Dr. Mandeep Singh Azad	SMS (Animal Sciences)
4	Dr. Sanjay Koushal	SMS (Agronomy)
5.	Dr. Suja Nabi Quereshi	SMS (Horticulture)

KVK Doda

S.No.	Name	Designation
1.	Dr A S Charak	SMS (Agronomy)
2.	Dr Narinder Paul	SMS (Agriculture Extension)
3.	Dr G N Jha	SMS (Fisheries)

KVK Rajouri

S.No.	Name	Designation
1	Dr. Arvind Kumar Ishar	SMS (Entomology)
2	Dr. SurajParkash	SMS (Agri. Extension Edu.)
3	Dr. Vishal Sharma	SMS (Agronomy)
4	Dr. Parul Gupta	SMS (Animal Sciences)

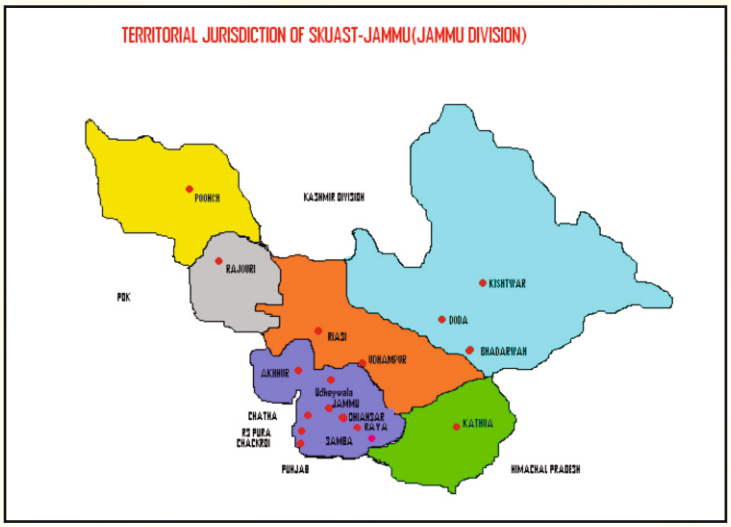
KVK Poonch

S.No.	Name	Designation
1.	Dr. Ajay Gupta	SMS (Agronomy)
2.	Dr. Muneeshwar Sharma	SMS (Plant Protection)
3.	Dr. Muzafar Mir	SMS (Horticulture)

KVK Samba

S.No.	Name	Designation
1	Dr. Vinod Gupta	SMS (Agriculture Ext.)
2	Dr. Sanjay Khajuria	SMS (Agro-Forestry)
3	Dr. Neerja Sharma	SMS (Horticulture)
4	Dr. Abhey Kr. Sinha	SMS (Agriculture Engg.)
5.	Dr. Saurav Gupta	SMS (Plant Protection)
6.	Dr. Suraj Amrukar	SMS (Animal Sciences)

SHER-E-KASHMIR UNIVERSITY OF AGRICULTURAL SCIENCES AND TECHNOLOGY OF JAMMU (J&K)



Head Quarter:
Main Campus, Chatha

Faculties:
Agriculture: Chatha
Veterinary Sciences & AH: RS Pura
Basic Sciences, Chatha

Schools:
School of Biotechnology

Krishi Vigyan Kendras:
R.S.Pura (Jammu)
Bhaderwah (Doda)
Tandwal (Rajouri)
Reasi (Reasi)
Poonch (Poonch)
Kathua (Kathua)
Samba (Samba)

Research Stations/Sub Stations/Centre:

- Regional Agricultural Research Station, Rajouri
- Advanced Centre for Dryland Agriculture, Dhiansar
- Advanced Centre for Horticulture Research, Udheywalla
- Rain fed Research Sub-Station for Sub-tropical Fruits, Raya
- Regional Horticulture Research Sub-Station, Bhaderwah
- Pulses Research Sub-Station, Samba
- Maize Breeding Research Sub-Station, Poonch
- Maize Research Centre , Udhampur

SHER – E – KASHMIR UNIVERSITY OF AGRICULTURAL SCIENCES & TECHNOLOGY OF JAMMU (J&K)