*16th*

# ANNUAL REPORT

## SKUAST-J

## 2015-16

**Sher–E –Kashmir University of**
**Agricultural Sciences & Technology of Jammu**

(Jammu & Kashmir)

*"An institution for sustainable agriculture for food and nutritional security"*

***Credit Line***

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Sher-e-Kashmir University of
Agricultural Sciences and Technology of Jammu,
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# PREFACE

I am pleased to present the 16th Annual Report of Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu (SKUAST-J) reflecting salient achievements of the University during the year 2015-16. The University has moved forward through its concerted efforts towards making the state of Jammu & Kashmir self sufficient, which at present is deficit by 40 per cent in food grains, 30 per cent in vegetables, 70 per cent in pulses and oil seeds, besides deficiency in meat, poultry and animal products. There is a vast scope for boosting horticulture, floriculture, mushroom cultivation, bee-keeping, medicinal plants and dairy farming. The University is mandated to address the basic, strategic and applied issues related to enhancement in production in agriculture and allied sectors, live-stock health, and human resource development in collaboration with Govt., non-Govt., national and international organizations to achieve overall improvement in the socio-econmic status of our farming community.

The SKUAST-J is engaged in grooming professionally competent and skilled human resource in agriculture sector. The University is offering undergraduate programmes viz., B.Sc.(Hons) Agriculture, B.Sc (Hons) Biotechnology, B.V.Sc & A.H. and programmes at Master and Doctorate level in 37 and 21 disciplines, respectively, in two academic campuses. The admission to Under Graduate and Master Programmes were made through entrance examination conducted by University itself. During the year under reference, 163 students were admitted to various UG programmes, 139 to PG programme. Besides, curricular and extracurricular activities including sports and cultural activities are being encouraged.

Research in 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 59 quintals of breeder seed, 1120 quintals of foundation seed and 1295 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), the State Government and other funding agencies.

SKUAST-J has a strong and effective network of extension services with six Krishi Vigyan Kendras (KVKs) in Jammu Division disseminating latest technology knowledge 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, conducting method demonstrations, group discussions and organizing field days and kissan melas. Those are a source of mass communication bringing out 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 Governor of Jammu & Kashmir, Padam Vibhushan Sh. N.N.Vohra and Dr. Trilochan Mohapatra, Secretary, DARE & DG, ICAR 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. Parmod Jain, Financial Commissioner, Agriculture Production Department, Sh. B.B.Vyas, Financial Commissioner, Planning & Development Department, and Sh. Navin Kumar Choudhary, Principal Secretary, Finance 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

**(Pradeep K. Sharma)**
Vice Chancellor

# CONTENTS

# 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 six 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, School of Biotechnology, Examination halls, Seed processing unit, Seed stores and Farm machinery centre, Sports complex, Students' center and Health Centre, besides, research and instructional farms. Additional buildings for Faculty of Basic Sciences, Controller of Examinations and Seed Research Center have also come up recently. 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. An International Guest House and ultra-modern Auditorium are under construction and will be ready very shortly.

The University has modern library system, with on-line facilities, providing accessibility to about 30,000 text and reference books, around 45,478 e-journals and 45,000 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 IFFCO through the initiatives of the placement cell. The cell also facilitated the placement of MBA (ABM) students in corporate sector namely Punjab National Bank, Tirumala Milk Products Pvt. Ltd., Mahindra Pvt. Ltd., etc. 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 19 All India Coordinated Research projects (AICRPs) funded by ICAR, aimed to address issues related to crop improvement, production and protection. The University has succeeded in obtaining two AICRPs on weed management and on honey bees in 2015-16. There are more than 95 adhoc/network projects funded by different agencies like DBT, DST, IMD, NHB, ICMR, RKVY, etc. amounting to more than Rs.33 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 has initiated a project on 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. Yellow grain hybrid PHM-12, UDMH-101 and UDMH 108 have shown promising increase in maize yield over check variety. Efforts have been made to improve the production of world famous basmat i r ice through the development of new varieties like Basamati 564 (RR 564), which matures 15 days earlier to Basmati, without compromising on the quality. Other important varieties notified by the University in the recent past include wheat variety RSP 561 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.

The plains of Jammu have a wide network of canals. With the incidence of high water table, some of the low lying irrigated areas have become susceptible to water logging. It has been estimated that out of the total 75,000 ha of Ravi-Tawi canal area, nearly 25,000 ha remains waterlogged, particularly during monsoons. The University has successfully evaluated a raised bed-sunken bed technology model to make better use of these waterlogged areas. The raised beds can be used for agricultural activity like growing vegetables, flowers, whereas the sunken beds act as ponds where fisheries can be taken up. Bench marking of Ranbir canal command area of Jammu region has been carried out for performance indicators of rice and wheat crop. Efficient irrigation schedules have been worked for enhancing water productivity in various cropping systems, especially that of the commonly followed rice-wheat rotation. WUE in rice-wheat sequence is up-scaled to 11.6 kg/ha-mm through laser levelling as compared to 8.3 kg/ha-mm in traditional leveled plots of farmer fields. Micro-irrigation systems, like drip irrigation and sprinkler systems, are being promoted in areas where there is water scarcity and uneven terrain conditions. A unique technique called trench cultivation for utilizing sub-surface water on the banks of river Chenab and Tawi for production of off-season vegetables have been developed and is being promoted.

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. The year 2015 being declared as the "International year of the Soils", awareness lectures were delivered among the school students to highlight the importance of soil health in not only sustaining agricultural productivity but also in combating climate change. Computer based approaches like remote sensing, 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 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, was organized on 18th-19thMarch 2016, which was inaugurated by the Hon'ble Governor of Jammu and Kashmir and Chancellor of SKUAST-Jammu. The district level Kisan Mela were also organized by 6 KVKs located in various districts during the Kharif as well as Rabi seasons 2015-16. 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 also 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. A major international conference was held this year on "Natural Resource Management: Ecological Perspectives" from 18-20, February 2016 which was attended by over 600 delegates from different parts of the globe.

## Our Mission

- Ensuring food and household security of Jammu and Kashmir by enhancing the productivity and profitability 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.
- Colloborate 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 Council

The Extension 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.

## 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.

## Faculties and School

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 and School of Biotechnology

## 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, Project Planning & Monitoring Officer 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

## SHER-E-KASHMIR UNIVERSITY OF AGRICULTURAL SCIENCES AND TECHNOLOGY OF JAMMU

UNIVERSITY COUNCIL → CHANCELLOR ← PRO-CHANCELLOR

BOARD OF MANAGEMENT → VICE CHANCELLOR ← ACADEMIC COUNCIL, RESEARCH COUNCIL, EXTENSION COUNCIL, PLANING COMMITTEE, FINANCE COMMITTEE

VICE CHANCELLOR

- DIRECTOR RESEARCH
- DIRECTOR EDUCATION
- DIRECTOR EXTENSION
- DEAN OF FACULTIES
- LIBRARIAN
- REGISTRAR
- COMPTROLLER
- PPMO
- ESTATES OFFICER

**Regional 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, Udhampur
5. K V K, Poonch
6. K V K, Kathua

**Faculty of Agriculture, Chatha/Udheywalla**

1. Division of Agronomy
2. Division of Agricultural Economics and Agri-Business
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- 2016) | |
|---|---|
| Sh. N.N. Vohra, Hon'ble Governor, J&K State<br>(Hon'ble Chancellor, SKUAST-Jammu) | Chairman |
| Dr. Pradeep K. Sharma<br>Vice Chancellor, SKUAST-Jammu | Member |
| Dr. Nazeer Ahmed<br>Vice Chancellor, SKUAST-Kashmir | Member |
| Dr. Baldev Singh Dhillon<br>Vice-Chancellor, Punjab Agriculture University, Ludhiana | Member |
| Prof. (Col.) A.K. Gehlot<br>Vice-Chancellor, Rajasthan University of Veterinary & Animal Sciences, Bikaner | Member |
| Sh. B.B. Vyas, IAS,<br>Financial Commissioner, Planning and Development Department, Govt. of J&K | Member (Co-opted) |
| Sh. Navin Kumar Choudhary, IAS,<br>Commissioner/ Secretary to Govt. (Financial Advisor-SKUAST-Jammu)<br>J&K Govt., Jammu | Member |
| Sh. Mohammad Ashraf Bukhari, IAS,<br>Commissioner/Secretary to J&K Govt., Agriculture Production Department,<br>Govt. of J&K | Member |
| Dr. Dileep Kachroo<br>Registrar, SKUAST-Jammu | Non- Member Secretary |

| BOARD OF MANAGEMENT (As on 31-03- 2016) | |
|---|---|
| Dr. Pradeep K. Sharma<br>Vice Chancellor, SKUAST-J | Chairman |
| Dr. Nazeer Ahmed,<br>Vice-Chancellor, SKUAST-K | Member |
| Sh. B.B. Vyas, IAS,<br>Financial Commissioner., Planning and Development Department, Govt. of J&K | Member |
| Sh.. Navin Kumar Choudhary, IAS<br>Commissioner/ Secreatry to Govt., Finance Department, Govt. of J&K, | Member |
| Sh. Mohammad Ashraf Bukhari, IAS,<br>Commissioner/Secretary to J&K Govt.,<br>Agriculture Production Department, Govt. of J&K | Member |
| Dr. Arvind Kumar, Vice-Chancellor, Rani Lakshmi Bai Central Agricultural University, Jhansi | Member |
| Dr. A.C. Varshney, Vice-Chancellor, UP Pt. Deendayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan, Mathura (UP) | Member |
| Dr. K.S. Risam<br>Director Extension | Member |
| Dr. J.P. Sharma<br>Director Research | Member |
| Dr. T.A.S. Ganai<br>Director Education | Member |
| S. Tajinder Singh,<br>Progressive farmer | Member |
| Sh. Rohit Gupta, Agro Industrialist Jammu | Member |
| Dr. Dileep Kachroo<br>Registrar, SKUAST-J | Non- Member Secretary |

| OFFICERS OF THE UNIVERSITY (As on 31.03.2016) | |
|---|---|
| Dr. Pradeep K. Sharma | Vice Chancellor |
| Dr. K. S. Risam | Director Extension |
| Dr. J.P. Sharma | Director Research |
| Dr. T.A.S.Ganai | Director Education |
| Dr. Deepak Kher | Project Planning & Monitoring Officer |
| Dr. Dileep Kachroo | Registrar |
| Dr. S.K. Sen | Comptroller |
| Dr. M.M.S. Zama | Dean, Faculty of Veterinary Sciences & AH |
| Dr. R.M. Bhagat | Dean, Faculty of Basic Agriculture |
| Dr. R.K. Gupta | Dean, Faculty of Basic Sciences |
| Dr. V. K. Razdan | Librarian |
| Sh. T.R. Bhagat | Estates Officer |

# 1 Executive Summary

With the generous and constant patronage of Chancellor and Pro-Chancellor, Central & State Governments, Indian Council of Agricultural Research, the University during 2015-16 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., 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 342 faculty position. The academic and the gender wise spectrum of the faculty reveal that more than 90 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 163 and 139 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 239. The total number of students on roll remained 908, comprising of 413 in Agriculture, 16 in Basic Sciences, 373 in Veterinary Sciences &106 in Biotechnology.
- 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. 3570 OPDs were attended out of which approx. 50 per cent were the students.
- The University has modular libraries at Chatha and R.S. Pura facilitating reference services to our faculty and students. The library has 32720 text and reference books. The library has adopted electronic cataloging using SOUL software. It annually subscribes 11 Indian journals. The University has access to about more than 44000 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 and 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 facility with 30KwA and 20KwA are available for the libraries at Chatha and R.S.Pura, respectively.

## Research

- SJR 129: A new basmati culture: SJR 129 (IET 24597) with yield potential (44.39 q/ha) and exhibited desirable basmati quality characters like Head Rice Recovery (56.3), grain length (7.3 mm) , desirable amylose content (22.4), soft gel consistency and aroma.
- JAUW-598: A new wheat variety for rainfed conditions with Yield potential of 41.7 q/h.
- Maize Composite SJCM-3 has extensively evaluated in station trials, multilocational trials, AICRP zonal trial. The yield potential of the composite is 58.25 ql/ha
- Pollination studies in cauliflower: Eighteen species belonging eleven families under five order were observed visiting the blossoms of cauliflower seed crop. Among the insect pollinators, Hymenopteran constitutes 83.95 per cent of total pollinators and rest are others

- The application of pendimethalin @ 1.0 kg/ha (PE) fb bispyribac-sodium @ 30 g/ha at 25 DAS fb fenoxaprop-p-ethyl @ 60 g/ha at 30 DAS recorded highest weed control efficiency and B:C ratio in direct seeded rice under aerobic conditions. (The data will be submitted for discussion in the ensuing RCM)
- One ha. Integrated Farming System (IFS) model comprising of cropping systems (rice-wheat-greengram, 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 brocolii, knolkhol, cabbage, cauliflower, radish, okra as intercrops) in 0.32 ha + dairy (1 cow, 1 buffalo, 1 heifer) including bio-gas and vermicompost unit in 0.08 ha + fish cum poultry in 0.1 ha) + mushroom (dhingri & button) developed for the mid to high altitude plain zone (JK-1) in Western Himalayas provides round the year production (21.52 t REY/year), profit (Rs 3.06 lakhs/year) and employment (731 man days/year).
- 19 mulberry varieties were evaluated for six important commercial parameters. Nine mulberry varieties viz. LUN-10 followed by LF-1, Tr-10, NS-1, Chinese white, S-30, S146,Tr-4 and V-1 were found better for important commercial characters.
- Field evaluation of different clones of Poplar (Poplar deltoides) spacing of 5m x 4m at Chatha revealed that maximum survival (80%) was recorded in Udai and WSL22. Average plant height (5.39uj m) was observed to be maximum in WSL-22. The average maximum collar diameter (36.10cm) was also recorded for WSL-32
- Red Radish (SJRR-01): Inbred developed out of the material collected from the foot hills of Shivaliks and Pir Panjal of Jammu region. The variety has 17 leaves/root which are serrated and semi erect in behaviour. Root shape tapering, skin colour pinkish red with 20-25 cm length and 13-15 cm circumference and root weight is 160-180 g, giving yields upto 380-400 q/ha. It takes 50-60 days for market. Field resistance against Alternaria leaf spot and field tolerant to serious insect pest.
- Garlic (SJG-12-02): The variety is a selection from the local germplasm with a yield potential of 120 q/ha. It has pinkish white cloves with ovate bulb shape having 17-20 cloves/bulb. It takes 190 days to harvest after sowing. It is tolerant to blight and major pests of the area.
- Ornithogalum: Ornithogalum (Ornithogalum thyrsoides) commonly known as chincherinchee, star-of-Bethlehem or wonder-flower is a bulbous flower of exquisite beauty. The leaves are lance-shaped and smooth in texture. Flowers are white or creamy-white, usually with a brown or green centre and appear in February to March months. Ornithogalum is commercially propagated by bulbs. The best time for planting bulb is mid October under Jammu conditions. It takes about 120-150 days from planting to production of spikes. A single bulb produces an average of 3-4 flower grade bulb lets in the next season depending on its size.
- Establishment of Testing Centre for Farm Machinery & Equipments at SKUAST-Jammu: Farm Machinery Testing Center is now made operational for testing of various types of farm machinery and equipments.
- For extracting best quality juice, the bael pulp can be treated with 240ppm (0.024%) of pectinase enzyme at 45oC for 4.5 hours, improved juice yield by 29.45%.
- Best quality wine and vermouth can be developed from bael and strawberry fruits along with 2 percent spice extract having volatile acidity, reducing sugars, ethanol, total phenols and antimicrobial activity as 0.018%, 0.53%, 11.35% v/v, 0.78 mg/100ml and 76.42m mol/100ml for wine and 0.030%, 0.64%, 16.53%(v/v) 0.50mg/100ml and 28.14mmol/100ml for vermouth respectively.
- Mushrooms were dipped for 10 minutes in various concentrations of hydrogen peroxide., EDTA, citric acid, sodium erythorbate, surface dried, packed in polypropylene (PP) and stored under refrigerated conditions and it was observed that mushrooms treated with 2.5% citric acid was organoleptically acceptable upto 12th day of storage with over all of acceptability of 7.45 whereas control was acceptable upto 6th day with overall acceptability of 6.07.
- Characterization of Bakerwali Goat was carried out by analyzing the data of Kathua, Rajouri and Reasi. Farmers rearing the goat population mainly belong to Muslim, Bakerwal, Gujjar, Chopan, Pahari and other Schedule tribes. Average birth weight of male is 2.07 kg whereas; in females it was 1.99 kg. Body weight of adult male is (1yr and above)

is 36.39 kg. The goat is mainly reared for chevon purpose. The average daily milk yield is 1017.89 gm. Age at maturity is 14. 57 months and Age at first kidding is 24.76 months.

- Augmenting Utilization of Paddy Straw in Ruminant Ration - Twelve varieties of paddy straw were analysed for proximate principles, calcium, phosphorus, fiber fractions and incriminating factors (silica, lignin and oxalate). In vitro gas production technique was employed to evaluate in vitro degradability of untreated, water soaked, urea-ammoniated and concentrate supplemented straw samples. Varieties differed significantly in terms of proximate composition, fibre fractions and anti-nutritional factors despite their common agro-climatic and geological origin.
- Extension of shelf life of meat products through incorporation of herbal extracts - Study revealed that herbal extracts of Bacopa monnieri, Ocimum sanctum, Artemisia nilagirica and Mentha longifolia etc. can be successfully utilized for enhancing the shelf life of meat products replacing synthetic antioxidants.
- Meat Hygiene and Associated Health Hazard Awareness among Butchers, Meat retailers and Consumers in Jammu district- Study revealed that Urban location, lack of important infrastructure and poor condition of existing buildings results in production of unhygienic meat. Retail meat shops lacked in many important facilities. Illiteracy, low income and lack of facilities resulted in poor personal hygiene of meat handlers. Majority of meat handlers were aware of the public health significance of their business. Few had limited knowledge about cross contamination and presence of micro-organisms in meat. Most of respondents were against meat inspection. Meat handlers were aware about bird flu, rabies and tuberculosis. Awareness regarding some important specific meat borne diseases (except bird flu) was poor.
- 100 per cent success achieved in inducing estrus in anestrus buffalo heifers using crestar ear implant in R.S. Pura Tehsil of Jammu District.
- Seasonal influence on various physiological and milk composition parameters in dairy cattle and buffalo - Total milk yield was found to be higher during winter season as compared to dry hot summer and hot humid summer season. Total milk yield showed a decreasing trend with increase in THI (Temperature Humidity Index). Milk fat and solid not fat content varied with season with the highest value during winter season in both crossbreed cattle and buffalo.
- Seroprevalence studies on brucellosis in animals and humans - Out of 79 serum samples comprising of 55 sheep, 13 cattle, 3dogs and 8 human samples, 25 samples (13 sheep and 12 goats) and 6 samples (4 sheep and 2 goats) were found positive for brucellosis by RBPT and STAT, respectively. None of the samples of dogs and humans was found positive by RBPT and STAT.
- Hygienic Status of Retail Poultry Outlets in Jammu with special reference to zoonotically important bacteria – Out of 55 poultry samples, 12% and 17% samples were positive for S. aureus and E.coli, respectively.
- Hygienic quality of milk- A total of 150 milk samples (100 cows and 50 goats) were assessed to for zoonotically important pathogens. 41% and 20% of cows and goats samples were found positive for subclinical mastitis.
- Hygienic assessment of ready to eat foods with special reference to B. cereus – A total of 156 samples (40 boiled rice, 36 ice-cream, 32 momos, 24 kalaari and 24 steamed corn) collected from vendors and retail shops from east, west, north and central zones of Jammu city were processed. Highest prevalence of B.cereus was in boiled rice (55 %) followed by ice-cream (41.6%), momos (37.5%), steamed corn (20.83 %) and kalaari (25%) samples. Mean exposure of B.cereus per serving in veg. momos found higher (1.9×105) then ice-cream samples (9×104) per serving.
- Quality evaluation of water of Tawi river- A total of 112 water samples were taken from Tawi river. None of the samples complied with bacteriological standards for total Coliforms (TC), Faecal Coliforms (FC), Faecal Streptococcus (FS) and Clostridium perfringens (CP).
- Incidence of Cryptosporidium spp. in small ruminants with special reference to Cryptosporidium ubiquitum – Based on PCR-RFLP, I56.67% animals were infected with Cryptosporidium ubiquitum (First report of Cryptosporidium ubiquitum in India).
- Cryptosporidium sps are important parasite in

lamb and goat kids and require sustainable control to avoid contamination and illness in susceptible population.

- Zoonotic potential of Cryptosporidium parvum – Molecular phylogenetic analysis of sequences of C. parvum isolate showed that subtype IIaA15G2R1 and IIaA14G2R1 have zoonotic potential and they are prevalent in cattle calves in Jammu region.
- Acaricide resistance against organophosphates, pyrethroid and amidines in Rhipicephalus (Boophilus) microplus- Acaricidal resistance studies revealed resistance in Rhipicephalus (Boophilus) microplus against Diazinon in Jammu, Samba, Kathua and Doda district whereas against Fenvelerate, resistance level-1 was found in Jammu, Samba and Kathua and susceptible in Doda District.
- Ultrasonographic studies on surgical affections of gastrointestinal tract in bovine- Ultrasonographic features of intestinal obstruction in large animals have been standardized which can be effectively used in confirming the diagnosis in large animals without performing exploratory laparotomy.
- Clinical studies on surgical affections of urinary tract in ruminants - Tube cystostomy is suggested as a very simple and useful technique for its management at field level with fewer post operative complications.
- Surgical management of urolithiasis in canines - midline cystotomy with or without urohydropropulsion was effective for the surgical management of urolithiasis in canines.
- Bioprospecting of anticancer potential of some medicinal plants - To explore the anticancer potential of Alstonia scholaris, Nerium oleander, Cannabis sativa and Brassica oleracea, all the extracts and their fractions of plants were evaluated for their in vitro and in vivo anticancer potential. Only NODC, CSMC and ASDH were found to be the active fractions with in vitro anticancer activity.
- Virulence Characterization of Methicillin Sensitive and Methicillin-Resistant Staphylococcus aureus form Bovine Mastitis- A total of 160 mastitic milk samples were screened for the presence of S. aureus. A total of 36(22.5%) of samples carried S. aureus. Out of 36 S. from positive samples, 6(16.6%) MRSA while rest was MSSA.
- Characterization of fimbrial adhesins and toxins of Enterotoxigcnic E. coil in calves with diarrhea - Out of 200 diarrhoeic faecal samples from calves less than 3 months of age, 26 (13%) carried enterotoxigenic E. coil on bulk screening by multiplex PCR for eli and est genes.
- Submission of various bacterial cultures to National Veterinary Type Culture Centre - A total of 27 cultures are being submitted for accession.

## Extension

- 6239 farmers/farm women and rural youth were imparted training through 290 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 952 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. A programme "Village Visit and Stay with Farmers" proved very effective. The scientists working at different research stations too participated in various extension activities

## 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 1255 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, University Council, Board of Management, and Academic Council were held accordingly.

# 2

# Education

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. (Ag), B.V.Sc & AH and B.Sc (Biotechnology)

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

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

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

| S. No. | M.Sc.(Ag) | Ph.D.(Ag) | 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 | Biotechnology | Animal Husbandry Extension | Animal Husbandry Extension |
| 12 | Biotechnology | Biotechnology | Veterinary Pharmacology & Toxicology | - |
| 13 | Bio Chemistry | - | Animal Genetics & Breeding | - |
| 14 | Forestry | - | Veterinary Microbiology | - |
| 15 | Sericulture | - | Live stock Production and Management | - |
| 16 | Floriculture | - | | - |
| 17. | Microbiology - | - | | - |

## 2.3 Faculty Spectrum

| Posts | Sanctioned |
|---|---|
| Dean | 2 |
| Associate Dean | 2 |
| Professor / Equivalent | 31 |
| Associate Professor / Equivalent | 71 |
| Asstt. Professor/ Equivalent | 124 |
| **Total** | **230** |

The classified information pertaining to the faculty strength cadre wise are given in the table as evident there are 344 faculty positions as sanctioned strength for both the faculties viz Faculty of Agriculture and Faculty of Veterinary Sciences & Animal Husbandry

## 2.4 Student Strengths

The strength of the students admitted to B.Sc (Hons) Agriculture, B.Sc (Biotechnology) and BVSc & AH programme during the academic session 2014-15 were 67, 28 and 85 respectively. The number of students admitted to M.Sc (Ag.) and Ph.D (Ag.) programme were 47 and 27 respectively in different divisions. In Veterinary faculty 48 MVSc and 24 Ph.D students were admitted during the academic session of 2014-15. In M.Sc Biotechnology and Ph.D Biotechnology programme 4 and 5 students were admitted. In Masters degree programme of Agribusiness Management and Genomics and Molecular Biology/ Microbiology 10 and 04 No. students were admitted respectively. The total strength of the students on roll in Post Graduate and undergraduate Degree programme were 380 and 584 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 2015 | | II year 2014 | | III year 2013 | | IV year 2012 | | V year 2011 | | | |
| | | | M | F | M | F | M | F | M | F | M | F | M | F |
| 1. | Faculty of Agriculture | B.Sc.(Hons.) Agriculture | 30 | 37 | 27 | 35 | 28 | 34 | 20 | 23 | - | - | 105 | 129 |
| | | B.Sc.(Hons.) Biotechnology | 02 | 23 | 07 | 18 | 02 | 23 | - | 19 | - | - | 11 | 83 |
| 2. | Faculty of Veterinary Sciences & Animal Husbandry | B.V.Sc. & A.H. | 39 | 31 | 55 | 26 | 35 | 26 | 19 | 28 | 31 | 15 | 179 | 126 |

## 2.6 Post Graduate Programme

| Post Graduate Programme | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Name of Faculty | Master's Programme | | | | Sub-Total | | Ph.D. Programme | | | | | | Sub- Total | | Total | |
| | | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F |
| 1. | Faculty of Agriculture | 20 | 17 | 49 | 17 | 69 | 34 | 10 | 27 | 12 | 10 | 20 | 23 | 42 | 60 | 111 | 94 |
| 2. | Faculty of Veterinary Sciences & Animal Husbandry | 25 | 14 | 32 | 21 | 57 | 35 | 09 | 03 | 12 | 11 | 10 | 11 | 31 | 25 | 88 | 60 |
| 3. | Faculty of Basic Sciences | - | 04 | 01 | 09 | 01 | 13 | - | 04 | 01 | 03 | - | - | 01 | 07 | 02 | 20 |
| 4. | School of Biotechnology | 01 | 03 | - | 04 | 01 | 07 | - | 03 | 01 | 04 | 01 | 12 | 02 | 19 | 03 | 26 |

## 2.7 Faculty wise Admission (2015-16)

| S. No | Divisions | | |
|---|---|---|---|
| **Faculty of Agriculture** | | **Master's Degree** | **Doctoral Degree** |
| 1 | Agronomy | 05 | 01 |
| 2. | Agricultural Engineering | 02 | - |
| 3. | Agri. Economics & Agri-business Management | - | 03 |
| 4. | Agro-forrestry | 03 | 03 |
| 5. | Agril. Extension Education | 03 | 02 |
| 6. | Plant Breeding & Genetics | 04 | 04 |
| 7. | Soil Sciences | 03 | 02 |
| 8. | Entomology | 03 | 04 |
| 9. | Vegetable Sciences & Floriculture | 02 | 01 |
| 10 | Plant Pathology | 04 | 04 |
| 11. | Fruit Science | 04 | 06 |
| 12. | Food Sciences & Technology | 02 | 04 |
| 13. | Sericulture | 02 | 03 |
| 14. | Biotechnology | 04 | 03 |
| **Faculty of Basic Sciences** | | | |
| 1 | Statistics & Computer Sciences | - | - |
| 2 | Biochemistry | 02 | 03 |
| 4 | Plant Physiology | 01 | - |
| 4. | Microbiology | 01 | - |
| **Faculty of Veterinary Sciences & Animal Husbandry** | | | |
| 1 | Veterinary Anatomy | 01 | 01 |
| 2 | Veterinary Physiology & Biochemistry | 02 | 01 |
| 3 | Veterinary Pharmacology & Toxicology | 03 | - |
| 4 | Veterinary Parasitology | - | 01 |
| 5. | Veterinary Microbiology | 02 | - |
| 6 | Veterinary Public Health & Epidemiology | 03 | 02 |
| 7 | Veterinary Medicine | 07 | 02 |
| 8 | Veterinary Pathology | 03 | 02 |
| 9 | Animal Nutrition | 03 | 01 |
| 10 | Animal Genetics & Breeding | 02 | 01 |
| 11 | Livestock Production Management | - | - |
| 12 | Livestock Product Technology | 01 | - |
| 13 | Veterinary Gynaecology & Obst. | 02 | - |
| 14 | Veterinary Surgery & Radiology | 08 | - |
| 15 | Veterinary & Animal Husbandry Education | 02 | 01 |

## 2.8 Number of Students who completed degree programmes (2015-16)

| S. No. | Degree | No. of students who completed degree programmes (2015-16) | |
|---|---|---|---|
| | | **Male** | **Female** |
| **Post Graduate** | | | |
| 1 | Ph.D (Agriculture) | 03 | 06 |
| 2 | Ph.D (Veterinary) | 02 | - |
| 3 | Ph. D. (Biotech) | - | 01 |
| 4 | Ph.D (Basic Science) | - | - |
| 5 | M.Sc. (Agriculture) | 33 | 15 |
| 6 | M.V.Sc. | 25 | 13 |
| 7 | M.Sc. (Basic Sciences) | - | 06 |
| 8 | M.Sc. (Biotech) | 01 | 05 |
| 9 | MBA (Agri-Business) | 10 | 03 |
| **Under Graduate** | | | |
| 1 | B.Sc. (Agriculture) | 17 | 19 |
| 2 | B.Sc. (Biotechnology) | - | 18 |
| 3 | B.V.Sc. &A.H. | 21 | 24 |

## 2.9 Thesis accepted (01-04-2014 to 31-03-2015):

### M.Sc Agriculture

| S. No. | Name of the Student | Regd. No. | Discipline | Name of Major Advisor | Title of the Thesis |
|---|---|---|---|---|---|
| 1. | Vishaw Vikas | J-13-M-323 | Soil Science & Agricultural Chemistry | Dr. K. R. Sharma | Mapping of Nutrient Status of Soil Using GIS in Kathua District of J & K |
| 2. | Harkirat Singh | J-12-M-258 | Soil Science & Agricultural Chemistry | Dr. Renu Gupta | Isolation and characterization of Diazotrophic and P Solubilising Bacteria in Rice Rhizosphere of Jammu District |

| S. No. | Name of the Student | Regd. No. | Discipline | Name of Major Advisor | Title of the Thesis |
|---|---|---|---|---|---|
| 3. | Shivangi Singh | J-13-MBS-01 | Microbiology | Dr. Upmadutta | Studies on plant growth promoting activities of Pseudomonas species in Solanummelongena (L.) (Brinjal) |
| 4. | Hemshiveta Pandita | J-13-MBS-02 | Microbiology | Dr. Brajeshwar Singh | Studies on isolation, characterization and antimicrobial activities of endophytic microflora of Digitalis purpurea. |
| 5. | Diksha Raina | J-13-MBS-03 | Microbiology | Dr. Brajeshwar Singh | Studies on antimicrobial activities of endophytes isolated from Picrorhiza kurroa. |
| 6. | Akanksha Rathore | J-13-MBS-04 | Microbiology | Dr. Brajeshwar Singh | Isolation and screening for novel bioactive molecules from endophytic populations associated with Arisaema erubescens. |
| 7. | Manisha Slathia | J-13-MBS-05 | Microbiology | Dr. A.K. Bhat | Bio mediated transformations in industrial belt of Jammu |
| 8. | Aijaz Ah. Dar | J-14-MBS-06 | Microbiology | Dr. A.K. Bhat | Isolation, Characterization and efficacy of Phosphate solubilizing bacteria |
| 9. | Raj Kumar | J-13-M-338 | Forestry | Dr. S.K. Gupta | Performance of green gram under Agri-silviculture system in drylands of Jammu |
| 10. | Sher Singh Palsaniya | J-12-M-281 | Agronomy | Dr. R. Puniya | Effect of sowing dates on growth and productivity of summer mungbean [Vigna radiata (L.) Wilczek] varieties |
| 11. | Arpita Sharma | J-13-M-297 | Agronomy | Dr. Dileep Kachroo | Effect of different transplanting dats and nutrient sources on growth, yield and quality of basmati rice (Oryza sativa L.) under system of rice intensification |
| 12. | Sourbh Khajuria | J-13-M-300 | Agronomy | Dr. M C Dwivedi | Effect of different dates of sowing and plant geometry on growth and yield of Indian mustard (Brassica juncea L.) varieties |
| 13. | Sandeep | J-13-M-298 | Agronomy | Dr. Sarabdeep Kour | Response of different varieties and fertility levels on growth, yield and quality of rice (Oryza sativa L.) under aerobic conditions |
| 14. | Sapna Bhagat | J-13-M-296 | Agronomy | Dr. Meenakshi Gupta | Production potential and quality of fodder maize (Zea mays) varieties sown under varying intercropping systems with cowpea (Vigna unguiculata) |
| 15. | Tulsi Ram Kumawat | J-13-M-299 | Agronomy | Dr. R. Puniya | Effect of different weed management practices on growth and yield of rice (Oryza sativa L.) under aerobic conditions |
| 16. | Sanjeev Kumar | J-13-M-295 | Agronomy | Dr. B R Bazaya | Effect of fertility levels on growth, yield and quality of hybrid rice (oryza sativa l.) Cultivars under sub-tropical irrigated conditions |
| 17. | Sagir Ahmed | J-13-M-324 | Agriculture Extension Education | Dr. L. K. Sharma | Adoption of Farm Mechanization in Jammu District of The Jammu And Kashmir State |
| 18. | Tariq Iqbal | J-13-M-325 | Agriculture Extension Education | Dr. Rakesh Nanda | Outcomes of the Government Interventions on Gujjars and Bakerwals of Jammu Division |
| 19. | Skalzang Dorjey | J-13-M-326 | Agriculture Extension Education | Dr. S. K. Kher | A study on adoption of marigold practices among floriculturist in Jammu district of Jammu and Kashmir State |
| 20. | Pratima Rana | J-13-M-327 | Agriculture Extension Education | Dr. Poonam Parihar | A Study on Post-Harvest Management Practices among the Mango Growers in Jammu District of Jammu And Kashmir State |
| 21. | Pardeep Gupta | J-13-M-332 | Fruit Science | Dr. Deep Ji Bhat | Effect of Orchard Floor Management Practices on Growth, Yield And Fruit Quality Of Peach (Prunus persica (L.) Batsch) cv. Shan-e-Punjab |

| S. No. | Name of the Student | Regd. No. | Discipline | Name of Major Advisor | Title of the Thesis |
|---|---|---|---|---|---|
| 22. | Sandeep Kumar Gupta | J-13-M-333 | Fruit Science | Dr. Akash Sharma | Effect of Foliar Nutrition on Yield, Quality and Shelf Life of Mango (Mangifera indica L.) cv. Dashehari under Jammu sub-tropics |
| 23. | Koushalya Devi | J-13-M-330 | Fruit Science | Dr. Rajesh Kumar | Effect of Foliar Application of Nutrients and Growth Regulators on Fruit Cracking and Quality of Lemon (Citrus limon L.) cv. Eureka |
| 24. | Ambika Bhandari | J-13-M-331 | Fruit Science | Dr. Arti Sharma | Effect of Mulching and Irrigation Intervals on Fruit Cracking and Quality of Litchi (Litchi chinensis Sonn.) cv. Dehradun |
| 25. | Jatinder Kumar | J-13-M-335 | Food Science & Technology | Dr. Rajkumari Kaul | Effect of processing temperatures on the development of whey based herbal fruit beverage |
| 26. | Vinod Wanchoo | J-13-M-336 | Food Science & Technology | Dr. Jagmohan Singh | Standardization and evaluation of aloe vera-jamun juice and its RTS |
| 27. | Sunil Manhoori | J-13-M-337 | Food Science & Technology | Dr. Jagmohan Singh | Standardization and evaluation of Litchi-Beetroot Blended Products |
| 28. | Nitish Pandita | J-13-M-334 | Food Science & Technology | Dr. Neeraj Gupta | Development and evaluation of flavoured ladoo from different cultivars of aonla |
| 29. | Deeksha Charak | J-13-M-316 | Genetics & Plant Breeding | Dr. S.K. Rai | Genetics of yield and quality traits in Indian mustard (Brassica Juncea L.) |
| 30. | Vanya Bawa | J-13-M-315 | Genetics & Plant Breeding | Dr. R.R. Mir | Association Mapping for Genetic Dissection of seed Zinc (Zn) and Iron (Fe) content in common Bean (Phaseolus Vulgaris L.) |
| 31. | Vivek Sharma | J-13-M-317 | Genetics & Plant Breeding | Dr. Sumita Kumari | Delineating marker trait associations for iron & zinc content in seeds of bread wheat (Triticum aestivum L.) |
| 32. | Heena Attri | J-12-M-269 | Genetics & Plant Breeding | Dr. B.S. Jamwal | Evaluation of Chickpea (Cicer arietinum L.) F4 derived F5, MAGIC lines for seed yield and its component traits |
| 33. | Niraj Singh | J-12-M-270 | Genetics & Plant Breeding | Dr. Bupesh Kumar | Marker assisted selection for bacterial blight resistance and aroma genes in Basmati rice (Oryza sativa L.)" |
| 34. | Rubby Sadhu | J-12-M-271 | Genetics & Plant Breeding | Dr. S.K. Rai | Studies on genetic diversity among various genotypes of Brassisa napus L. using morphological and molecular markers |
| 35. | Sandeep Kumar Bangarwa | J-12-M-272 | Genetics & Plant Breeding | Dr. Tuhina Dey | Genetic enhancement of stripe rust resistance in wheat (Triticum aestivum L.) |
| 36. | Pawandeep Singh | J-11-M-242 | Plant Pathology | Dr. Deepak Kumar | Black rot disease of cauliflower and its management |
| 37. | Arun Khajuria | J-13-M-308 | Plant Pathology | Dr. Vishal Gupta | Epidemiological studies of stripe rust of wheat caused by Puccinia striiformis |
| 38. | Manmohan Singh | J-13-M-318 | Plant Pathology | Dr. S.K. Singh | Studies on spot blotch [Bipolaris sorokiniana (Sacc.) Shoem.] of wheat and its management |
| 39. | Saima Farooq | J-13-M-320 | Plant Pathology | Dr. V.K. Razdan | Germplasm evaluation and characterization of resistant genes against stripe rust of wheat |
| 40. | Arvind Kumar | J-13-M-347 | Plant Pathology | Dr. S.K. Singh | Variability and management of colletotrichum capsici the causal organism of chilli anthracnose |
| 41. | Sandeep Kumar | J-13-M-348 | Plant Pathology | Dr. Sachin Gupta | Evaluation of substrates for quality spawn production of mushrooms. |

| S. No. | Name of the Student | Regd. No. | Discipline | Name of Major Advisor | Title of the Thesis |
|---|---|---|---|---|---|
| 42. | Raivati Raman Sharma | J-13-M-349 | Plant Pathology | Dr. Deepak Kumar | Integrated management of bacterial spot of bottle gourd caused by Xanthomonas cucurbitae. |
| 43. | Arif Khan | J-12-M-262 | Sericulture | Dr. R.K.Bali | Heterosis studies on indigenous bivoltine silkworm hybrids |
| 44. | Anamika Sharma | J-12-M-260 | Sericulture | Dr. R.K.Bali | Screening of mulberry cultivars for leaf rust (cerotelium fici) disease and its influence on silkworm |
| 45. | Smaili Mehra | J-13-M-245 | Sericulture | Dr. R.K.Bali | Development and evaluation of double hybrid crosses of silkworm (Bombyx mori L.) |
| 46. | Nazia Anjum | J-12-M-291 | Floriculture and Landscape Architecture | Dr. Sheetal Dogra | Micropropagation Studies in Chrysanthemum (Chrysanthemum morifolium Ramat) cv. Maghi White. |
| 47. | Desh Raj Choudhary | J-13-M-313 | Vegetable Science | Dr. Satesh Kumar | Influence of seedling age and plant hormones on growth, yield and bolting in onion (Allium cepa L.) |
| 48. | Gh. Jeelani Zargar | J-13-M-314 | Vegetable Science | Dr. Manoj Kumar | Effect of integrated nutrient mangement on growth, yield and quality in cabbage (Brassica oleracea L. var capitata) |
| 49. | Menisha Rani | J-13-M-311 | Vegetable Science | Dr. Sanjeev kumar | Evaluation of diallel progenies in brinjal (Solanum melongena L.) |

## M.V.Sc.

| S.No. | Name of the Student | Regd. No. | Discipline | Name of Major Advisor | Title of the Thesis |
|---|---|---|---|---|---|
| 1. | Mazar Ali Shah | J-13-MV-361 | Veterinary Gynaecology and obstetrics | Dr Nishi Pande | Clinical Investigations and Therapeutic Approaches in Canine Pyometra |
| 2. | Dalbir Singh Sudan | J-13-MV-362 | Veterinary Gynaecology and obstetrics | Dr WAA Razzaque | Induction of Estrus in Anestrus Buffalo Heifers with or without Antioxidants |
| 3. | Reyaz Nazir Reshi | J-13-MV-363 | Veterinary Gynaecology and obstetrics | Dr utsav sharma | Studies on Estrus Induction in Acyclic Cross-bred Heifers. |
| 4. | Neha Manhas | J-13-MV-326 | Veterinary Surgery | Dr. R.B.Kushwaha | Clinical Studies on Diagnosis and Surgical Management of Urolithiasis in Canines. |
| 5. | Amarpreet Singh | J-13-MV-327 | Veterinary Surgery | Dr. Ashok Kumar | Studies on Granulomatous Lesions of Head And Neck of Cattle and Buffaloes. |
| 6. | Vikas Gaur | J-13-MV-328 | Veterinary Surgery | Dr. H.R.Bhardwaj | Studies on Hoof Disorders in Dairy Cows. |
| 7. | Riyaz Ahmad Wani | J-13-MV-329 | Veterinary Surgery | Dr. M.S.Bhadwal | Ultrasonographic Studies on Surgical Affections of Gastrointestinal Tract in Bovine. |
| 8. | Ashish Mahajan | J-13-MV-330 | Veterinary Surgery | Dr. A.K.Gupta | Clinical Studies on Surgical Affections of Urinary Tract in Ruminants. |
| 9. | Rayees. A.Bafanda | J-13-MV-343 | Veterinary & Animal Husbandry Extension Education | Dr. S.A.Khandi Asstt. Professor | Meat hygiene and associated health hazard awareness among butchers, meat retailers and consumers in jammu district of jammu and kashmir |
| 10. | Jaspal Singh | J-13-MV-344 | Veterinary & Animal Husbandry Extension Education | Dr. Pranav Kumar, Asstt. Professor | Web module for dissemination of need based scientific dairy practices among farmers |
| 11. | Aditi Chanoria | J-13-MV-345 | Veterinary & Animal Husbandry Extension Education | Dr. Pranav Kumar, Asstt. Professor | A study on role dynamics of rural women engaged in livestock rearing |

| S.No. | Name of the Student | Regd. No. | Discipline | Name of Major Advisor | Title of the Thesis |
|---|---|---|---|---|---|
| 12. | Farzana Chaudhary | J-13-MV-346 | Veterinary & Animal Husbandry Extension Education | Dr. S.A.Khandi Asstt. Professor | Small ruminant rearing practices followed by bakarwal tribe in jammu district |
| 13. | Sarwar Ahmed Ganaie | J-12-MV-295 | Veterinary Parasitology | Dr. Rajesh Godara | Epidemiology of dicrocoeliosis in sheep and goats of Jammu region |
| 14. | Damandeep Kaur | J-12-MV-294 | Veterinary Parasitology | Dr. Rajesh Katoch | Molecular characterization and chemotherapeutic management of Cryptosporidiosis in small ruminants |
| 15. | Rafiqur Rehman Ahanger | J-13-MV-353 | Veterinary Parasitology | Dr. Rajesh Godara | Studies on deltamethrin resistance in Rhipicephalus microplus of Jammu and Kashmir |
| 16. | Arjun Dev Singh Bhutyal | J-13-MV-352 | Veterinary Parasitology | Dr. Rajesh Godara | Evaluation of some herbal acaricides against Rhipicephalus microplus |
| 17. | Akhiyar Khan | J-13-MV-354 | Veterinary Parasitology | Dr. Anish Yadav | Subgenotype analysis of Cryptosporidium parvum isolates from pre-weaned lambs and goat kids in Jammu region |
| 18. | Kaifa Nazim | J-13-MV-355 | Veterinary Parasitology | Dr. Anish Yadav | Subgenotype analysis of Cryptosporidium parvum isolates from pre-weaned cattle calves in J&K |
| 19. | Sanak Sharma | J-13-MV-356 | Veterinary Pathology | Dr.ShaguftaAzmi | Studies on clinic-pathomorphological alterations in broiler chickens experimentally inoculated with Salmonella Enteritidis and its amelioration with Vitamin C |
| 20. | Mr. Mudasir Amin Bader | J-13-MV-336 | Veterinary Pharmacology & Toxicology | Dr. M. Sultana | Studies on toxico-biochemical alterations induced by co-exposure of Roundup and Fluoride and their modulation with Quercetin in rats. |
| 21. | Ms. Priyanka Mudgil | J-13-MV-335 | Veterinary Pharmacology & Toxicology | Dr. R. Raina | Studies on biochemical alterations induced by Chlorfenapyr and its interaction with Fluoride in wistar rats. |
| 22. | Mr. Abineet Singh Pandha | J-14-MV-383 | Veterinary Pharmacology & Toxicology | Dr. M. Sultana | Protective effect of catechin on hemato-biochemical and oxidative stress parameters following repeated administration of chlorpyrifos and aluminum in rats |
| 23. | Mr. Nasir Manzoor Wani | J-14-MV-385 | Veterinary Pharmacology & Toxicology | Dr. R. Raina | Oxidative damage of liver & kidneys following repeated exposure to chlorfenapyr & its toxic interaction with fluoride. |
| 24. | Mr. Lakshay Mahajan | J-15-MV-433 | Veterinary Pharmacology & Toxicology | Dr. P.K. Verma | Alterations in biochemical & oxidative biomarkers in sub acute oral toxicity of imidacloyrid alone & in conjuction with Arsenic in wistar rats |
| 25. | Gurpreet Singh | J-15-MV-434 | Veterinary Pharmacology & Toxicology | Dr. N.K. Pankaj | Evaluation of Randia spinosa barks extract for its antidiabetic potential in wistar rats. |
| 26. | Abid Hussain Thoker | J-15-MV-432 | Veterinary Pharmacology & Toxicology | Dr. N.K. Pankaj | Evaluation of toxicity manifestations on vital organs following repeated exposure of indoxacarb alone and in combination with cadmium. |
| 27. | Ovais Aarif | J-08-MV-59 | Veterinary Physiology | Dr. P.S.Mahapatra | Influence of cold induced stress on haemato-biochemical and immune status in turkeys |
| 28. | Juneet Kour | J-08-MV-100 | Veterinary Physiology | Dr. Jafrin Ara Ahmed | Electrocardiographic response in rabbits under normal & stress conditions |

| S.No. | Name of the Student | Regd. No. | Discipline | Name of Major Advisor | Title of the Thesis |
|---|---|---|---|---|---|
| 29. | Ankush Reothia | J-09-MV-164 | Veterinary Physiology | Dr. Jonali Devi | Some Physiological Studies in Rambouillet sheep during seasonal migration in Jammu region. |
| 30. | Ishfaq Hassan Bhat | J-10-MV-210 | Veterinary Physiology | Dr. Jonali Devi | Study of changes in haemato-biochemical parameters during different lactations in Toggenberg goats. |
| 31. | Sumeet Kour | J-11-MV-273 | Veterinary Physiology | Dr. Jonali Devi | Influence of thermal stress on haemato-biochemical parameters in relation to thyroid activity in goats |
| 32. | Pallavi Khajuria | J-11-MV-239 | Veterinary Biochemistry | Dr. Pratiksha Raghuwanshi | Effect of seabuckthorn (Hippophae rhamnoides) leaf extract on diabetes induced biochemical and antioxidant alterations in wistar ra. |
| 33. | Rizwana Zargar | J-11-MV-240 | Veterinary Biochemistry | Dr. Pratiksha Raghuwanshi | Ameliorating and protective effect of seabuckthorn (Hippophae rhamnoides) leaf extraction lead induced oxidative stress in wistar rats. |
| 34. | Ankush Arora | J-11-MV-242 | Veterinary Biochemistry | Dr. Aditi Lal Koul | Ameliorating and Protective effect of Sea buckthorn (Hippophaerhamnoides) Leaf Extract on Copper Induced Oxidative Stress in Wistar rats. |
| 35. | Ashok Kumar Anand | J-10-MV-188 | Veterinary Biochemistry | Dr. Pratiksha Raghuwanshi | Study on antidiabetic and antioxidative effects of Buffalo urine in streptozotocin induced Diabetes in Wistar rats. |
| 36. | Ajay Deep Singh | J-11-MV-274 | Veterinary Physiology | Dr. Kawardeep Kour | Comparative study of seasonal influence on various physiological and milk composition parameters in dairy cattle and buffalo. |
| 37. | Uzma Sehrish | J-14-MV-407 | Veterinary Physiology | Dr. P.S.Mahapatra | Effect of season on biochemical profile and oxidative stress markers in preovulatory follicular fluid in local sheep of Jammu |
| 38. | Sumaiya Bashir Khanday | J-15-MV-447 | Veterinary Physiology | Dr. Jafrin Ara Ahmed | Effect of antioxidant ascorbic acid on in vitro maturation of caprine oocytes under normal and elevated temperatures. |
| 39. | Vaishali Sharma | J-15-MV-448 | Veterinary Physiology | Dr. P.S.Mahapatra | Developmental potency of immature oocytes harvested from cryopreserved sheep ovary. |

## Ph.D (Agri/Vety)

| S.No. | Name of the Student | Regd. No. | Discipline | Name of Major Advisor | Title of the Thesis |
|---|---|---|---|---|---|
| 1 | Neetu Sharma | J-11-D-125-A | Agronomy | Dr. Anil Kumar | Influence of multiple herbicidal interventions and time of planting in direct seeded basmati rice (oryza sativa l.) and wheat (triticum aestivum l.) In rice-wheat cropping system |
| 2 | Lyaqet Ali | J-10-D-118-A | Agriculture Extension Education | Dr. S. K. Kher | Status and Prospects of Sericulture in Jammu Division of J & K State |
| 3 | Prerna Gupta | J-11-D-145-A | Food Science & Technology | Dr. Anju Bhat | Effect of the post harvest treatments and packaging on the shelf life of button mushrooms |
| 4 | Harmeet Kour | J-11-D-144-A | Food Science & Technology | Dr. Rajkumari Kaul | Standardization of Technology for the development of Wine and Vermouth from the blends of Bael and Mango fruits |

| S.No. | Name of the Student | Regd. No. | Discipline | Name of Major Advisor | Title of the Thesis |
|---|---|---|---|---|---|
| 5 | Anwar Hussain | J-12-D-167-A | Food Science & Technology | Dr. Rajkumari Kaul | Development and evaluation of Porridge and Biscuits using Multigrain Flour |
| 6 | Javaid Akter Bhat | J-11-D-136-A | Food Science & Technology | Dr. S.K. Mondal | Genetic analysis for heat tolerance in bread wheat (Triticum aestivum L.) |
| 7 | Padma Lay | J-11-D-134-A | Food Science & Technology | Dr. A.K. Razdan | Genetic analysis of Maize (Zea Mays L.) inbred lines using Microsatellite Markers |
| 8 | Sunita Rani | J-11-D-133-A | Plant Pathology | Dr. S.K. Singh | Epidemiology and management of Turcicum leaf blight (Exserohilum turcicum (Pass) Leonard and suggs) of maize in Jammu sub tropics |
| 9 | Mokshe Sajgotra | J-11-D-146-A | Sericulture | Dr. R.K.Bali | Multiple rearing and food dynamics in silkworm (Bombyx mori L.) |
| 10 | Sonam Spaldon | J-11-D-137A | Vegetable Science | Dr. R.K. Samnotra | Genotype × Environment interaction in tomato (Solanum lycopersicum L.) |
| 11 | Maneesh Sharma | J-11-D-36-V | Veterinary Pathology | Dr. Shagufta Azmi | Toxico-pathological studies on Experimentally induced chlorfenapyr toxicity and its interaction with sodium nitrate in poultry |
| 12 | P.K. Verma | J-11-D-37-V | Veterinary Pharmacology & Toxicology | Dr. R. Raina | Bioprospection of Alstonia scholaris & Calendula officinalis for Antioxidant, Antidiabetic, Hepato & Nephro protective Effects. |
| 13. | Mahrukh Ahmad | J-12-D-42-V | Veterinary Pharmacology & Toxicology | Dr. M. Sultana | Studies on the effect of quercetin on diabetic wound and hypertension in rats. |
| 14. | Makhmoor Ahmad Bhat | J-14-D-90-V | Veterinary Pharmacology & Toxicology | Dr. R. Raina | Bioprospection of Bergenia ciliata for its anti-oxidant, antidiabetic, hepato and nephro-protective effects. |
| 15. | Juneet Kour | J-13-D-55-V | Veterinary Physiology | Dr. Jonali Devi | Effects of zinc supplementation on growth, biochemical profile and development of testis & epididysis in male Wistar rat |
| 16. | Rizwana Zargar | J-13-D-56-V | Veterinary Biochemistry | Dr. Pratiksha Raghuwanshi | Studies on molecular detection of streptococcus agalactiae in cattle milk through LAMP (Loop Mediated Isothermal Amplification). |
| 17. | Pallavi Khajuria | J-14-D-80-V | Veterinary Biochemistry | Dr. Pratiksha Raghuwanshi | Effect of dietary cholesterol and niacin supplementation on experimentally induced renal dysfunction in Wistar rat. |
| 18. | Aditi Lal Koul | J-14-D-81-V | Veterinary Biochemistry | Dr. Pratiksha Raghuwanshi | Effect of dietary cholesterol and niacin supplementation on experimentally induced hepatic cirrhosis in Wistar rat. |
| 19. | Sumeet Kour | J-14-D-86-V | Veterinary Physiology | Dr. Jonali Devi | Effect of vitamin C on physio-biochemical parameters in water deprived goats. |

## 2.10 Students Welfare

- Intra faculty sports meet of Faculty of Veterinary Sciences & Animal Husbandry, R.S. Pura organized on 07th-08th of May, 2015. Competition was held in Cricket, Football, Volleyball, Badminton, Table Tennis.
- Orientation of new entrants to SKUAST of Jammu: Three days orientation of newly admitted students to the Faculty of Agriculture, Veterinary Sciecnes & A.H. and Basic Sciences was held on 11th-13th of August, 2015. Students briefed on Academic System, Health Care, Students Welfare, Extracurricular Acitivities, Hostel and Anti Raggin

Rules & Regulations.

- Foundation Day of SKUAST-Jammu: Function to commensurate the Foundation Day of SKUAST-Jammu was held on 23rd of September, 2015, presided over by Hon'ble Vice-Chancellor, SKUAST-Jammu. Cultural Programmes by Faculty members and students were presented.
- International day on Non-Violence: The day was observed on 05th October, 2015 at Conference Hall, R.S. Pura Campus in which UG/PG students, faculty, staff members and officers of the University participated.
- Hostel Night Celebration: Girls boarders of Urja Hostel celebrated hostel night on 27th of November, 2015 and organized a cultural programme.
- Participation in XVI All India Inter Agricultre Universities Sports and Games Meet: Mr. M. Bharathi Desan, M.Sc. Student won Bronze Medal (3rd Position) in Atheletics – 800 Meter (Men) event

Intra faculty sports meet of Faculty of Agriculture, Chatha

- Intra faculty sports meet on FoA, Chatha: On 28th of March, the Intra faculty sprots meet of Faculty of Agriculture, Chatha was inaugurated by Hon'ble Vice-Chancellor, SKUAST-Jammu, class wise competition was organized in Cricket, Football, Volleyball, Badminton, Table Tennis etc.

## 2.11 Students' Placement and Counseling Cell

Facilitates the University students by providing information to them about various scholarships and avenues of employment. The center is running in the Students Centre, Chatha campus. The students completing the course of B.Sc. (Agriculture), B.V. Sc. & A.H. are advised on seeking jobs in private, government, Army, paramilitary and non-governmental organizations. Information bulletins from prestigious universities of U.K., U.S.A. and Europe are procured, displayed and provided to the interested students. For Employment, the advertisements appearing in newspapers or received directly from the employers are displayed on notice boards of the Faculty concerned and/or communicated directly to the eligible candidates.

## 2.12 Hostels and hostel facilities

Separate hostel accommodation for boys and girls are available at the RS Pura campus and one hostel is under construction at the main campus, Chatha. The girl boarders are housed in newly constructed Girls Hostel with additional accommodation comprising of four flats to facilitate the girl boarders. 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:

| S. No. | Type of case | No. |
|---|---|---|
| 1 | Total OPD | 3570 |
| 2 | Students Treated | 1911 |
| 3 | Staff Treated | 1659 |
| 4 | Hostlers | 1331 |
| 5 | Non-Hostellers | 580 |
| 6 | Medical Cases | 3018 |
| 7 | Surgical Cases | 552 |
| 8 | Male Patients | 2497 |
| 9 | Female Patients | 1073 |
| 10 | Patient Referred | 39 |
| 11 | Emergencies Handled | 214 |
| 12 | Indoors | 59 |
| 13 | Lab Tests | 144 |
| 14 | Physiotherapy | 369 Sessions |
| 15 | Dental OPD | 190 sittings |
| 16 | Total Patients treated in different campuses | 44 |

## 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 2015-16 to the final year students of B.Sc Agriculture, batch 2012 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.

There were 36 students registered for RAWE 2015-16. The students were paid a stipend of Rs. 1500 each per month for 6 months.



Students performing practical at Rural Agriculture Work Experience (RAWE)

## 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. An amount of Rs 1800/- per student per month is paid as internship allowance except in-service nominee from J&K Government. During 2015-16, 44 students have successfully completed their internship programme in B.V.Sc & AH. The expenditure involved for one student for six months is Rs 10,800/- and total amount paid to students was amounting to Rs. 475200/-.

Group photograph of Students

## 2.17 Library

### Usage

| Campus | Books Borrowed | | Library Consultation | |
|---|---|---|---|---|
| | | | Books/Journals/Back Volumes/Current Issues | |
| | Per day (avg.) | Total (annually) | Per day (avg.) | Total (annually) |
| Central Library, Chatha | 14 | 2833 | 118 | 24009 |
| Faculty Library, R.S.Pura | 20 | 5511 | 46 | 10491 |
| **Total** | **34** | **8344** | **164** | **34500** |

### Book Collection

| Campus | Books (No.)* |
|---|---|
| Central Library, Chatha | 25193 |
| Faculty Library, R.S.Pura | 7041 |
| **Total** | **32234** |

*Includes Gratis Books, Book Bank Books etc.

### Online Databases / e-Journals/e-Books New Additions

| Campus | Books | Journals | Theses | Reports | News Letter | Gratis Books | ST |
|---|---|---|---|---|---|---|---|
| Central Library, Chatha | 468 | 09 | 119 | 60 | 116 | 79 | |
| Faculty Library, R.S. Pura | 77 | 02 | 38 | | | | |
| **Total** | **545** | **11** | **157** | **60** | **116** | | |

* In addition to this, complete J-gate e-resource was subscribed during 2015-16 which offers access to as metadata aggregation platform indexing 44000 plus journals including 25000 plus full text journals.
* EBSCO host-e Books academic subscription collections has been subscribed during the year 2015-16.
* Remote access is provided to students, scholars and faculty members for making full utilization of the e-resources subscribed in the Library.

### Journal Subscription (Print)

| Campus | Journals | | Total |
|---|---|---|---|
| | Indian | Foreign | |
| Central Library, Chatha | 09 | -- | 09 |
| Faculty Library, R.S.Pura | 02 | -- | 02 |
| **Total** | **11** | **--** | **11** |

### Book Bank Services

| Campus | No. of books available | | No. of books Issued | | Special Issue for JRF Aspirants |
|---|---|---|---|---|---|
| | General | SC/ST | General | SC/ST | |
| Central Library, Chatha | 677 | | -- | | -- |

### Reprographic Services for students and researchers on payment basis

| Campus | On payment |
|---|---|
| Central Library, Chatha | 96188 |
| Faculty Library, R.S.Pura | 04741 |
| **Total** | **100929** |

*The payment received is deposited regularly in the office of the Comptroller.

### Receipts

| Campus | Overdue charges (Rs.) | Collection from lost ticket | Cost recovered from lost books | Text book bank | Reprographic services | Internet | Total (₹) |
|---|---|---|---|---|---|---|---|
| Central Library, Chatha | 6942.00 | -- | -- | -- | 96188 | Free | 103130.00 |
| Faculty Library, R.S.Pura | 12608.00 | -- | -- | -- | 04741 | Free | 17349.00 |
| **Total** | **19550.00** | | | | **100929** | | **120479.00** |

### Other services provided

| Campus | News Clippings | Internet | Journal Online | e-Books | CD ROM Services | Miscelleaneous (Documentaion Service) |
|---|---|---|---|---|---|---|
| Central Library, Chatha | Yes | Yes | Yes | Yes | Yes | Yes |
| Faculty Library, R.S. Pura | -- | Yes | Yes | Yes | Yes | Yes |

## Online Library

### Training provided to Library Users:

| S. No. | Title | Participants | Venue |
|---|---|---|---|
| 1 | Orientation programme pertaining to the use of CeRA for the post graduate students (PGS-501) | 117 | Central Library, Chatha |
| 2 | User education programme regarding how to use Library resources | 138 | Central Library, Chatha |

### Library Membership

| Type of Members | Central Library, Chatha | Faculty Library, R.S.Pura |
|---|---|---|
| Faculty & Staff | 206 | 64 |
| Ph.D students | 119 | 32 |
| M. Sc. students | 118 | 150 |
| UG students | 234 | 319 |
| **Total** | **677** | **565** |

### Subscription to Newspapers & Magazines

| Campus | Newspapers | Magazines |
|---|---|---|
| Central Library, Chatha | 12 | 11 |
| Faculty Library, R.S.Pura | 5 | 11 |
| **Total** | **17** | **22** |

# 3

# Research

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 disciplines are reported as under.

## 3.1 Faculty of Agriculture

### 3.1.1 Division of Plant Breeding & Genetics

Following varieties of different crops under process of release at state level.

#### i) Rice

**Breeding for sub-tropical rice for Jammu region**

**SJR 129: A new basmati culture**


(IET 24597)

- Yield potential of 44.39 q/ha: Exhibited desirable basmati quality characters like Head Rice Recovery (56.3), grain length (7.3 mm) , desirable amylose content (22.4), soft gel consistency and aroma.
- The culture tested in the minikit trials by State Deptt. of Agriculture during kharif 2015 and exhibited significant yield superiority over Basmati 370 in all the three basmati growing districts of Jammu, Kathua and Samba.

#### ii) Wheat

**Breeding wheat varieties for Jammu region**

**a) JAUW-584:** A new wheat variety for timely sown irrigated conditions


- Yield potential : 50 q/ha
- Ecology : Timely Sown Irrigated condition
- Testing : NIVT & AVT at national level and State minikits.
- Biotic Stresses : Moderately resistant to all three rusts (YR, LR & SR).

**b) JAUW-598:** A new wheat variety for rainfed conditions.


- Yield potential : 41.7 q/ha
- Ecology: Rainfed condition
- Testing : NIVT & AVT at national level and State minikits.
- Biotic Stresses : Moderately resistant to all three rusts (YR, LR & SR).

### iii) Toria

- Newly developed Brassica rapa var. toria strain RSPT-6 was evaluated during rabi season 2012 to 2014.
- It recorded highest average seed yield of 12.0 q/ha and matures in 87 days and 41.3 percent oil content.
- RSPT-6 was also evaluated during Rabi 2013-2014 in AICRP trials over three locations in Zone II where it recorded an average seed yield of 1589 Kg / ha and it matured in 93 days.

### iv) Maize

**Breeding for development of maize hybrids/ composites**

**Maize Composite:** SJCM-3-A yellow grain composite

- Maize Composite SJCM-3 has extensively evaluated in station trials, multilocational trials, AICRP zonal trial, AICRP IVT trial, Minikit trials and FLDs for two to four years under the name of PMSY-3. The composite has exhibited 10-32% grain yield superiority over local check entries.
- The yield potential of the composite is 58.25 ql/ha
- It is a medium maturing composite matures in 130-135 days.
- The composite is moderately resistance Tursicum and Maydis leaf blights.

SJCM-3

## 3.1.2 Division of Entomology

### Pollination studies in cauliflower

- Eighteen species belonging eleven families under five order were observed visiting the blossoms of cauliflower seed crop. Among the insect pollinators, Hymenopteran constitutes 83.95 per cent of total pollinators and rest are others
- Quantitative parameters were significantly higher in open pollinated plants as compared with pollinator excluded plants.

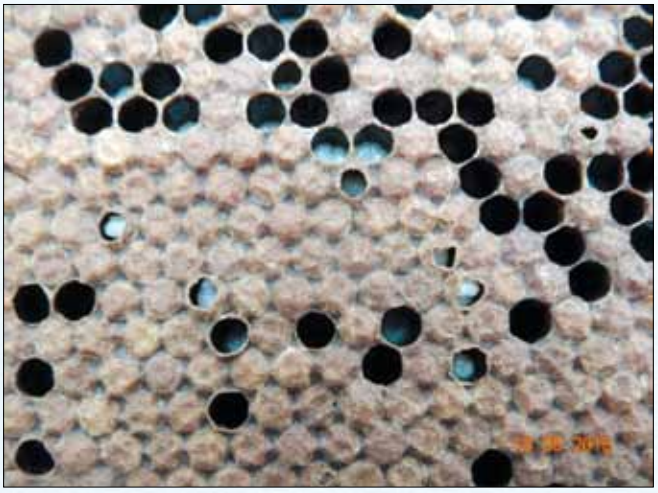
### Pollination studies in coriander

- 15 species of insects belonging to 6 families and 8 orders. The honeybees viz. *A. mellifera*, *A. dorsata* and *A. cerana* were the dominant flower visitors.

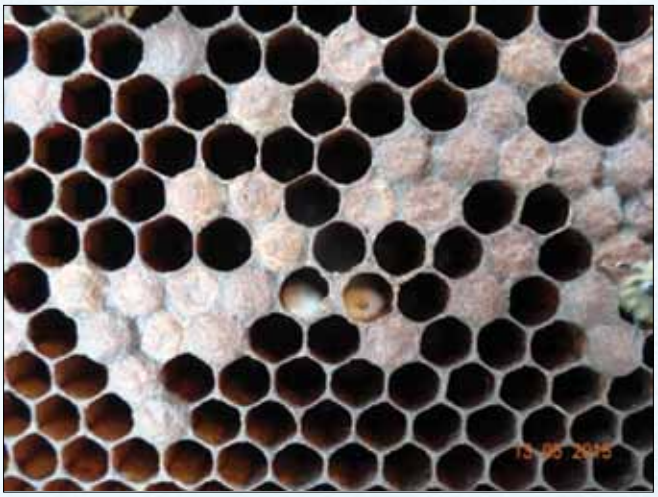
- Quantitative parameters were significantly higher in open pollinated plants

### Survey and surveillance of honeybee enemies and disease

- Wax moth, *Galleria melonella*, ectoparasitic mites, *V. destructor*, *T. clareae*; *T. koenigerum* and stored product mites, *Tyrophagus longior, Caloglyphus indica, Hypopus* and phoretic mites *Neocypholaelaps indica* and three species of wasp i.e., *Vespa mandarinia, Vespa tropica and Vespa basalis* were recorded as major pests of honeybees.



Sac Brood Virus disease



European Foulbrood disease

### Artificial domiciliation of Non – *Apis* pollinators *Xylocopa* species

- The solitary bee *Pithitis viridissima* have been domiciled
- Different nesting material viz., bamboo stems and castor stems of varying size have been tested for domestication and rearing of *Xylocopa* species
- More than 100 host plants species of *Apis florea* was recorded in Jammu region.

### AICRP on Linseed

- The linseed germplasm was evaluated against Linseed pod fly of the germplasm evaluated, Shekhar and Baner performed well against linseed bud fly and recorded the minimum damage of 3.69 and 3.93 per cent, respectively. Maggot flies were found laying eggs on flowering bud stage causing serious damage. Besides, bud fly damage, linseed crop was also found to be heavily attacked by *Helicoverpa armigera* larva. Pheromone traps were installed to monitor the *Helicoverpa* population in the field condition.
- **Conservation of lac insect genetic resources**

  Explorative survey conducted revealed the natural occurrence of lac insect from 7 locations viz. - Jammu campus, Jammu city, Akhnoor, Vijaypur, Kathua, Samba, Udhampur and Reasi. All collections were maintained in the gene bank at SKUAST Jammu. Brood lac farm was established. About 15kg brood was re-inoculated for brood production. Three collections did not survive due to excessive parasitisation
- **Scientific intervention for validation and popularization of traps for management of insect pests in vegetable growing areas of Jammu Region**

  An awareness cum training programme for farmers were organized at Village Pandorian (Mishriwalla) on March 11, 2016 in collaboration with Directorate of Agriculture, Jammu. More than 50 progressive farmers participated in awareness cum training programme. The farmers were emphasized to adopt the preventive and scientific methods to manage insect-pests of vegetable crops. The farmers were advised to adopt organic farming which promotes and enhances agro-eco system of health including bio diversity, biological cycles and soil biological activity.

## 3.1.3 Division of Agronomy

### Effect of fertility levels on yield of maize cultivars under irrigated conditions.

PMH-34 (hybrid) gave higher yield and found statistically at par with PMSY-3 (Composite) under irrigated conditions. Cultivar PMH-34 responded to a fertility level of N: 112.5: P:75: K:37.5 Kg/ha whereas the cultivar PMSY-3 responded up to N:90:P:60:K:30 kg/ha

### Effect of different weed management practices on growth and yield of direct seeded rice under aerobic conditions

The application of pendimethalin @ 1.0 kg/ha (PE) fb bispyribac-sodium @ 30 g/ha at 25 DAS fb fenoxaprop-p-ethyl @ 60 g/ha at 30 DAS recorded highest weed control efficiency and B:C ratio in direct seeded rice under aerobic conditions.(The data will be submitted for discussion in the ensuing RCM)

### Weedy Rice Management Strategies in Basmati Rice under Sub-tropical Irrigated Conditions of Jammu

Weedy rice density as well as weedy rice biomass/ $m^2$ was found to be lowest in the treatments involving stale seed-bed with different herbicides, although the stale seed-bed with glyphosate was found to be numerically superior among the three stale seed-bed treatments

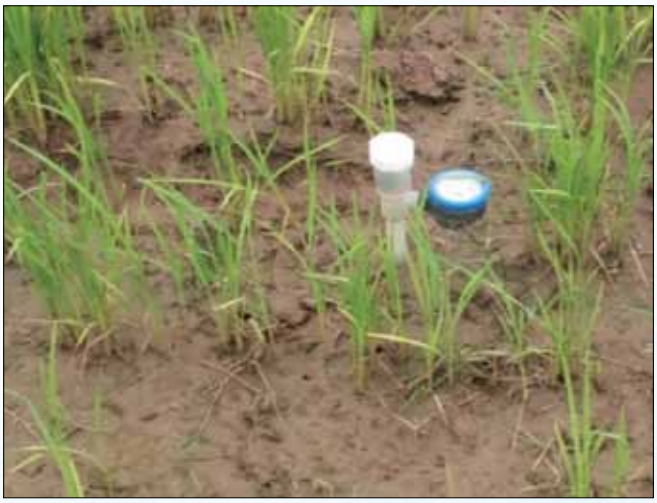
### Effect of Graded levels of N, P and K on growth, yield and quality of fine rice cultivar (*Oryza sativa*) under sub-tropical conditions.

Among the 24 different graded levels of N:P:K :: 50 kg N, 30 Kg $P_2O_5$ and 20 kg $K_2O$ has been adjudged as the best fertility level for higher yields, better quality and relative economics .

### Effect of Irrigation Scheduling on Growth, Yield and Quality of Direct Seeded Basmati Rice (*Oryza sativa* L.) Varieties

Data reveals comparable yield levels of normal transplanted rice (Control) with irrigation at 2 days interval through sprinkler at 150 % PE (Cumulative value of PE for 2 days) and irrigation/saturation at 0.3 bar suction at 15 cm depth.

Amongst varieties, Pusa-1509 recorded the highest grain yield followed by Pusa-1121 and Basmati-370. (Results of 1 year data)



Visual of Tension meter installed in the field

Visual of Sprinkler irrigation in the field

### Inegrated Farming System

**a. On Station**

**i. Development and validation of on station Integrated Farming System Research Model for small and medium farms toward livelihood security**

One ha. Integrated Farming System (IFS) model comprising of cropping systems (rice-wheat-greengram, 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 boundry crop and brocolii, knolkhol, cabbage, cauliflower, radish, okra as intercrops) in 0.32 ha + dairy (1 cow, 1 buffalo, 1 heifer) including bio-gas and vermicompost unit in 0.08 ha + fish cum poultry in 0.1 ha) + mushroom (dhingri & button) developed for the mid to high altitude plain zone (JK-1) in Western Himalayas

provides *round the year* production (21.52 t REY/year), profit (Rs 3.06 lakhs/year) and employment (731 man days/year). The maximum production and profit was realized in June (Table 1 & Fig 1) while employment was in May month signifying the work even during lean period. The model also meets around 85 % 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 (Fig 2).

**Cost of production, gross return, net return and employment generation under IFS model (1.0 ha)**

| Month | Total cost involved (Rs) | Gross return (Rs) | Net return (Rs) | Employment generated (Man days) |
|---|---|---|---|---|
| July | 27432 | 52335 | 24903 | 43 |
| August | 23435 | 27230 | 3795 | 59 |
| September | 16429 | 15536 | -893 | 51 |
| October | 13930 | 16500 | 2570 | 64 |
| November | 16813 | 13217 | -3596 | 61 |
| December | 27588 | 49561 | 21973 | 66 |
| January | 32452 | 71841 | 39389 | 70 |
| February | 32171 | 52278 | 20107 | 59 |
| March | 24574 | 62563 | 37989 | 63 |
| April | 16993 | 26006 | 9013 | 45 |
| May | 27163 | 71469 | 44306 | 91 |
| June | 38840 | 145490 | 106650 | 58 |
| Total | 297820 | 604026 | 306206 | 730 |

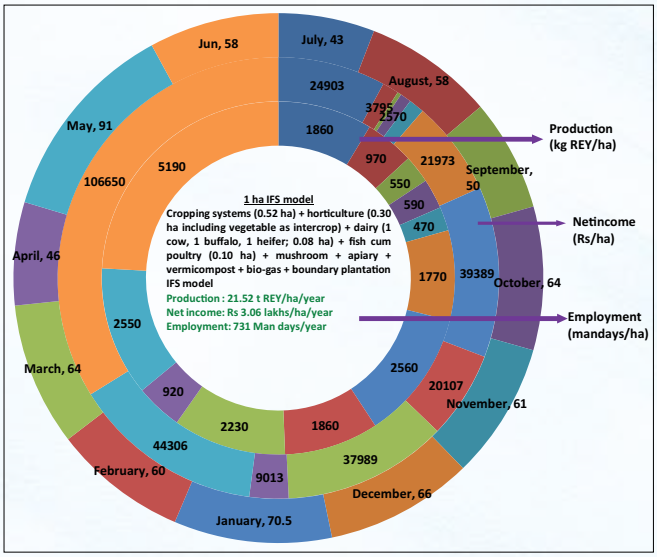



**Fig 1:** Integrated Farming System model for round the year production (kg REY/ha), profit (Rs/ha) and employment (man days/ha)

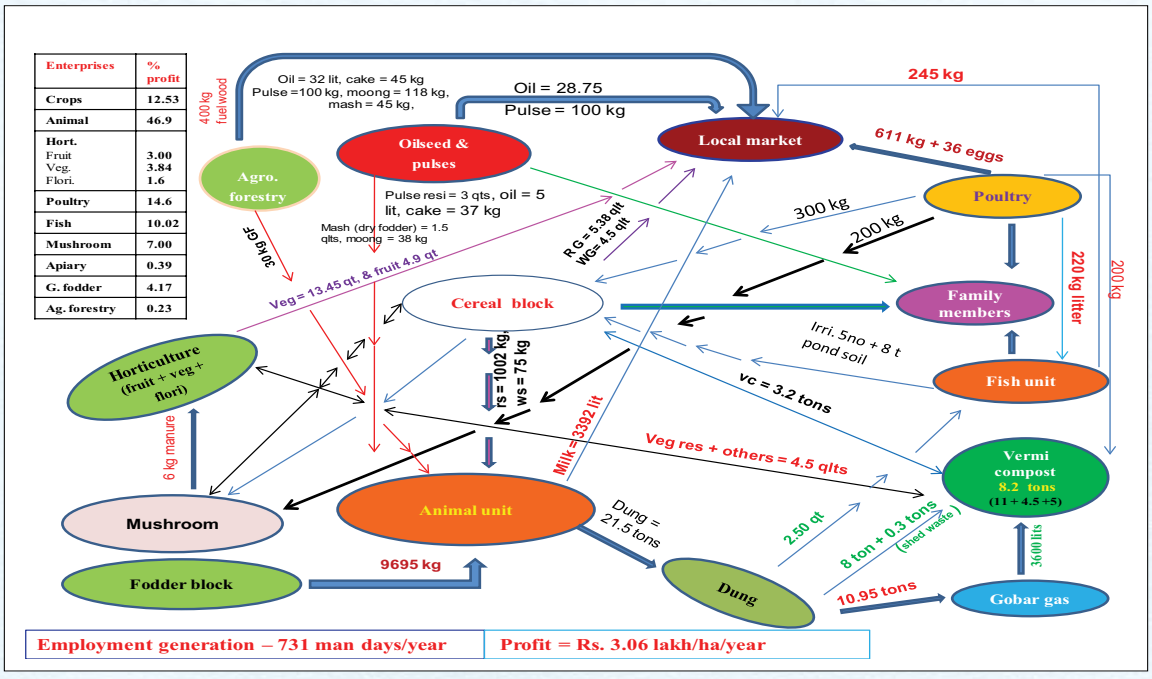



**Fig 2:** Recycling of inputs and output in the IFS model developed at Jammu (Jammu & Kashmir)

**ii. Development of organic farming package for system based high value crops**

Organic farming package for high value cropping sequence like rice-potato-Frenchbean is being developed for the last 5 years and found that the REY under the treatment where 100% recommended N was applied different organic sources each equivalent to 1/3 of recommended N through FYM +Vermi compost + Non edible oil cake was recorded at par with the treatment where 100% RDF was applied through fertilizer alone. The highest REY of 9.9 t/ha was recorded in $T_3$ and closely followed by $T_4$ (9.52 t/ha) where different organic sources each equivalent to 1/3 of N through FYM + Vermicompost + non edible oilcake (neem cake) were applied along with trap/ intercrop and adoption of agronomical practices for weed control. Soil organic carbon content was recorded higher in all the organic treatment which varied from 5.6g/kg soil to 8.0 g/kg soil over initial value of 5.1 g/kg soil. Available NPK content in soil was slightly enhanced where organic sources like FYM/vermi-compost/neemcake were applied. The microbial count was affected by the organic treatments, initial population of Fungi, bacteria and actionmycetes in experimental area was recorded 6.0, 12.0 and 10.0x$10^5$ CFU/g soil, respectively which was enhanced to all the treatment after 5$^{th}$ year of study period. The maximum count of Fungi (28x$10^5$ CFU/g) and bacteria (55x$10^5$ CFU/g) were recorded in plot where 50% recommended N through vermi-compost + bio-fertilizers + rock phosphate to substitute the P requirement + PSB were applied to each crop while the population of actinomycetes in the soil was recorded higher (17x$10^5$ CFU/g) under treatment $T_6$ where different organic sources like (FYM + vermi-compost + non-edible oil cake ) with VAM was applied to each crop.

**iii. Long term study on integrated plant nutrient management for rice-wheat system**

In long term fertility experiments the data of 30$^{th}$ cropping cycles of rice-wheat system revealed that the plots where no fertilizer was applied the lowest yield of rice (17.41q/ha) and wheat (14.33q/ha) were observed. However, the plots fertilized through integrated nutrient supply system i.e. 50% NPK through inorganic source + 50 % N through FYM ($T_6$) produced the higher yield of Rice (48.74 q/ha) and wheat (35.62 q/ha) over control and other treatments in comparison. The overall productivity of the system was also higher under $T_6$ (8.5 t/ha) followed by $T_7$, $T_8$ and $T_5$, respectively. Temporal changes of soil organic carbon content in long term study cleared showed that the content of SOC was increased under those treatments where organic sources like FYM, crop residue and green manuring was incorporated during *Kharif* season over a period of time. However, SOC content was decreased in control ($T_1$) and farmer's practice ($T_{12}$), while similar trend was also observed under ($T_5$) where 100% recommended NPK was applied through fertilizers. The initial value of available N, P and K was 456.10, 13.30 and 154.0 kg/ha. Although the available content of N and K decreased and P increased from the initial status. The higher value of available N (255.00 kg/ha) and P (24.60 kg/ha) was recorded in $T_6$ where 50% N was substituted with FYM in *Kharif* and K (128.35 kg/ha) in $T_8$ where 50% N was substituted with paddy straw in *Kharif*. The DTPA extractable micronutrients content (*Viz*; Mn, Fe and Cu) except Zn was recorded above their critical level in all the treatment including control and farmer practice. The range of DTPA Fe was varied from 13.71 mg/kg soil in control ($T_1$) to 47.60mg/kg in INM treatment where 50% N was substituted with FYM to rice and 100% NPK through fertilizers to wheat crop ($T_6$). Similarly DTPA extractable Mn was varied from 27.25 mg/kg soil in chemical fertilizer ($T_3$) to 44 mg/kg soil in INM treatment where 50% N was substituted with FYM in *Kharif* ($T_6$). While DTPA-Cu range varied from 0.743 mg/kg soil in $T_9$ to 1.03 mg/ kg soil in $T_6$ respectively. However, DTPA extractable Zn in soil under continuous rice-wheat cropping system varied from 0.33 mg/kg under treatment receiving 100% NPK in both crops ($T_5$) to 0.79 mg/kg under the treatment receiving 75% NPK through inorganic + 25% PS and 75% NPK through inorganic in wheat crop ($T_9$) closely followed by $T_6$ (0.76 mg/kg) when 50% NPK+50% N through FYM during *Kharif* followed by 100%NPK during rabi. The highest value in $T_9$ was closely at par with $T_6$. The Zn content in soil under continuous application of fertilizer alone as well as farmer practices where imbalanced fertilizer applied was below critical level under rice-wheat cropping and appreciable amount of Zn was build up under the treatment where inorganic fertilizer was applied with

organic in *Kharif* season only and inorganic fertilizer in *rabi* crop in system. It indicate that adoption of IPNN in long term basis in *Kharif* season realized higher productivity of rice and wheat in a system and would be the most practical viable technique and eco-friendly technology for crop production.

**iv. Diversification and intensification of need based alternative cropping system.**

The diversified cropping system like rice-broccoli-mash, rice-cabbage-onion, rice-knolkhol-tomato, rice-spinach-bhindi, and rice-marigold-french bean are the better choice for obtaining higher net return (Rs. 4.02, 3.98, 3.19, 3.06 and 2.85 lakh) and B:C ratio (Rs. 4.30, 3.53, 3.07, 2.97 and 2.61) as compared to existing rice-wheat cropping system under irrigated condition of Jammu region (net return of Rs.0.92 lakh and B:C ratio of 1.41). Similarly highest system profitability of Rs. 1101/ha/day was recorded under rice-broccoli-Mash followed by Rice-cabbage-onion (Rs. 1092/ha/day) and Rice-Knol-Khol-Tomato (Rs. 876/ha/day), respectively. Whereas land use efficiency and production efficiency was found highest 91.78% and 133.17 kg/ ha/day under Rice-Spinach-Okra and Rice-knolkhol-Tomato system. However soil organic carbon was build up to 6.4 g/kg soil under Rice-Potato-Maize-green gram over initial value of 5.5 g/ kg soil.

**b. On-Farm**

**i. On farm crop response to plant nutrient in predominant cropping system and their impact on crop-livestock human continuum.**

a. Application of NPK coupled with $ZnSO_4$ to rice, produced higher grain yield of rice (2705 kg/ha) and wheat (2616 kg/ha) with highest nutrients response of 18.24 kg rice and 7.57 kg wheat grain/kg of nutrient in a system, Where as 2205 kg of rice and 1998 kg of wheat under farmer practice was observed. The increase in gain yield over FP was 500 kg in rice and 618kg/ha in wheat in Rice-Wheat system.

b. Similarly in Maize-wheat cropping, higher MEY of 7976 kg/ha and nutrient response of 11.70 kg maize and 12.57 kg wheat grain/kg nutrients was recorded under NPK + $ZnSO_4$ to maize only. However, FP recorded 6286 kg/ha MEY with nutrient response of 17.50 kg maize and 9.45 kg wheat grain/kg nutrient applied and the increase in MEY over FP was 26.80 per cent.

**ii. Diversification of existing farming system under marginal household conditions.**

The interventions were made in crop (rice-wheat & maize-wheat) , livestock and product diversification. The net return of Rs 18381,17345,15189 and 14044 Per annum was realized by investing of Rs 3518, 3026, 3567 and 3006 as intervention cost in FC+D, FC+D+P, FC+D+G and FC+D+P+G, respectively.

**iii. On farm evaluation of farming system modules for improving profitability and livelihood of small and marginal farmers.**

The farming System Crop+ Dairy (0.84ha) realized net return of Rs 79891 before intervention and Increased to the tune of Rs 32175 in first year after intervention (8924) with the total net return of Rs 112066.

### 3.1.4 Division of Soil Science and Agriculture Chemistry

**Refinement and improvement of soil quality and water productivity enhancement technology in rainfed orchards of Jammu region:**

Application of 75% nutrients through inorganic sources coupled with 25% nutrients through organic sources + spray of micronutrients @ 2% increased the Soil Quality Index value of the rainfed orchards in the Shivaliks. The maximum Soil quality Index value was obtained for orchards of Billawar (0.84%) followed by Basohli (0.72%).

### 3.1.5 Division of Fruit Sciences

**Establishment of rootstock and bud-wood bank and their large scale production**

- Ten plants of Nematode resistant Peach Rootstock "Flordagaurd" have been introduced from PAU, Ludhiana and are being maintained at FoA, Udheywalla for further utilization for rootstock raising through cutting.
- Bud sticks of two soft Pear varieties *viz.*"Nijesskki"&"Punjab soft" were procured from PAU Ludhiana and fifteen grafts of each variety have been prepared and are being maintained

at FoA, Udheywalla. These grafted plants will be maintained as mother plants for further multiplication of these two varieties of soft pear.

- Ten plants of Pomegranate Variety "Mridula" have been introduced from PAU, Ludhiana and are being maintained at Faulty of Agriculture, Udheywalla for further use as mother plants for multiplication of this variety.
- Thirty six plants of fig Variety "Brown Turkey" have been introduced from PAU, Ludhiana .Out of thirty six plants 3 plants have been planted at Raj Bhawan and rest are being maintained at FoA Udheywalla for further use as mother plants for multiplication of this variety.
- Fifteen plants of Papaya hybrid "Red lady" have been introduced and planted at Raj Bhawan as per their letter no. HDO/RB/2015-16/108-09 dated 2/2/2016.

**MOTHER BLOCKS OF VARIOUS FRUIT CROPS AT FOA UDHEYWALLA**

Litchi collection block

Citrus collection block



Grape collection block

Mango collection block

Kinnow collection block

## ROOTSTOCK RAISING OF VARIOUS FRUIT CROPS AT FOA UDHEYWALLA

Treatment of Peach cuttings with IBA

Planting of Peach cuttings at FoA, Udheywalla

Rootstock raising in peach through cuttings

Citrus rootstock


Rootstock raising in peach through cuttings

Citrus rootstock

- The bud wood bank of different fruit crops, established at Research Orchard, Udheywalla and Raya are being maintained for bud-wood production which include citrus, mango, guava, peach, pear, pomegranate, aonla, grape and ber.
- Rootstock raising of citrus, mango, guava, peach, pear and aonla is in progress.
- A research trial has been laid out under the project for standardization of IBA concentration for rootstock raising of peach through cuttings under Jammu conditions.

### Domestication of naturally occurring and wild relatives of some fruits for specific horticultural trait(s)

Surveyed Kishtwar, Reasi, Bani, Billawar, Rajouri areas for identification of naturally occurring wild fruits. The bud wood of these wild types was collected and planted in the Experimental block of ACHR, Udheywalla for further evaluation


Tamarillo fruits in Manjakote area of Rajouri district


Plant of Tamarillo


Collection of fig cuttings from Rajouri


Collection of Pomegranate Cuttings
Doul area of Kishtwar


Collection of grape cuttings from the
Dool area of Kishtwar


A promising strain of Pomegranate from
Dool area of Kishtwar


A progressive farmer


Locally grown promising strain of grape
at Galhar area of Kishtwar


Collection Block of Grapes at Udheywalla


Collection of Promising strains of locally grown Fig

## High density orcharding of mango and guava in Jammu Sub-tropics

- High density demonstration unit of guava was laid out at FoA, Division of Fruit Science, SKUAST-J, Udheywalla, Jammu
- Planting time: March, 2015.
- Spacing under HDP : 3m x 1.5 m (Row to row x plant to plant)

- Guava plants planted under HDP demonstration unit : 250 plants

### Demonstration Unit - II

1) Planting time: March, 2016
2) Number of plants : 144 number
3) Spacing under HDP : 3.0m x 4.0 m

**Following steps have been taken for High density orchard establishment:-**

- Cleaning of site/location from weed and other deadwood stubs.
- Clearing and levelling of experimental land with JCB.
- Tractorization of land/site for deep ploughing.
- Levelling of land/site.
- Layout of land/site for ultra high density orchard establishment.
- Pit digging (50 cm x 50 cm x 50 cm) at marked locations.
- Spraying of chlropyriphos in the dugged pits to protect the plants from termite attack.
- Mixing of well rotten FYM w +ith the dugged soil.
- Filling of pits with dugged soil.
- Planting of seedling rootstocks for *insitu* grafting/ budding of guava.
- Irrigation of the orchard through flood irrigation.
- Basin preparation around the plants during every month.
- Irrigation of the orchard twice a week.
- Pruning of outward branches.
- Staking of the plants for their upright direction.
- Spray of NAA for better vegetative growth.
- Spray of chemicals for disease and pest control.
- Weeding and hoeing of the orchard.

### Demonstration unit -iii

- High density demonstration unit of guava was laid out at organic farm, FoA, SKUAST-J, Chatha, Jammu at a spacing of 6 m x 3 m (Row to row x plant to plant)

**Raising of guava high density planting material**

- Grafting and budding operations of 5000 no.'s rootstocks have been done for propagation of quality planting material at ACHR, Udheywalla, SKUAST-Jammu for high density plantation of guava

**Development of aonla based cropping system for Jammu sub tropics**

- Selected Aonla Orchard in Sambha was intercropped with Marigold and vegetables crops (cucumber, red cabbage, broccoli, and brinjal) was done with the recommended spacing as per the Package and Practices, SKUAST-J.
- Intercropping of vegetable crops (peas, onion, bottle gourd, French bean) in aonla orchard at Village Palwan District, Akhnoor was done.
- Cultural practices and Gap filling of Phalsa was done at Farmers Field at Village Palwan District, Akhnoor.


Intercroppiong of $F_1$ Marigold & Brinjal in Aonla Orchard of Mr. Rampal at Village Swankha, Vijapur

**Training and demonstration on rejuvenation of old/ unproductive orchards in Jammu sub-tropics**

- Three training cum demonstration programmes on rejuvenation of unproductive/ senile aonla orchards were taken at Nai Basti Akhnoor, Chainpura Kathua and Sial Jattan Udhampur during 2015-2016 wherein, the orchardists were briefed about after care of rejuvenated trees so as to get maximum yield of good quality from unproductive/ senile aonla orchards.
- Use of Copper-oxychloride for protection against fungus or insects after cutting of trees was also demonstrated**.**
- Use of plastic black polythene mulch in the basins of rejuvenated orchards was demonstrated to the farmers as it will help to conserve moisture as well as reduce the incidence of shoot borer.
- Farmers were also demonstrated about the after care of newly emerged shoots as well as patch budding technique.

**Establishment of nuts center in intermediate agro-climatic zone of Jammu province to augment requirement of quality planting material**

- Eight thousand walnut rootstocks are grafted with superior varieties of walnut at RARS Rajouri under RKVY project nut center procured from RHRS Baderwah, Kishtwar and Mughal nursery Rajouri.
- Three thousand pecan nut rootstocks are grafted with superior scion woods of various varieties viz., Western Shelly, Mahan, Nellis, Clero etc. procured from CSKHPV, Palampur, H.P. at RARS Rajouri under RKVY project nut center.
- Installed five low cost polyhouses at RARS, Rajouri which were procured from Agriculture Research Engineer, Govt. Agriculture Workshop, Talab Tillo, Jammu for raising of rootstocks of walnut and pecan nut.
- Ten thousand rootstocks of walnut are procured from Department of Horticulture, J&K Government and Mughal Nursery Rajouri and planted these rootstocks of walnut at Regional Agricultural Research Station Rajouri, SKUAST-Jammu for establishment and for further grafting purpose with elite type scions of walnut.
- Eight thousand rootstocks of Pecan nut procured from Department of Horticulture, J&K Government and CSKHPKV, Palmpur, H.P. and planted these rootstocks of pecan nut at Regional Agricultural Research Station Rajouri, SKUAST-Jammu for establishment and for further grafting purpose with elite type scions of pecan nut.
- 1.6 quintals walnut and 0.30 quintal pecan nut seeds were scarified and stratification for breaking the dormancy of seeds.
- The treated seeds sown under low cost polyhouses and under open field conditions at RARS, Rajouri for germination.

Stratification of walnut seeds

Pecan nut seedlings under low cost polyhouses

**Establishment of Hi-tech mother plant nursery for high pedigree planting material of citrus and guava.**

- **Land development:** The nursery and mother block area of citrus and guava measuring about 1 hac was cultivated and irrigation cum drainage channels were dug thoughout the nursery and mother block area.
- **Irrigation facility:** One tubewell was installed on the area adjoining mother plant nursery of high pedigree at FoA, Udheywalla for irrigating the nursery and mother block.
- **Import of rootstock and sowing of seed and raising rootstock:** Twenty thousand good quality seedling rootstock of guava and citrus were imported and planted in the nursery area.
- **Virus indexing facility:** Virus indexing facility through ELISA for citrus has been developed at Division of Fruit Science, Chatha, Jammu.
- **Vermi-compost:** Vermi-compost unit comprising of four trenches, 6m long constructed during the financial year and are functional.
- **High density plantation of guava cultivar Shweta:** New high density mother block of guava cultivar Shweta was established adjoining nursery area.

## 3.1.6 Division of Sericulture

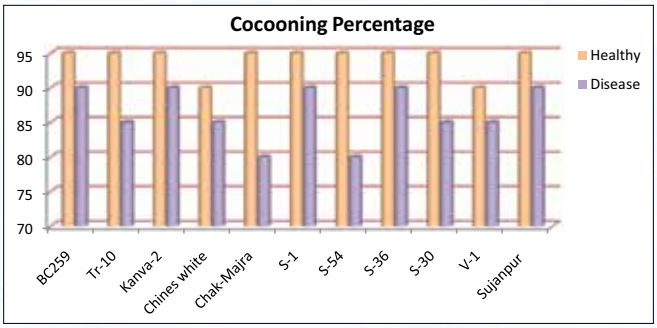
### Introduction, conservation and evaluation of mulberry germplasm:

Under this experiment 19 mulberry varieties were evaluated for six important commercial parameters. Nine mulberry varieties viz. LUN-10 followed by LF-1, Tr-10, NS-1, Chinese white, S-30, S146,Tr-4 and V-1 were found better for important commercial characters.

### Screening of mulberry cultivars for leaf rust and its influence on economic parameters of silkworm rearing :

Eleven popular mulberry genotypes namely: BC-259, Tr-10, Kanva-2, Chak-Majra Chinese White, S-1, S-54, S-36, S-30, V-1 and Sujanpur were screened for rust infestation. No symptoms of rust disease was observed in spring season. The symptoms of the disease appeared during autumn rearing commencing from 1st week of October onwards. The data generated is submitted as under: Mulberry variety BC259 followed by Chak –Majra, Sujanpur, S54 and S1 showed > 50 per cent disease index (PDI). Least rust disease was recorded in mulberry variety S-30 followed by S-36, Tr10, V-1 and Kanva-2.

Rust infested leaves were fed to silkworms and adverse affect was observed for all economic rearing parameters. The data generated was compared with feeding of healthy mulberry leaves to silkworms.




## 3.1.7 Division of Agroforestry

### Conservation, Production and Sustainable Management of Shatavar (*Asparagus racemosus* Willd.) (R&D/JK-01/2013)

Plant height of 20 accessions of shatavar ranged between 2.83m-3.60m, but did not varied significantly from each other. Number of tubers per plant varied from131.00-300.67. Minimum number of tubers plant was recorded in accession IC471920 whereas, maximum was in IC471923. After two years of planting, highest fresh tuber weight per plant of 3.84 kg was recorded in accession 1C471923 which was at par with the fresh tuber weight per plant of 3.73kg (IC471922) and 3.71 kg (IC471911). Minimum fresh tuber weight per plant (1.28 kg) was observed in accession IC471920. Maximum dry tuber weight per plant of 397.60g was registered in accession 1C471923 whereas, minimum dry tubers weight per plant of 130.88g was observed in accession IC471920.

### Inter-cropping studies on short rotation tree species like Poplar and Eucalyptus under sub-tropics of Jammu

Field evaluation of different clones of Poplar (*Poplar deltoides*) spacing of 5m x 4m at Chatha revealed that maximum survival (80%) was recorded

in Udai and $WSL_{22}$. Average plant height (5.39uj m) was observed to be maximum in WSL-22. The average maximum collar diameter (36.10cm) was also recorded for WSL-32

### 3.1.8 Division of Plant Pathology

The plant growth promoting rhizobacteria (PGPR) isolates collected from different agro-climatic/ cropping systems of Jammu and Kashmir State exhibited the production of indole acetic acid (IAA), gibberlic acid, hydrogen cyanide (HCN) and siderophore which can be further exploited for the preparation of bio-inoculants.

### 3.1.9 Division of Vegetable Science And Floriculture

- Vegetable production techniques under raised and sunken bed technology.


- Flower production techniques under raised and sunken bed technology


- Technology dissemination through on farm demonstration for production of exotic vegetables like chinese cabbage, pak choi, lettuce (Green), lettuce (red), red cabbage, celery, asparagus, swiss chard and broccoli.


Chinese cabbage


Pak choi


Lettuce (Green)


Lettuce (Red)


Red cabbage


Celery


Lettuce (Red)


Red cabbage

Celery

## Varieties bred and nominated for evaluation under AICRP (VC) and AINRPOG

### Cherry tomato (SJCT-01)

SJCT-01 is a selection from local collections from North Western Himalayan region. The variety is indeterminate (150 – 180 cm) with red colored fruits bearing in clusters of 15–18/plant and each Cluster with 5 – 8 fruits of 5– 7 g each. The fruit yield is about 6 t/ha.

### White Radish (SJWR-01)

Inbred developed out of the cross between All Season X Local White. Root shape tapering which is 25-30 cm long, 3-4 cm in diameter with root weight of 150-200 g, giving yields of 400-450 q/ha. It has 20-25 leaves/root, dull white skin colour with no pithiness and it takes 45-50 days for marketable stage. Elongate non-branching stem, supporting compact auxiliary buds, semi erect leaf habit. Field resistance against *Alternaria* leaf spot and field tolerant to serious insect pests.

### Red Radish (SJRR-01)

Inbred developed out of the material collected from the foot hills of Shivaliks and Pir Panjal of Jammu region. The variety has 17 leaves/root which are serrated and semi erect in behaviour. Root shape tapering, skin colour pinkish red with 20-25 cm length and 13-15 cm circumference and root weight is 160-180 g, giving yields upto 380-400 q/ha. It takes 50-60 days for market. Field resistance against *Alternaria* leaf spot and field tolerant to serious insect pest.

**Garlic (SJG-12-02)**

The variety is a selection from the local germplasm with a yield potential of 120 q/ha. It has pinkish white cloves with ovate bulb shape having 17-20 cloves/ bulb. It takes 190 days to harvest after sowing. It is tolerant to blight and major pests of the area.

### New introduction in ornamental / flower crops

**Ornithogalum:**

Ornithogalum (*Ornithogalum thyrsoides*) commonly known as chincherinchee, star-of-Bethlehem or wonder-flower is a bulbous flower of exquisite beauty. The leaves are lance-shaped and smooth in texture. Flowers are white or creamy-white, usually with a brown or green centre and appear in February to March months. Ornithogalum is commercially propagated by bulbs. The best time for planting bulb is mid October under Jammu conditions. It takes about 120-150 days from planting to production of spikes. A single bulb produces an average of 3-4 flower grade bulblets in the next season depending on its size.

Ornithogalum

## 3.1.10 Division of Agricultural Engineering

### Establishment of Testing Centre For Farm Machinery & Equipments at SKUAST-Jammu

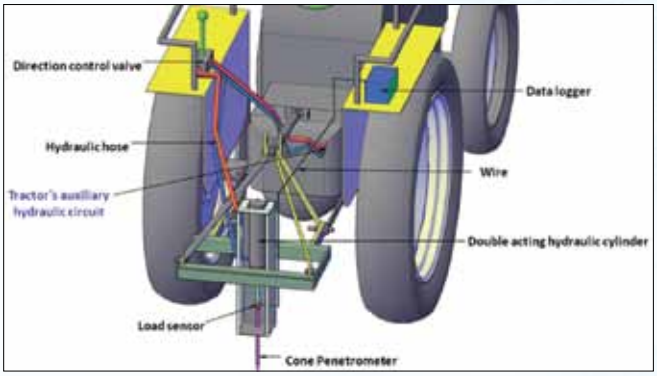
Farm Machinery Testing Center is now made operational for testing of various types of farm machinery and equipments.

**Development and Evaluation of Automatic Timer Based Variable Speed Device For Sprinkler System**

A customized Automated Timer Based Electronic Variable Speed Device has been developed under a DST funded Adhoc project. This device can be easily fitted with commonly available electric irrigation pumps and compatible with the available makes and model of sprinkler irrigation system. Initially, the system was tested under laboratory conditions and after testing-modification-testing procedures and successfully testing the prototype; now it has been tested under the field conditions. Sprinkler irrigation with variable speed device is being done on wheat crop at Chatha farm. The water and energy saving and cost-benefits analysis of the system will be calculated.

### Design and Development of A Tractor Operated Soil Compaction Measurement Device

The first prototype of the machine was developed and soil samples for soil compaction were taken by core cutter of university farm Chatha, Jammu. A lab model of the hydraulic circuit was designed for lab testing and demonstration purpose. The sensors were procured and calibrated for the testing purpose and a new frame for the machine with 3-point hitch system was designed for better performance. The final version of the machine was developed after modifications based on repeated testing. The sensors and recording instruments were replaced as per the modified requirement and the testing was carried out of the developed machine in different locations of Jammu region. The machine was successfully developed and tested.




The Sketch of designed Machine

The team members with developed machine

### 3.1.11 Division of Food Science & Technology

- For extracting best quality juice, the bael pulp can be treated with 240ppm (0.024%) of pectinase enzyme at 45°C for 4.5 hours, improved juice yield by 29.45%.
- Best quality wine and vermouth can be developed from bael and strawberry fruits along with 2 percent spice extract having volatile acidity, reducing sugars, ethanol, total phenols and antimicrobial activity as 0.018%, 0.53%, 11.35% v/v, 0.78 mg/100ml and 76.42m mol/100ml for wine and 0.030%, 0.64%, 16.53%(v/v) 0.50mg/100ml and 28.14mmol/100ml for vermouth respectively.
- Mushrooms were dipped for 10 minutes in various concentrations of hydrogen peroxide., EDTA, citric acid, sodium erythorbate, surface dried, packed in polypropylene (PP) and stored under refrigerated conditions and it was observed that mushrooms treated with 2.5% citric acid was organoleptically acceptable upto 12th day of storage with over

all of acceptability off 7.45 whereas control was acceptable upto 6th day with overall acceptability of 6.07.

- The effect of four desiccants, viz. silica gel. Sorbitl, citric acid nd $CaCl_2$, on the shelf life of mushroom packaged in LDPE pouches and stored under refrigerated condition revealed that 5g of sorbitol/100g of mushroom was observed to be the best treatment for maintaining the quality.
- Steeping of mushroom in 2% NaCl + 2% Sugar + 0.3 citric acid 0.1% KMS+ 1% ascorbic acid was found to be the best in extending shelf life of mushrooms upto 80 days of storage where as control was acceptable only upto 20 days.
- Best quality Aloe vera-jamun drink can be developed by blending aloe vera and jamun juice in equal proporitions
- Litchi juice can be blended with 25 per cent beet root juice for preparing best quality of RTS beverage and leather having shelf life of 90 and 365 days, respectively
- Cardamom flavoured aonla *ladoos* (*cv*. NA-7) prepared with refined sugar can be stored for more than 90 days.

Processing of strawberry into wine

Bael wine

- Whey based herbal pineapple beverage can be prepared by blending whey and pineapple juice in the ratio of 70:30 ratio and the beverage had shelf life of 50 days under refrigerated conditions.

Fermentation in progress

Strawberry wine

Aonla *ladoo*

Steeped mushrooms

### 3.1.12 Agricultural Economics & Agri Business Management

**Economic Efficiency of vegetable crop production and their marketing pattern under Sub-Tropical conditions of Jammu division**

- The study was conducted on Cauliflower, Cabbage and Knolkhol. The per acre overall operational cost on cauliflower production was Rs. 16004.91, Rs.15238.19 and Rs. 15658.92 , respectively for Jammu, Samba and Udhampur districts; on cabbage production was Rs. 24519, Rs. 24303 and Rs. 24467 respectively for Jammu, Samba and Udhampur districts; and on knolkhol production was Rs. 141.76, Rs. 133.33 and Rs. 114.26 respectively for Jammu, Udhampur and

Samba districts.

- In case of cauliflower, the producer's of Samba district received the highest net price of Rs. 782.97/ qtl, Rs. 848.10/qtl and Rs. 900.16/qtl which was 60.49 percent, 65.52 per cent and 96.74 per cent, of the price paid by the consumer in channel I, II and III resp. In case of cabbage, the producer's of Udhampur district received the highest net price of Rs. 452.16/qtl, Rs. 492.14/qtl and Rs. 574.60/ qtl which was 52.88 percent, 56.58 per cent and 95.89 per cent, of the price paid by the consumer in channel I, II and III resp. In case of knolkhol, the producer's of Samba district received the highest net price of Rs. 403.24/qtl, Rs. 438.61/qtl and Rs. 476.53/qtl which was 52.57 percent, 57.419 per cent and 94.31 per cent, of the price paid by the consumer in channel I, II and III resp.

**Diagnostic study of farmers in context of price spread analysis, marketing pattern and assessment of agricultural diversification in Chenani block of Udhampur district**

- As far as cereal crops are concerned, it does not provide much return to the farmers of the area. Moreover, vegetables are most profitable crops of the area and farmers are getting better returns from these. Climate of the area is also suitable for growing walnut, bei, apricot, plum, apple etc. Moreover, area is famous for the production of amlook which is having religious importance as it is used in prashads.
- Farmers of Bashat area in particular are facing a specific problem that is road connectively from their fields to roadside. The fields are not well connected to the road and the link is in dilapidated conditions which force them to transport the produce through human labour which in turn increases their cost resulting in decline in their profit.

## 3.2 Faculty of Basic Sciences

### 3.2.1 Division of Biochemistry

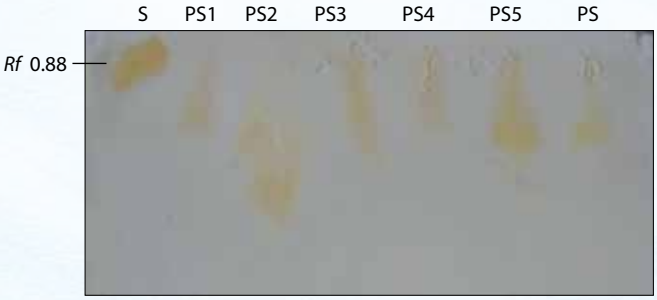
**Biochemical constituents of *Pleurotus* spp for nutritional assessment**

- Biochemical constituents of *Pleurotus* spp for nutritional assessment was conducted in the Division. The biochemical constituents which were analysed in five different *Pleurotus* species rangein differtent parameters. Lycopene (0.014to00.15mg/ gdwt), Carotenoid (0.015-0.258mg/100gdwt), Total phenol (533 to 903mg/100gdwt), Flavonoid (12.24 to 25.53 mg/100gdwt), Phytate (0.121 to 0.162mg/100gdwt), Oxalate(0.024to 0.054g 100gdwt), saponin( 0.027to 0.036 g/100gdwt) etc)

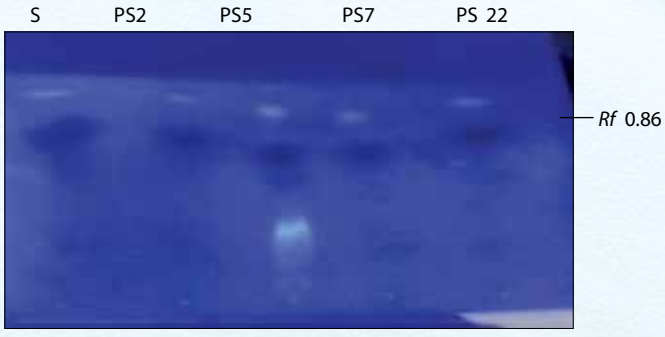
Findings: ***P. florida*** **was found to be best on the basis of nutritional quality.**

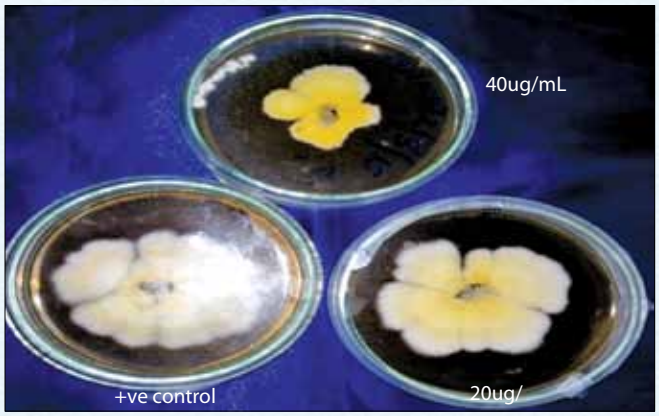
**Exploiting Pseudomonas species of Jammu region on the basis of biochemical determinants**

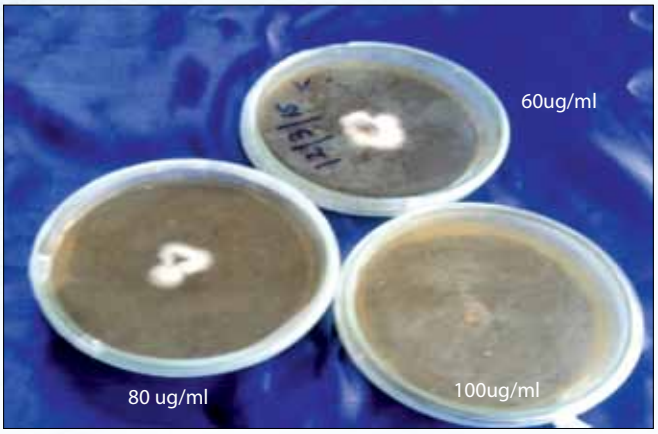
- Antibiotic production and validation was done of the strains which were moderate to good antibiotic producer on fungal pathogen




2,4 DAPG spot on TLC






Minimum Inhibitory concentration (MIC) of antibiotics from PS 22 strain of Pseudomonas

**Findings:** Strain PS 22 was found to be better antibiotic producers which showed 100 per cent inhibition of fungal pathogen at a concentration of 100 ug/ mL which can be exploited as biocontrol agent.

## Evaluation of medicinal plants of Jammu region: Possible anticancer role using *in vitro* cytotoxicity assays

### *Mallotus philippnensis* and *Momordica charantia* possess *in vitro* cytotoxic effect against human cancer cells.

A polyphenolic compound isolated from the fruits of *Mallotus philippnensis* suppressed the proliferation of eight human cancer cell lines from five different tissues (colon, cervical, lung, liver, ovarian) and proved its exceptionally remarkable *in vitro* anticancer efficiency

**Desi karela** of Jammu showed 100% growth inhibition against lung cancer cells and 99% growth inhibition against breast cancer cells

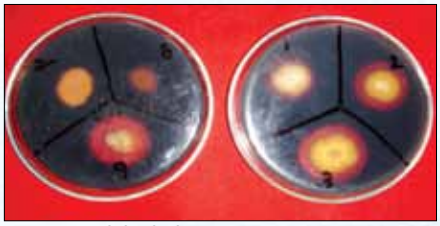
*Mallotus philippnensis* (Kamala, Sinduria)

*Momordica charantia* (Karela)

## Isolation of heat resistant amylase producing efficient *Bacillus* species from Jammu soil for industrial application

*Bacillus* species isolated (in MYP agar) from soil samples of different mill disposals of Jammu region were purified and characterized for amylase activity at high temperature. Out of 30 species assessed ,the *Bacillus* isolate labeled as NBS-9 was found to have highest amylase activity (2.851 µmole /mg / min ) at 60 degree C & pH 7.0 and is considered as most potential bacillus species as amylase source for industrial application at high temperature.

Biochemical tests for Identifying Bacillus sp



Starch hydrolysis test (+ve reaction)

Gelatin hydrolysis test (+ve reaction)

Simmon's citrate test (+ve reaction)

H2S production test (+ve reaction)

Urease test (-ve reaction)

Casein hydrolysis test (+ve reaction)

## Biochemical assessment of EMS- Mutagen effects on Pseudomonas species

*Pseudomonas* species isolated from Jammu soil were assessed in context of their biocontrol properties after Ethyl methane sulphonate (EMS) induced mutation. The biocontrol function in terms of activities of cell degrading enzymes viz. chitinase, lipase and protease and antibiotic 2,4 –DAPG

production abilities. EMS mutation caused significant improvement of these enzyme activities in all species from their control values. However, a little or negligible impact of mutagen was observed on antibiotic 2,4 DAPG production. On the basis overall observations, *Pseudomonas* PS-11 is considered as most potential mutant having highest chitinase, protease and lipase activities at wider range of pH and able to survive at high temperature(55 ° C).

### 3.2.2 Division of Plant Physiology

#### Physiological responses of brassica genotype under drought stress condition

The mustard variety RB-55 was taken and drought stress treatments were given by withholding of water for 07, 13, 19 and 25 days. Morphological characters viz., plant height, no. of leaves, no. of branches and leaf area was significantly lower in all the water stress treated plants in reference to control. Chlorophyll content (SPAD reading) was observed to be maximum in control plants (53.5) while in stressed plants the content was reduced; 07 days(45.65), 13 days (41.20), 19 days(32.05) & 25days (25.20). Relative Water Content was observed to be highest (82.28%) in control plants, but decreased to 67.21%, 64.35, 54.20%, and 42.80% in 07, 13, 19 and 25 days of stress respectively. Phenotypically plant showed flacid in nature whereas after addition of water they become survive with lesser performance. Aphid population slightly increased under mild stress but decreased with severe stress condition in comparison to control plants.

Different days to withholding

25 days withholding of water

- **Abiotic stress tolerance in field/horticultural crops**:

  The work is being carried out on enhancing Physiological efficiency in filed/horticultural crops.

- **Morphogenesis studies**

  Infrastructure established for carrying out work on morphogenesis and hormonal studies besides invitro propagation in agri-horticulture crops

## 3.3 Faculty of Veterinary Sciences & Animal Husbandry

### 3.3.1 Division of Animal Genetics and Breeding

#### Phenotypic Characterization and Study on some Haemato-Biochemical Parameters of Bakerwali Goat

The mean body weight at birth, 3, 6, 12 and 18 months were 3.37kg, 13.94kg, 22.12kg, 28.12kg and 36.96kg, respectively in male Bakerwali goats. The results showed that white colour was prevalent and the population is of medium size with 67.47 cm BL, 69.98 cm CG, and 64.39 cm HW. The corresponding values in females were 3.06kg, 12.60kg, 20.18kg, 25.27kg and 31.95kg. There was highly significant effect ($P < 0.01$) of sex, age group (birth, 3 months, 6 months, 12 months and 18 months differ significantly among each other), while colour pattern and head pattern had no significant effect on body weight.

#### Characterization of Bakerwali Goat

Three districts namely Kathua, Rajouri and Reasi were surveyed and it was observed that the farmers rearing the goat population are mainly belong to Muslim, Bakerwal, Gujjar, Chopan, Pahari and other Schedule tribes. The goat is semi-migratory in nature and present in high land Pasture from April-May to September and downhill Pasture from October to March-April. Coat colour is Black, White, Black & White-predominantly. Average birth weight of male is 2.07 kg whereas; in females it was 1.99 kg. Body weight of adult male is (1yr and above) is 36.39 kg. The goat is mainly of chevon purpose. The average daily milk yield is 1017.89 gm. Age at maturity is 14. 57 months and Age at first kidding is 24.76 months.

#### Characterization and Conservation of Poonchi Sheep

Three districts namely Poonch, Rajouri and Reasi were surveyed and it was observed that the farmers

rearing the sheep population are mainly belong to Muslim, Bakerwal, Gujjar, Chopan, Pahari and other Schedule tribes. The sheep is semi-migratory in nature and present in high land Pasture from April-May to September and downhill Pasture from October to March-April. Coat color is Black, Black & White-predominantly. Average 0-6 month body weight of male is 8.73 kg whereas; in females it was 7.71 kg. Body weight of adult male and female (1yr and above) are 35.68 kg and 33.83 kg, respectively. The sheep is mainly mutton purpose and carpet wool breed. The average staple length and fibre diameter were 3.73±0.15cm and 24.99±0.23 µ, respectively. Age at maturity is 10-24 months and Age at first kidding is 23.44 months. Rams are selected from farmers. These selected rams are being provided with antihelmintic drugs against various parasitic diseases from time to time. They are also provided with mineral mixture for better management of the livestock.

### 3.3.2 Division of Animal Nutrition

#### Augmenting Utilization of Paddy Straw in Ruminant Ration:

The locally cultivated varieties of paddy straw were evaluated regarding their nutrient and anti-nutrient profile, response to treatments and *in vivo* utilization by goats as model ruminants. Twelve varieties of paddy straw were collected from University farm and nearby areas and were analysed for proximate principles, calcium, phosphorus, fiber fractions and incriminating factors (silica, lignin and oxalate). *In vitro* gas production technique was employed to evaluate *in vitro* degradability of untreated, water soaked, urea-ammoniated and concentrate supplemented straw samples. Varieties differed significantly in terms of proximate composition, fibre fractions and anti-nutritional factors despite their common agro-climatic and geological origin. IVDMD of different varieties varied from 40.32±0.33 to 50.68±0.49. These varieties respond differently to treatments with urea-ammoniation leveling up the degradability differences among different varieties. SJR-5, K-39, Giza-14 and Basmati-564 varieties were selected for *in vivo* trial, wherein four groups of three goats each were fed a specific variety of straw *ad libitum* supplemented with concentrate mixture for a period of 30 days that include a six days metabolism trial during last week of respective feeding period. Thereafter varieties were rotated as per switch over design. The periodic live weight of experimental animals, daily dry matter and organic matter intake, nutrient digestibility and nitrogen balance remained comparable among different groups, irrespective of the variety fed. However, ADF digestibility and calcium balance differed significantly between groups with significantly lower ADF digestibility in K-343 variety and significantly higher calcium balance in Basmati-564 fed group. It may be concluded that varietal differences exist among locally available paddy straw in terms of chemical composition, anti-nutritional factors and *in vitro* DM degradability and varieties also differ in their response to water soaking, urea treatment and concentrate supplementation. Further, *in vivo* utilization of studied paddy straw varieties differed in their ADF digestibility and calcium balance without impacting the feed intake and utilization of other nutrients.

### 3.3.3 Division of Livestock Products Technology

#### Development of designer chicken nuggets fortified with herbal extracts of *Bacopa monnieri* and *Ocimum sanctum*

The present study was undertaken to explore the antioxidant properties of locally available herbs viz. *Bacopa monnieri* and *Ocimum sanctum* in enhancing the shelf-life of chicken nuggets. Meat products are very vulnerable to spoilage due to excessive fats and protein contents. Therefore, chicken nuggets fortified with 1, 2, and 3% of extracts of *Bacopa monnieri* and *Ocimum sanctum* along with control was studied to explore the potency of these locally available herbs on oxidative stability and storage quality of chicken nuggets on 0, 7, 14 and 21 days in refrigerated (4±1$^0$C) condition. Extracts of *Bacopa monnieri* and *Ocimum sanctum* were prepared and incorporated in chicken nuggets. The ethanolic: aqueous (80: 20) and (90:10) extracts of *Bacopa mnonnieri sp.* and *Ocimum sanctum sp*. respectively were used in preparation of value added chicken nuggets. Chicken nuggets prepared with 2% of *Bacoppa monnieri* and 3% *Ocimum sanctum* were adjudged to the best among all based on sensory attributes. Chicken nuggets fortified with extracts of *Bacopa monnieri* and *Ocimum sanctum*

were safe for consumption till 21 days at refrigerated storage (4±1˚C) on the basis of pH, FFA, TBARS, microbiological profile and sensory evaluation of chicken nuggets. The developed designer chicken nuggets could be conveniently packed in LDPE for a period of 21 days in refrigerated (4±1$^0$C) condition without any marked loss of physico-chemical, microbial and sensory quality.

### *Artemisia nilagirica* L. and *Mentha longifolia* L. extract fortified designer fish nuggets

The present study was experimented to explore antioxidant potential of herb viz. *Artemisia nilagirica* L. and *Mentha longifolia* L. in elongating the shelf life of emulsion based fish product viz. fish nuggets. Since the fish meat used contains excessive fat and protein content, they were vulnerable to spoilage due to proteolysis and lipolysis. Fish nuggets incorporated with 0% (Control), 1%, 2%, and 3% of *Artemisia nilagirica* L. extract along with control was studied to explore the potential of *Artemisia nilagirica* L. and *Mentha longifolia* L. on oxidative stability and storage quality of aerobically packaged fish nuggets at refrigeration temp on 0, 7, 14 and 21$^{st}$ day. Aqueous ethanolic extract of *Artemisia nilagirica* L. and *Mentha longifolia* L. was prepared, standardized, optimized and incorporated in fish nuggets. Fish nuggets prepared with *Artemisia nilagirica* L. and *Mentha longifolia* L. (1%) extract were recorded to be the best among all based on various sensory attributes. Extract of *Artemisia nilagirica* L. and *Mentha longifolia* L. fortified fish nuggets were safe for human consumption till 21$^{st}$ day of refrigeration (4±1)˚C storage under aerobically packaging on the basis of TBA value, FFA value, microbiological profile and sensory evaluation. The possible application of *Artemisia nilagirica* extract and *Mentha longifolia* L. (1%) as a natural source of antioxidant in development of value added fish nuggets with potential health benefits without affecting any sensory attributes of the products.

### Quality attributes of *Papaver somniferum* (poppy seeds) incorporated mutton, poultry and fish nuggets

Efficacy of *Papaver somniferum* viz. poppy seed paste fortification in mutton, chicken and fish nuggets was analyzed for its physico-chemical attributes and its oxidative stability during refrigeration storage. It was also done to extend its shelf-life and enhance its nutritive value. The standardization and optimization of chicken, mutton and fish nuggets was done by substituting 0% (control), 5%, 10% and 15% level of poppy seed paste with lean meat (wt./wt.). The developed products were evaluated based on physico-chemical, proximate, sensory and storage quality parameters on 0$^{th}$, 7$^{th}$, 14$^{th}$ and 21$^{st}$ day during refrigeration storage at (4±1°C). The use of ground poppy seed in mutton, chicken and fish nuggets formulation had no effect on moisture and pH content. However, it had significant ($p<0.05$) effect on lowering fat content, increasing protein content, higher emulsion stability and higher cooking yield in the developed designer product. The developed designer functional nuggets having 10% ground poppy seed in mutton nuggets, 15% ground poppy seed in chicken nuggets and 5% ground poppy seed in fish nuggets were having significantly ($p<0.05$) better sensory scores as compared to other variants. The ground poppy seed treated chicken, mutton and fish nuggets were having significantly ($p<0.05$) lower TBA and FFA value. The microbial load of developed product was also recorded significantly ($p<0.05$) lower. The chicken, mutton and fish nugget prepared with fortification of ground poppy seed was found to be suitable for human consumption even on 21$^{st}$ day of its refrigeration storage based on TBA, FFA, microbiological and sensory profile. Thus, mutton, chicken and fish nuggets with good to very good acceptability were developed with incorporation of ground poppy (*Papaver somniferum*) seed in it.

## 3.3.4 Division of Veterinary & Animal Husbandry Extension Education

### Meat Hygiene and Associated Health Hazard Awareness Among Butchers, Meat retailers and Consumers in Jammu district of Jammu and Kashmir

The study was conducted in Jammu district of Jammu and Kashmir with a view to find out the awareness of meat hygiene and associated health hazards among butchers, meat retailers and consumers. The data was collected randomly from thirty butchers, thirty meat retailers and one hundred twenty consumers of Jammu district with the help of structured interview schedule containing selected

dependent and independent variables, through personal interview technique. Majority of the respondents were middle aged with poor education. Male members of general and other backward castes were observed in this profession. Most of them had 5 to 10 years of experience, medium workload and without formal training. All the respondents had meat retailing as major occupation while butchery work at slaughter houses was the subsidiary occupation of majority of butchers and meat retailers. Urban location, lack of important infrastructure and poor condition of existing buildings results in production of unhygienic meat. Authorities do not make regular inspection for hygienic maintenance of buildings, facilities and processing of carcasses. Primitive instruments were used which reduced working efficiency. Retail meat shops lacked in many important facilities. Illiteracy, low income and lack of facilities resulted in poor personal hygiene of meat handlers. Majority of meat handlers were aware of the public health significance of their business. Few had limited knowledge about cross contamination and presence of microorganisms in meat. Most of respondents were against meat inspection. Meat handlers were aware about bird flu, rabies and tuberculosis. Awareness regarding some important specific meat borne diseases (except bird flu) was poor. They were willing to undergo government funded short duration training at their own workplace. Most of the consumers preferred chicken meat twice in a week and consumption was enhanced during winter and rainy seasons while due to religious sentiments some consumers avoided consuming meat on specific days. A significant proportion of respondents showed reduction in the consumption of chicken and eggs due to the fear of bird flu outbreak. Meat consumers were aware about zoonotic disease like bird flu, rabies and tuberculosis. But they lack information regarding transmission of these diseases through handling meat consumption. Consumers preferred information on price, quality and freshness while purchasing meat. Thus, the study reveals that there is an urgent necessity to create awareness regarding meat hygiene and associated health hazards among meat handlers and consumers.

### Web Module for Dissemination of Need Based Scientific Dairy Practices Among Farmers

The appearance of the Internet and the incredibly rapid development of highly sophisticated computer and telecommunication technology have made the world a global village in a real sense. As the traditional livestock extension mechanism for transfer of technology have numerous limitations, so the IT enabled extension tools and techniques have become an unavoidable necessity for organizations especially those involved in technology transfer. In this context the study entitled "Web module for dissemination of need based scientific dairy practices (WMSDP) among farmers" was undertaken for designing a need based web module on scientific dairy practices after analyzing the existing knowledge level of dairy farmers as well as assessment and prioritization of information needs as perceived by dairy farmers themselves and also by the dairy experts/scientists pertaining to scientific dairy practices in Jammu district of J& K state. The study was also conducted to identify and document the constraints in adoption of scientific dairy practices by following the traditional methods of extension communication as perceived by scientists and farmers. The total sample size comprised of 120 dairy farmers and 20 dairy experts/ scientists. On analysis of existing knowledge level of dairy farmers, it was revealed that majority (69.16%) of the respondents had medium level of knowledge pertaining to scientific dairy practices. The assessed and prioritized information needs of dairy farmers were found in the following order of importance or preference: Health care management, Fodder production and management, General management, Nutrition and feeding and Breeding and reproduction. After prioritization of information needs, an interactive IT enabled need based web module on scientific dairy practices (WMSDP) was developed using Microsoft tools: Microsoft Visual Studio.net (2010). The developed web module consists of comprehensive information on scientific dairy practices covering important aspects like health care management, fodder production and management, general management, nutrition, feeding, breeding, reproduction and miscellaneous items like livestock insurance, dairy entrepreneurship development schemes, dairy economics etc. The major constraints in adoption of scientific dairy practices by following the traditional methods of extension communication as perceived by dairy farmers were 'Need based information not available', 'Outdated information

is provided through the traditional methods', 'Poor public relation of extension workers' etc whereas, major constraints perceived by scientists were 'Lack of sufficient motivated extension workers at grass root level', 'Lack of sufficient extension aids, tools and techniques in the department of animal husbandry and other line departments', 'Traditional methods of extension are not much interactive' etc. To overcome all these technical, institutional as well as field level constraints in technology dissemination and adoption, the developed web module WMSDP can be used by uploading it on University website and also 'Village Information Kiosks' uploaded with WMSDP can be placed at prominent places in villages. The study concluded with the impression that the developed web module will be effective among the farmers and to a major extent will solve the problems of need based information on scientific dairy practices.

### 3.3.5 Division of Veterinary Anatomy

#### Anatomical studies on the adrenal gland of adult Bakerwali goat

The study was conducted on adrenal gland of adult Bakerwali goat. Biometrical measurements were recorded and analyzed statistically. The adrenal glands were paired ductless glands situated in the roof of the abdomen. The right adrenal gland was pyramidal in shape and left one was curved and elongated.

The capsule was mainly comprised of collagen fibers, enriched with reticular fibers. Many sympathetic ganglia were seen outside the capsule in the form of spheroidal and fusiform bodies. The cortex consisted of three zones i.e. zona glomerulosa, zona fasciculate and zona reticularis. The total cortical thickness was recorded more in left adrenal gland (2769.58±49.70) than right adrenal gland (2502.35±42.18). Zona glomerulosa had two parts: the superficial zona glomerulosa and deep zona glomerulosa. The zona glomerulosa exhibited intense reactivity for mucopolysaccharide and for lipid granules. The zona fasciculate was broadest zone (503.82 ± 26.28µm) of the adrenal cortex .The percentage of cortical area occupied by this zone was 55.40% in right adrenal gland and 54.29% in left adrenal gland. This intracapsular and extracapsular accessory adrenal nodules were found in the present study.

The adrenal nodules have been surrounded by the capsule of dense irregular connective tissue fibers mainly comprised of collagen fibers and reticular fibers. The medulla was composed of chromaffin cells. Two zones were clearly seen in the adrenal medulla i.e. the outer zone and inner zone comprised of light and dark cells respectively. The central vain was lined by endothelial cells supported by collagen and fine reticular fibers. The medullary cells were seen discharging their secretions into the central vein by a secretory duct. The sympathetic ganglions were present in the adrenal gland at two locations, outside the capsule and in the adrenal medulla near to central vein. The ganglions were arranged in clusters.

#### Anatomical studies on the internal female genitalia of adult Bakerwali goat in different phases of estrus cycle

The study was conducted on internal female genitalia of 50 apparently healthy female non pregnant cyclic adult (2-3 years of age) Bakerwali goat divided into follicular and luteal phase. After conducting gross studies histological, micrometrical and histochmical observations were made from sections obtained from different parts of the female genitalia. The width, thickness of left ovary and length of left oviduct was significantly higher than the right one in luteal phase. Few binucleated primary follicles were seen in ovaries of adult Bakerwali goat. The mean diameter of the graiffian follicle was 1558.70± 83.08 µm. In luteal phase well developed single or double corpora lutea was observed. Three types of luteal cells. i.e. Large, small and spindle shaped cells were observed each having light and dark types. The mean diameter of large cells and small cells were 29.43 ± 0.69 µm and 14.04±0.29 µm respectively. The mean length of spindle shaped cells was30.70± 1.08 µm. Strong reaction for AMPS, lipid and mild cholesterol reaction was observed in all types of luteal cells. In ovarian medulla hilar cells were seen scattered in between blood vessels surrounded by collagen and reticular fibres were strongly positive for PAS and lipids. Oviduct comprised of three parts-infundibulum, ampulla and isthmus. Mucosal folds were maximum in tubual part of infundibulum, less in ampulla and least in isthmus. The thickness of tunica mucosa, tunica muscularis of oviduct increases towards the isthmus and was significantly higher

in luteal phase of estrus cycle whereas height of epithelium was significantly higher in luteal phase but decreased towards the layer of muscles in the terminal part of isthmus. In follicular and luteal phase the apical borders of lining epithelium showed strong PAS positive reaction and strong lipid reaction. Oviductal glands had higher glandular diameter, epithelium height and nuclear height in luteal phase than in follicular phase. The cytoplasm of glandular and lining epithelia showed moderate reactivity with Alcial Blue. The uterus consisted of two uterine horns, body of uterus and cervix uteri. The length of free parts of left cornu was higher than the right one. In uterine horns the mucosal folds lie in close apposition to each other as compared to uterine body. The mean height of the epithelium, less in follicular phase and increased towards the corpus uteri. Both in uterine horn and uterine body proliferation of endometrial glands was seen in follicular phase whereas in luteal phase the glands became compact and where seen in secretory phase. Number of endometrial glands were more in uterine body than uterine horn. Thickness of myometrium increases from free parts of uterine horn to fixed part of uterine horn to uterine body. In both uterine horn and body the glandular epithelium, nuclear height and glandular diameter of uterine glands was significantly higher in follicular phase of estrus cycle. In luteal phase strong lipid reaction was seen in apical, basal borders of endometrial. The reactivity was more intense in the endometrial glands of uterine body. The cervical crypts of opposite side lie in close apposition with each other but did not interdigitate. The core folds composed of thick collagen fibres reinforced with fine reticular fibres extended up to tip of cervical crypt. Most of the cervical crypts had broad luminal end. Many apical blebs, luminal secretions were observed in follicular phase. Intense PAS reaction was seen in the supranuclear zone of lining and glandular epithelium.

## 3.3.6 Division of Veterinary Gynaecology and Obstetrics

### Clinical investigations and therapeutic approaches in canine pyometra

The study on canine pyometra was conducted to assess the alteration in clinico-haematobiochemical status and to evaluate the response to various treatment protocols. Signalment and history recording of 14 bitches was followed by clinical examination, ultrasonography and blood sampling. In group I (n=4), Dinoprost tromethamine was administered intravaginally in a progressively increasing dose @ 100-250 µg/kg for 5 days. In Group II (n=4) Mifepristone @ 2.5mg/kg orally on day 1, 2, 8 and 15 (if required) and s/c Dinoprost was administered in an progressively increasing dose @ 50-150 µg/kg from day 3 to 7, whereas bitches of group III (n=4) were subjected to ovariohysterectomy. Antibiotherapy was instituted in all the bitches from the day 1. Vulvar discharge, inappetance, polydipsia, polyuria, vomition, and paresis were most common clinical signs. At presentation, uterine diameters ranged from 1.3 to 5.0 cm; leukocytosis, neutrophilia and lymphopenia were present in more than 3/4th bitches and BUN, creatinine, and ALP were elevated in 50-75% bitches. Ten bitches had plasma P4 concentration above basal (> 1.0 ng/ml) level.Medical treatment was successful in 87% bitches with reversal of clinical signs. Two closed pyometra cases became open within 48 hrs of Mifepristone therapy. Uterine diameters decreased to ≤1.1 cm by day 14 in all dogs except one which had ovarian cysts. Intravaginal administration of PGF2α had lesser and milder side effects. The mean hematobiochemical parameters returned to normal by day 10-14 post treatment in all groups. The progesterone concentration decreased to basal by day 10-14 in group I and III but not in group II. Recurrence was found in one (14.28%) medically treated bitch at next diestrus. Out of the four operated bitches, one died after three weeks while others recovered.

### Induction of estrus in anestrus buffalo heifers using crestar ear implant with or without antioxidants

The present study was carried out to study the effect of Crestar ear implant with or without antioxidants (vitamin E & selenium) on haemato-biochemical profile, estrus induction response and oxidative stress parameters in anestrus buffalo heifers located in different villages of R. S. Pura tehsil of Jammu district. A total of 18 anestrus buffalo heifers were selected and equally divided into three groups. Group I animals were kept as control, Group II animals were treated with Crestar protocol and Group III animals were treated with Crestar protocol plus

one intramuscular injection of vit. E-Care-Se (50 mg α-tocopheryl acetate and 1.5 mg selenium per ml) at the dose rate of 1ml/50 kg b.wt. on day 0. The mean globulin concentration in Group II were lower on day 0 and increased non-significantly (P>0.05) on day 9, at the time of AI and 60 days post AI, respectively. The mean globulin concentration in Group III were higher on day 0 and decreased non-significantly (P>0.05) on day 9 and at the time of AI but increased non-significantly (P>0.05) 60 days post AI.

Estrus induction response was 100% in treated animals. Mean time required for onset of estrus was 30.40±1.00 h and 29.65±0.46 h and mean duration of estrus was 27.9±1.42 h and 21.0±0.63 h in Group II and III, respectively. The estrus was intense in 16.66% and 33.33%, intermediate in 33.33% and 33.33% and weak in 50.00% and 33.33% in Group II and III, respectively. The pregnancy rates in Group I, II and III were 0.00%, 50.00% and 66.66%, respectively. Lipid peroxidation (LPO), superoxide dismutase (SOD) and glutathione peroxidase (GPx) levels decreased non-significant (P>0.05) whereas catalase (CAT) activity increased significantly (P<0.05) in anestrus buffalo heifers when treated with Crestar protocol either alone or in combination with vitamin E and Se.

### Studies on Estrus induction in acyclic cross bred heifers

The present investigation was aimed to study estrus induction in 24 acyclic cross bred heifers in different villages of R. S. Pura area of Jammu district. Acyclic cross bred heifers were treated with three standard hormonal protocols (Crestar, CIDR and Ovsynch n= 6 each), and the findings were compared with a group of acyclic control heifers (n=6). All the heifers (100 %) under Crestar, CIDR, and Ovsynch protocols exhibited induced estrus with prominent, moderate or weak estrus signs within mean onset of 22.33 ±1.22, 48.33 ±1.08 and 19.5 ± 1.99 hrs, and estrus duration of 25.33±2.30, 22.16±1.74 and 16.33±1.08 hrs, respectively. The overall pregnancy rates obtained in Crestar, CIDR and Ovsynch protocols were 66.67, 66.67and 50.00 %, respectively. In untreated anestrus control, none of the heifers exhibited estrus within 90 days of follow up. In all the treatment groups hematobiochemical parameters viz Hb, TEC, PCV, TP, Albumin and cholesterol were lower on the day of start of treatment and increased significantly (P<0.05) on the day of estrus whereas globulin and mineral values of Ca, P, Cu, Zn, and Fe increased non-significantly (P>0.05) on the day of estrus than on the day of start of treatment. The mean values of MCV, MCH and MCHC in all groups differed non- significantly (P>0.05) from the day of start of treatment to the day of estrus. The overall mean plasma progesterone concentration was higher on the day of start of treatment and decreased non-significantly (P>0.05) on the day of estrus. Thus, Crestar / CIDR / Ovsynch protocols can be conveniently used to improve fertility in anestrus heifers by the practicing veterinarians.

## 3.3.7 Division of Veterinary Physiology & Biochemistry

### Comparative study of seasonal influence on various physiological and milk composition parameters in dairy cattle and buffalo

The study was conducted on dairy animals (crossbred dairy cattle & buffaloes) of Samba region maintained in a organized dairy farm with the objective to compare the seasonal influences on physiological parameters, total lactation yield & milk composition between cattle & buffalo during third lactation.

The study was conducted in three different season i.e. Dry Hot Summer (April-June), Humid Hot Summer (July-September) & winter (December-February). The physiological parameters and THI were calculated on the basis of environmental parameters. Milk samples were collected at 15 days interval to analyze its constituents like protein, fat, SNF, lactose & MUN by standard protocols.

Total milk yield was found to be higher during winter season as compared to dry hot summer and hot humid summer season. Total milk yield showed a decreasing trend with increase in THI (Temperature Humidity Index). Milk fat and solid not fat content varied with season with the highest value during winter season in both crossbred cattle and buffalo. All the milk component parameters differ significantly during different season between cattle and buffalo except for total solid contents.

## 3.3.8 Division of Veterinary Public Health & Epidemiology

### Seroprevalence studies on brucellosis in animals and humans

A total of 79 serum samples comprising of 55 sheep, 13 cattle, 3dogs and 8 human samples were collected and subjected to Rose Bengal Plate Test and Standard Tube Agglutination test for diagnosis of brucellosis. A total of 25 (13 sheep and 12 goats) and 6 samples (4 sheep and 2 goats) were found positive for brucellosis by RBPT and STAT, respectively. None of the samples of dogs and humans was found positive by RBPT and STAT.

### Studies on Hygienic Status of Retail Poultry Outlets in Jammu with special reference to zoonotically important bacteria

A total of 55 poultry samples including raw chicken and poultry cloacal swabs were analyzed for *Staphylococcus aureus* and *E. coli*.

12% samples were positive for *S. aureus*.

17% samples were positive for *E.coli*.

### Studies on hygienic quality of milk with special reference to zoonotically important pathogens

On analysis of 150 milk samples (100 cows and 50 goats) by Modified California Mastitis Test, subclinical mastitis was detected in 41% and 20% of cows and goats, respectively.

*S. aureus* was found to be the predominant organism.

Culture Sensitivity Test revealed gentamicin and enrofloxacin to be the effective antibiotics against isolates.

### Studies on hygienic assessment of ready to eat foods with special reference to *B. cereus*

A cross sectional study on microbiological quality and exposure assessment of *B.cereus* in ready to eat (RTE) foods was conducted. Total 156 samples (40 boiled rice, 36 ice-cream, 32 momos, 24 kalaari and 24 steamed corn) collected from vendors and retail shops from east, west, north and central zones of Jammu city were processed for Standard Plate Count (SPC), Coliform Count (CC), Yeast and Mould Count (YMC) and *Bacillus cereus* Count (BCC). Result showed log cfu/g of SPC, CC, YMC and BCC for boiled rice (n=40) as 4.7±0.11, 2.27±0.29, 3.96±0.66 and 1.71±0.25, respectively. Highest prevalence of *B.cereus* was in boiled rice (55 %) followed by ice-cream (41.6%), momos (37.5%), steamed corn (20.83 %) and kalaari (25%) samples. Mean exposure of *B.cereus* per serving in veg. momos found higher ($1.9\times10^5$) then ice-cream samples ($9\times10^4$) per serving. *B. cereus* isolates were highly sensitive to gentamicin (100%), cipropfloxacin (98.3%). High resistance against penicillin-G (100%) and cephalexin (91.16%) was observed. The MAR indices of *B.cereus* isolates were found in the range of 0.2-0.7. High contamination levels of RTE foods may be of public health concern warranting strict hygienic control.

### Physico-chemical and bacteriological evaluation of drinking water in and around Jammu

A total of 112 water samples from tawi river Pre-filtration (n=16), Post filtration water (n=16), household supplies (n=12), ponds and wells of kandi area and border belt (n=6 each) in both summer and rainy season were analysed. All the parameters were within the parameters set for pH, temperature, hardness, chloride, nitrate, nitrite, dissolved oxygen, free carbon dioxide except for the magnesium which was above the permissible limit in both summer and rainy season in Tawi river (pre filtration) water. None of the samples complied with bacteriological standards for total Coliforms (TC), Faecal Coliforms (FC), Faecal *Streptococcus* (FS) and *Clostridium perfringens* (CP). During summer season, the values of TC, FC, FS, CP were highest (1359, 164, 664, 604 MPN/100ml respectively) in pre filtration Tawi river water and lowest (5.6, 3.5, 5.43 and 4.91 MPN/100ml respectively) in post filtration water. During rainy season also, the values of TC, FC, FS, CP were highest (2391, 227, 858 and 716 MPN/100ml respectively) in pre filtration Tawi river water and lowest (9.4, 6.2, 9.0 and 8.6 MPN/100ml respectively) in post filtration water. SPC/ml was highest for Tawi river (pre filtration) water ($6.2\times10^6$) in rainy season and lowest for post filtration water ($1.049\times10^3$) in summer season.

### Prevalence studies on *Salmonella* species in

### human diarrheic cases

The present investigation was carried out to study the prevalence of *Salmonella* species in human diarrheic cases in different areas of Jammu district. A total of 200 diarrheic samples were processed for the presence of *Salmonella* out of which 5 samples were found positive for *Salmonella* with an overall prevalence of 2.5 per cent. The prevalence was higher in females (3 per cent) as compared to males (2 per cent). The patients of age group of <1-19 years (3.12 per cent) showed the highest prevalence, followed by patients of age group of 19- 49 years (2.85 per cent). The prevalence was higher in farmers/workers (4 per cent) followed by students (2.5 per cent). Diarrhea and fever were present in all the 5 positive patients. All the 5 isolates were confirmed at National *Salmonella* Centre, IVRI as *Salmonella* Typhimurium. All the 5 isolates were sensitive to ciprofloxacin, co-trimazole, chloramphenical and ceftriazone. However, the isolates showed resistance towards penicillin and streptomycin. Alcoholic leaf extract of *Alstonia scholaris* at the concentration of 100µg was the most effective against *Salmonella* Typhimurium and the activity of alcoholic leaf extract decreased as the concentration decreased. Aqueous leaf extract of *Alstonia scholaris* showed no antibacterial activity against *Salmonella* Typhimurium.

### Exposure assessment studies of *Staphylococcus aureus* for milk and kalaadi (an indigenous milk product)

Studied the Exposure assessment of *Staphylococcus aureus* for raw milk (bulk tank chillers) and Kalaadi (an indigenous milk product). 52(17.33%) samples yielded *S. aureus* with 12 (8%) from Kalaadi and 40(26.6%) from raw milk samples. 5 samples (1 Kalaadi and 4 raw milk) exhibited counts higher than the microbiological standards for S. aureus (ICMSF) i.e. 105 cfu/g. Out of 52 *S. aureus* isolates, 16 (30.76%) were MRSA including 3 from Kalaadi and 13 from raw milk. *S. aureus* isolates showed high sensitivity to ciprofloxacin (53.8%), ceftriaxone (51.9%), gentamicin (46.1%) and ceftriaxone+tazobactum (42.3%) while high resistance was shown towards ampicillin (42.3%) and enrofloxacin (36.5%). Experimental trial was also conducted to assess the survivability and growth prospects of *S. aureus* during Kalaadi preparation using milk spiked with *S. aureus*@$10^5$ cfu/ml. There was a continuous decline in moisture % from day 0 to 7, while pH was above 5.00 throughout the study period. *S. aureus* count increased from $1.7x10^4$ cfu/g on day 0 to $2.6 x10^5$ cfu/g on day.

## 3.3.9 Division of Veterinary Parasitology

### Molecular characterization of *Cryptosporidium* spp. in small ruminants with special reference to *Cryptosporidium ubiquitum*

*Cryptosporidium* is one of the most prevalent enteric protozoan parasites infecting a wide range of host species. From India, the genetic diversity of *Cryptosporidium* spp. in cattle has been reported in many studies but information in small ruminants is scanty. In the present study faecal samples of 262 pre weaned lambs and goat kids (90 diarrhoeic and 172 non diarrhoeic), aged 1-3 months old were collected from government and privately owned sheep and goat farms of Jammu region. Microscopical screening of faecal samples after diethyl ether sedimentation technique followed by modified Zeihl-Neelsen stain revealed presence of *Cryptosporidium* oocysts in 27.09% (71/262) animals. The prevalence was non significant between lambs (30.46%, 39/128) and goat kids (27.61%, 37/134). As per age, highest infection was recorded in <1 months animals (38.20%), followed by 1-2 months (28.20%) and 2-3 months (15.78%) animals. Significantly ($p<0.05$) higher infection was observed among diarrhoeic animals (35.55%) than the non diarrhoeic animals (22.67%). The samples found positive by acid fast staining were subjected to molecular characterization by a nested PCR of the small subunit rRNA gene (18S). The resulted 830 bp amplicon was exposed to restriction fragment polymorphism analysis with SspI, and VspI restriction enzymes. The PCR-RFLP showed that 56.57% (43/71) animals were infected with *Cryptosporidium parvum,* whereas 39.43% (28/71) animals were positive for *Cryptosporidium ubiquitum.* This is the first report of *C. ubiquitum* in goat kids of India. Infection of *C. ubiquitum* from any host species in India was recently reported from lambs of the same study area. The results of the present study conclude that identification of *Cryptosporidium* in small ruminants warrants better care of farm animals to avoid contamination and illness in susceptible population.

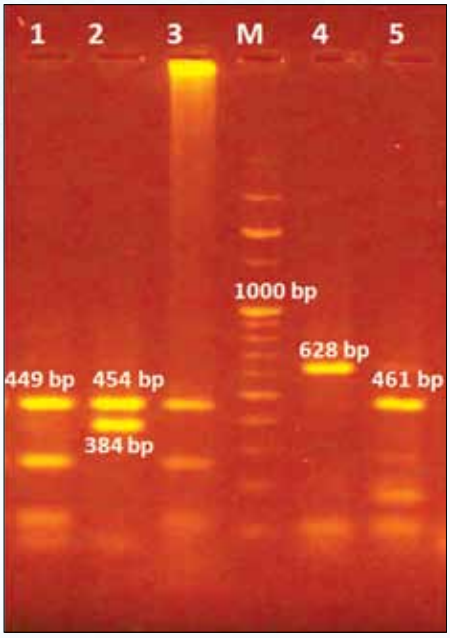



**Fig.1.** RFLP Pattern of *C. parvum* and *C. ubiquitum* based on 18S SSU rRNA gene PCR product

Lane 1, 3-Digestion with Ssp1, positive for *C. parvum*

Lane 4- Digestion with Vsp1, positive for *C. parvum*

Lane 2 & 5- Digestion with Ssp1 & Vsp1, respectively positive for *C. ubiquitum*

### Subgenotyping of *Cryptosporidium parvum* isolates in pre-weaned cattle calves of Jammu and Kashmir

Cryptosporidiois caused by *Cryptosporidium parvum* has been considered to be a zoonotic disease and therefore is of potential significance from both disease and public health prospective. Transmission of *C. parvum* from farm animals to humans has been documented in many cases and so to understand the transmission dynamics of the zoonotic cryptosporidioisis the present study was planned. Examination of 200 faecal samples of cattle calves by modified Ziehl Neelsen stain revealed presence of *Cryptosporidium* oocysts in 48.5% pre-weaned cattle calves of J&K. Highest prevalence was recorded in calves of age group 16-30 days (62%) than other age groups. Diarrhoeic calves revealed significantly higher prevalence (59%) than non diarrhoeic calves (38%). Prevalence was highest (68%) in winter months from December to February. Cattle calves having mucus in the faeces showed significantly higher prevalence (81.15%) of *Cryptosporidium* infection than those having blood in faeces (9.67%). Male calves showed significantly higher prevalence (62.5%) than female calves (41.91%). Genetic characterisation of 40 samples found positive by mZN was carried using molecular techniques. Nested PCR of 18S small subunit (SSU) rRNA gene of *Cryptosporidium* spp. amplified a product of 830 bp secondary PCR. RFLP analysis of nested PCR product by three restriction enzymes namely *Ssp*I, *Vsp*I and *Mbo*II was carried and only one species namely *C. parvum* was found to infect pre-weaned cattle calves. DNA of 20 positive samples were amplified targeting glycoprotein 60 gene, wherein *C. parvum* yielded clear band at 850 bp. Cloning and sequencing was performed. Molecular phylogenetic analysis of these sequences showed that these *C. parvum* isolates belonged to one subtype family i.e. family IIa. Eighteen of the *C. parvum* specimens belonged to the subtype IIaA15G2R1, whereas two specimens belonged to subtype IIaA14G2R1. Both subtypes reported are zoonotic in nature.

### Detection of acaricide resistance against organophosphates, pyrethroid and amidines in *Rhipicephalus (Boophilus) microplus* collected from Jammu region

Detection of resistance levels against malathion(at 1250, 2500, 5000, 10,000 and 20,000 ppm) and amitraz (62.5, 125, 250, 500 and 1000 ppm) in *Rhipicephalus* (*Boophilus*) *microplus*,collected from four districts (Jammu, Samba, Rajouri and Udhampur) was carried out using adult immersion test (AIT). In AIT, the regression graphs of probit mortality of ticks plotted against log values of concentration of drug were utilised for the determination of slope of mortality, lethal concentration for 50% ($LC_{50}$) and 95% ($LC_{95}$) with confidence intervals, and resistance factor (RF). On the basis of the data generated on variables (mortality, egg mass weight, reproductive index and percentage inhibition of oviposition), the resistance level (RL) was categorised as I, II, III and IV. Out of these four districts, resistance to malathion was detected at level I in Udhampur (RF = 4.01) and Jammu isolates (RF = 1.76), while Rajouri (RF = 0.472) and Samba (RF = 0.199) isolates were found susceptible, whereas resistance to amitraz was detected at level I in Udhampur (RF = 2.81), Jammu (RF = 2.53) and Samba (RF = 2.24), while Rajouri isolate found susceptible (RF = 1.0).

The tick *Rhipicephalus* (*Boophilus*) *microplus* collected from four districts (Jammu, Samba, Kathua and Doda) was also evaluated against diazinon (at 150, 300, 600, 1200 and 2400 ppm) and fenvalerate (100, 200, 400, 800 and 1600 ppm) AIT. Resistance in ticks against diazinon was found to be moderate in Jammu (RF = 2.01), Samba (RF =3.83), Kathua (RF =2.79) and Doda district (RF =2.28). Similar results were observed against fenvalerate wherein resistance level-I was found in Jammu (RF =3.3), Samba (RF =2.92) and Kathua (RF =2.51) districts, whereas ticks collected from Doda district was found susceptible (RF =1.0).

### Prevalence of Gastrointestinal Helminthic parasites in stray dogs of Jammu

Intestinal helminthes are one of the main entero pathogens of dogs, especially in newly whelped or neonate. The fecal deposits of the stray dog contaminate public places and rural field with eggs and helminthic larvae of different species of zoonotic parasites and so play important role in transmission of these diseases although particular implication of each population is not clearly establishe. As distribution and intensity of helminthic infections are influenced by climate, geographical location, host- related factors, it is necessary to analyze the situation in every city. Thus, coproscopic examination of 213 stray dogs from Jammu revealed gastrointestinal helminthic parasites in 85.44% animals. According to season highest prevalence was observed in monsoon (92.30%) followed by winter (88.0%), post monsoon (85.10%) and summer (78.12%). Among positive animals, the highest prevalence (45.33%) was recorded for strongylid eggs, followed by ascrid (16.43%) and Dipyllidium segment/eggs (11.26%). Mixed infection was recorded in 22.53% animals, whereas taenid, *Diphylobothrium latum* and *Spirometra* eggs were recorded in 4.69%, 2.81% and 0.93% animals, respectively.

### Treatment of infected wound in Wister rat with larval therapy of *Lucilia sericata* (Calliphoridae) in Jammu

*Lucilia sericata* is a necrophagus fly .The normal feeding behaviour of *L .sericata* fly larva is mainly on necrotic tissues and leaving the healthy tissue untouched. Therefore they are called as medicinal maggot. They reduces necrotic tissues, bacteria and helps in healing and stimulate growth of the healthy tissues. It has significant role in human medicine because these larvae are used for healing of chronic injuries, ulcer containing gangrenous or necrotic tissues that do not respond to any conventional treatments. The fly having important role in Forensic medicine as the larvae of the fly are used as Biological indicator for estimation of post-mortem intervals. Keeping this view in mind , an experimental study on maggot therapy in infected wound healing in Wister rat was studied in the Division of Veterinary Parasitology, FVSc&AH, SKUAST-Jammu. The study was approved by Animal Ethics Committee of SKUAST-Jammu. Twelve Wister rats were anesthetised and they were separated into two groups containing six animals per group. Two centimeter square area of each animal was marked in the interscapular region. Skin flap was excised with sterilized scalpel after shaving and sterilization with 10% providone iodine .Then created a full thickness square wound and the skin flap were excised with sterilize scissor . For this experiment, the wound bed were inoculated with 100 **micro litter** bacterial suspension of *Staphylococcus aureus* (approximately **2.0X $10^6$** cfu) for making the wound infective one . Animals were kept separately in a metallic cage and were covered with mosquito net to prevent entry of other different flies. At $4^{th}$ day after wounding ,pus formation of wound with debris and scar along with necrotic tissues was observed covering the whole wound bed and on the same day ,in one group laboratory reared *Lucilia* larvae were applied at a dose rate of 5 per square centimeter area in wound bed and other group remain as control. The wound area were measured on different days intervals from 0,7, 10,and $14^{th}$ day along with assessment of bacterial contamination by total colony count by using 10 fold serial dilution method in both the group from swab culture of the wounds. On study of wound closer kinetics along with control group, it was observed that in *L. sericata* larvae treated wound area began to decrease and along with decrease in bacterial load in different days intervals and complete healing without scab and necrotic tissues was seen on day $14^{th}$ in treated group in comparison to control. From this study, it was concluded that further details study on larval therapy is deserved further consideration in veterinary medicine to fight against

the uncontrollable infection even after antibiotic therapy.

### 3.3.10 Division of Veterinary Pharmacology & Toxicology

#### Studies on toxico-biochemical alterations induced by co-exposure of Roundup and Fluoride and their modulation with Quercetin in rats

The toxic effects of Roundup® (glyphosate) and/or fluoride following daily oral administration for 28 days and modulatory effects of quercetin were studied in rats. Roundup® @ 500mg/Kg body weight following its daily oral administration either alone or in combination with fluoride @ 10 ppm resulted in significant increase in the levels of AST, ALT, ALP and albumin as compared to control group. However fluoride either alone or in combination with Roundup® induced significant inhibition in activities of erythrocyte cholinesterase with elevation in ACP, ALP and AST; a non-significant increase in ALT levels was observed with fluoride alone. An increased lipid peroxidation of erythrocytes, hepatocytes and renal cells was observed in all toxicity induced groups. Roundup® treated animals displayed higher lipid peroxidation in erythrocytes whereas fluoride was more potent to induce such peroxidative changes in hepatocytes. Glutathione levels in whole blood declined significantly with either of the toxicants but such decline was relatively higher with Roundup®. Enzymatic biomarkers of oxidative stress viz. SOD, GPx, GST and catalase declined significantly in erythrocytes, liver and kidneys of exposed animals. Roundup® exposure resulted in significant alterations in liver catalase, GPx and GST levels in erythrocytes than fluoride. Co-administration of Roundup® and fluoride induced pronounced alterations in biochemical parameters like AST, ALP, BUN and oxidative stress indices (MDA, GSH, GPx, Catalase and GST) compared to single exposure.

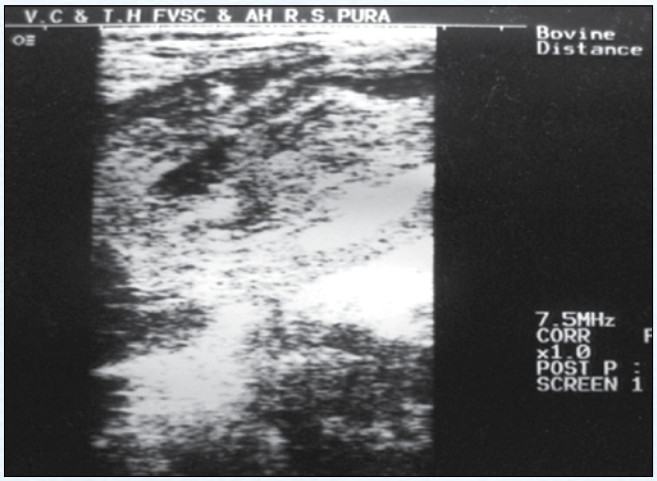
#### Studies on Biochemical Alterations Induced by Chlorfenapyr and its Interaction with Fluoride in Wistar Rats

Oral sub-acute toxic effects of chlorfenapyr alone and its interaction with fluoride was studied in wistar rats. Chlorfenapyr administered @ 24.2 or 48.4 mg/kg inhibited PChE activity but elevated blood biochemical indices like phosphatases (ACP & ALP), aminotransferases (AST & ALT), creatinine and BUN. Both doses induced oxidative stress as revealed by alteration in different biomarkers like increase in lipid peroxidation and decrease in blood glutathione (GSH), glutathione peroxidase and transferase (GPx & GST,), superoxide dismutase (SOD) and catalse. Fluoride at 15 ppm in drinking water produced biochemical changes viz. inhibition in activity of PChE with elevation of ACP, ALP, AST, ALT, creatinine and blood urea nitrogen. Oxidative stress parameters in blood and tissues as evidenced by increased lipid peroxidation and decrease in activities of GSH, SOD, GPx and catalase were also altered by fluoride.

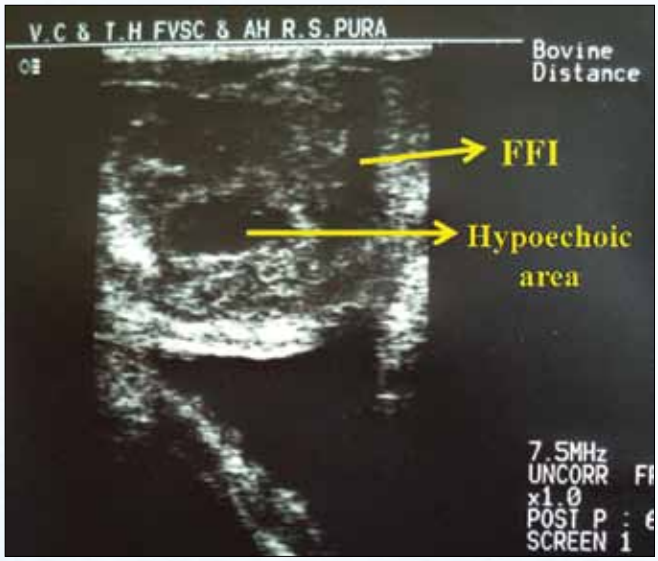
### 3.3.11 Division of Veterinary Surgery & Radiology

#### Ultrasonographic studies on surgical affections of gastrointestinal tract in bovine

The study was conducted on various clinical cases of bovines suffering with gastrointestinal tract affections. Animals were subjected to clinical, haemato-biochemical, ultrasonographic and peritoneal fluid examinations for definitive disease diagnosis. Animals diagnosed with intussusception exhibited increased heart rate, colic and cessation of faeces with significant increase in PCV, blood glucose and BUN. Ultrasonographic features of intestinal obstruction in large animals have been standardized which can be effectively used in confirming the diagnosis in large animals without performing exploratory laparotomy.




Longitudinal section of intussusception mass. Sandwiching of intestinal layers.




Central portion of hypoechoic region in partial lumen obliteration of intussusception mass.

## Studies on hoof disorders in dairy cows

The study carried out in dairy farms in and around R.S. Pura and at TVCC of SKUAST-Jammu concluded that lameness was commonly observed in Holstein-Friesian breed of cows. The affected cows were deficient in zinc and copper and more commonly observed in winter season as compared to other seasons. *Pucca* floor triggered the hoof growth faster and Footbath with 4 % formalin was efficient in controlling and curing the heel horn erosion.

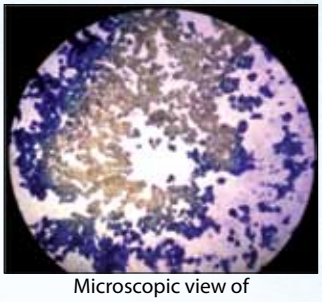
Scissors claw before trimming

Scissors claw after trimming

## Studies on granulomatous lesions of head and neck of cattle and buffaloes

Haematology, microbial evaluation and histopathology studies were conducted on granulomatous lesions of head and neck of cattle and buffaloes which concluded that incidence were more in female animals and cattle were affected more as compared to buffaloes with submandibular region of head the most affected. *Staphylococcus aureus* (27.7%) was the most common isolated species of bacteria, the mass was highly susceptible to

Arrow showing granulomatous lesion near cheek area



Microscopic view of sulphur granule

Gentamicin, Enrofloxacin and Ceftriaxone antibiotics. Surgical excision, antibiotic therapy along with oral administration of potassium iodide was the effective treatment.

## Clinical studies on surgical affections of urinary tract in ruminants

Clinical cases of urinary tract affections of ruminants was exclusively observed as a disease of young, intact males, with buffaloes affected the most, followed by cattle and goat. Maximum prevalence was observed in winter and spring season. Ultrasonography served as a useful diagnostic aid in assessing urinary bladder condition and tube cystostomy is suggested as a very simple and useful technique for its management at field level with fewer post operative complications.

## Clinical studies on diagnosis and surgical management of urolithiasis in canines

The study conducted on clinical cases of dogs affected with urolithiasis was diagnosed by urinalysis, radiography, ultrasonography, and haemato-biochemical parameters. Labrador and Pomeranian, males were the more affected breeds. Calculi were mostly located caudal to os-penis and in urinary bladder with maximum sensitivity to Enrofloxacin, Ceftriaxone and Gentamicin. The study concluded that midline cystotomy with or without

Single yellow coloured calculus

Multiple cream coloured triangular shaped calculi

urohydropropulsion was effective for the surgical management of urolithiasis in canines.

### 3.3.12 Division of Veterinary Medicine

#### Metabolic profile and oxidative stress during periparturient period in crossbred rambouillet sheep

To study the metabolic profile and oxidative status during periparturient period in crossbred Rambouillet sheep. 24 adult crossbred sheep were selected and categorized into 4 groups on the basis of parity and presence of singlet or twin pregnancy viz. group-A (primiparous twin), group-B (primiparous singlet), group-C (pleuriparous twin) and group-D (pleuriparous singlet). Blood samples were collected 4 and 1 week before and 1, 4 and 8 weeks after lambing. BCS of group A and B animals decreased significantly at the end of the sampling as compared to the BCS at the start of the sampling. Analysis of haematological parameters viz. Hb and PCV revealed significant decline during the peri-parturient period. Significant increase was observed in the blood glucose levels at 1 week before and 1 week after lambing. TPP, albumin, globulin, total cholesterol, HDL-C and LDL-C level declined 1 week before and remained low till 1 week after lambing compared with level observed 08 weeks post lambing. Triglyceride levels declined significantly at 1 week after lambing. Plasma creatinine level was significantly ($P<0.05$) increased at1 week before and 1 and 4 weeks after lambing. A significant increase in the GGT level was observed at 1 week after lambing. Higher levels of Sodium and potassium were observed during periparturient period. Ca and Pi levels of plasma samples were significantly decreased during periparturient period. Fe level decreased significantly 1 and 4 weeks after lambing and a non-significant decline in the Zinc level was observed 4 weeks before to 1 week after lambing.

Evaluation of oxidative stress parameters during peri-parturient period revealed significant increase in MDA level along with decrease in anti-oxidant enzymes viz., SOD, catalase, GPx and G-S-T during the peri-parturient period and lowest levels were observed 1week after lambing. Parity-wise, it was concluded that primiparous animals have higher stress levels as compared to the pleuriparous animals whereas animals with twin pregnancy have higher oxidative stress levels compared with animals having singlet pregnancy. To study the effect of UMMB supplementation on body weight gain, six crossbred sheep, reared through semi-intensive methods were provided UMMB @ 10 gm/day and Nicopass for 2 months and 1 week period. It was concluded that UMMB being a good source of energy, protein and minerals needs to be supplemented in diet.

#### Bioprospecting of anticancer potential of some medicinal plants

To explore the anticancer potential of Alstonia *scholaris, Nerium oleander, Cannabis sativa* and *Brassica oleracea*. All the extracts and their fractions of plants under study were evaluated for their *in vitro* and *in vivo* anticancer potential, DNA ladder assay, AMES assay and *in vitro* antioxidant potential i.e. total antioxidant capacity (TAC), free radical scavenging activity-DPPH assay (FRSA) and reducing power (RP). Additional phytochemical (viz. total phenolic, falvonoid, tannin and non tannin content), proximate principal, fiber fraction and mineral analysis was also done. Only NODC, CSMC and ASDH were found to be the active fractions with in vitro anticancer activity.

#### Electrocardiographic studies on extracardiac affections in dogs

The present study was conducted to investigate the ECG pattern in extracardiac diseases and its probable correlation with altered haematobiochemical parameters. Nine dogs suffering from gastroenteritis and six dogs from UTD were screened for ECG and hamatobiochemical parameters as per the standard prescribed procedure and the outcome was compared and correlated statistically with the findings in their healthy counterparts. In gastroenteritis affected group a decrease in amplitude of P wave and QRS complex and decrease in duration of T wave was observed. Similarly in dogs with UTD a decrease in amplitude of P wave and QRS complex and decrease in both amplitude and duration of T wave was observed along with decrease Hb and TEC and increased in BUN, Creatinine and ALP.

#### Bacterial diarrhoea in dogs

The overall prevalence of gastroenteritis/enteritis in dogs in the present study was 6.74 percent (91/1350) with the maximum prevalence recorded in

the month of May, 2014 (12.08 per cent) and in the age group of 3 to 6 months (36.26 per cent). Males were found to be more susceptible to gastroenteritis than the females (69.23 and 30.76 per cent respectively). Bacterial-associated diarrhoea was observed in 80 per cent of the investigated cases. Bacterial agents identified were *Clostridium perfringens* and *E. coli*. Toxin gene of *Clostridium perfringens* (*cpe*) was detected in 11 cases while toxin genes for *E. coli* detected were eaeA gene (8), stx 2 (4) and hlyA gene (5). Haemorrhagic diarrhoea was associated with bacterial etiology with clinical signs of haemorrhage (60.71 per cent), vomition (82.14 per cent), anorexia (89.28 per cent) and severe dehydration (64.28 per cent). A significant association between the detection of *cpe* gene and presence of diarrhoea was seen. Also a significant association between the detection of *cpe* and presence of haemorrhage was seen.

### Novel renal biomarkers

The study was conducted in 19 dogs suffering with renal problem. Overall prevalence of renal failure was found to be 1.20 per cent (19/1580). Incidence of acute kidney injury was found to be 57.89 per cent and of chronic kidney disease was found to be 42.11 per cent of all the cases of renal failure. A highly significant increase was observed in serum cystatin C and urinary nitric oxide in renal failure cases. The overall correlation coefficient of glomerular filtration rate with the reciprocal of serum cystatin C in renal failure dogs was superior to that of the reciprocal of serum creatinine. A highly significant increase was noticed in Lipid peroxidase activity. Significant decrease observed in glutathione peroxidase and vitamin C levels. Histopathological changes revealed thickening of bowman's capsule and periglomerular mononuclear cells infiltration. Treatment response with diuretic mannitol, supportive therapy along with nutritional management found to be more effective.

### Clinico-therapeutic studies on canine parasitic dermatitis

The present study was conducted in 391 clinical cases of dogs. The overall prevalance of dermatitis was 24.55 per cent (96/391) The prevalence of parasitic dermatitis was found to be 35.41 per cent with maximum prevalence recorded in July (42.55 %).Dogs less than one year of age were found to be more susceptible to canine parasitic dermatitis. Males were found more susceptible to parasitic dermatitis as compared to female. *Demodex canis, Staphylococcus* spp, *Streptococus* spp and *Microsporum* spp, were main isolates of parasitic, bacterial and fungal dermatitis, respectively. Lesion in parasitic dermatitis were mainly located at head and neck (36.21 %), thorax, abdomen and groin (24.23%), limbs and paws (17%) and on elbow(13.27%). A significant change in total protein was accompanied by decrease in albumin, significant increase in ALT and AST value in demodicosis.

### Coagulation abnormalities and fluid dynamics of hepatic disorders in dogs

The prevalence of hepatic disorders was found to be 3.32 per cent (47/1412) with maximum prevalence in summer season (63.82 %). Dogs in age groups of more than eight years (42.55 %) were found more susceptible to hepatic disorders. Males (63.82%) were more affected with highest prevalence in Labrador breed (40.42 %). Category wise chronic hepatitis was the most encountered hepatic disorder (59.57 %) followed by acute hepatitis (40.42 %). Anorexia, weight loss, anaemia, vomition, diarrhoea, jaundice, ascites, melena, hepatocutaneous syndrome, pain on palpation and hepatic encephalopathy were the chief signs observed. Haematobiochemical examination revealed anaemia, decrease in total protein, albumin, with increase in globulin which were more marked in chronic hepatitis and increased levels of ALT, AST, GGT and ALP were highly marked in acute hepatitis. Coagulation parameters revealed significant decrease in platelet count with increase in prothrombin, thromboplastin and clotting time, with increased severity in chronic hepatitis. Acid base analysis revealed varying degree of changes from normal (3/7) to respiratory alkalosis (2/7) and metabolic acidosis (2/7). Pathomorphological examination revealed hepatic fibrosarcoma, abscess and pneumonia in lungs with mild glomerulo and interstitial nephritis in kidney.

## 3.3.13 Division of Veterinary Microbiology And Immunology

### Virulence Characterization of Methicillin Sensitive and Methicillin-Resistant *Staphylococcus aureus* form Bovine Mastitis

The objective of the study was to determine the occurrence of methicillin sensitive and methicillin resistant S. *aureus* from bovine mastitis and to characterize them with respect to virulence genes. A total of 160 mastitic milk samples were screened for the presence of S. *aureus*. A total of 36(22.5%) of samples carried S. *aureus*. Out of 36 S. from positive samples, 6(16.6%) MRSA while rest was MSSA. The virulence gene profile of MSSA and MRSA did not show any significant difference. Among MSSA, 96.6% of isolates carried *coa, spa* and *clfA* gene while 60% of them carried *hla*. Similarly all MRSA isolates carried *coa, spa* and *clfA* gene while 66.6% of isolates carried *hla* gene. None of the MSSA or MRSA isolates revealed the presence of *sea* and *seb* gene. On antibiotic sensitivity testing 16.6% S. *aureus* isolates were resistant to all antibiotics screened for and 5.5% isolates were sensitive to all of them. Whereas,94.4%, 83.3% , 77.7%, 66.6% , 50% and 27.7% of S. *aureus* isolates were resistant to penicillin, ampicillin, amoxicillin, sulbactum, enrofloxacin, ceftriaxone and methicillin antibiotic respectively.

## Characterization of fimbrial adhesins and toxins of Enterotoxigcnic E. *coil* in calves with diarrhoea

The study aimed at finding the occurrence of entcrotoxigenic E. *coil* (ETEC), enteropathogenic E. *coil* (EPEC) and shiga toxin-producing E. *coil* (STEC) in diarrhoeic calves and to characterize the toxigenic isolates with respect to their fimbrial antigens and antibiotic resistance. Out of 200 diarrhoeic faecal samples from calves less than 3 months of age, 26 (13%) carried enterotoxigenic E. *coil* on bulk screening by multiplex PCR for *eli* and *est* genes. Out of these 26 samples, 12 ETEC were isolated, which on further screening for F5 and F4lfimbrial antigens turned out to be negative on genotypic screening but one isolate was positive for F5 by slide agglutination test. Out of the 450 E. *coil* isolates randomly collected from 200 faecal samples. 10 (2.2%) isolates were EPEC as they carried the intimin gene, whereas. 26 (5,7%) were STEC as they carried $stx_1$ gene. None of the isolates carried $stx_1$ gene. 4 isolates carried both *est* and $stx_1$ and were classified as ETEC. Antibiogram of these toxigenic E. *coil* isolates revealed that all isolates were sensitive to trimethoprim (90%) and enrofioxacin (80%) whereas all isolates were resistant to cephalexin and cloxacillin.

## Submission of various bacterial cultures to National Veterinary Type Culture Centre

A total of 27 cultures are being submitted. Given below is the list of bacterial culture isolates submitted for accession:

| List of cultures submitted on 2016 from SKUAST-J | | | | |
|---|---|---|---|---|
| **Depositors ID** | **Bacterial species** | **Source** | **Serogroup/ serotype** | **Remarks** |
| SKJ16-M1 | *Bacillus cereus* | Meat shop | NA | Positive for gyrB and non-haemolytic genes |
| SKJ16-M2 | *Bacillus cereus* | Meat shop | NA | Positive for gyrB and non-haemolytic genes |
| SKJ16-M3 | *Bacillus cereus* | Meat shop | NA | Positive for gyrB and non-haemolytic genes |
| SKJ16-M4 | *Bacillus cereus* | Meat shop | NA | Positive for gyrB and non-haemolytic genes |
| SKJ16-M5 | *Bacillus cereus* | Meat shop | NA | Positive for gyrB and non-haemolytic genes |
| SKJ16-M6 | *Bacillus cereus* | Meat shop | NA | Positive for gyrB and non-haemolytic genes |
| SKJ16-M7 | *Bacillus cereus* | Meat shop | NA | Positive for gyrB and haemolytic genes |
| SKJ16-M8 | *Bacillus cereus* | Meat shop | NA | Positive for gyrB and non-haemolytic genes |
| SKJ16-M9 | *Bacillus cereus* | Meat shop | NA | Positive for gyrB and non-haemolytic genes |
| SKJ16-E1 | *E. coli* | Sheep | NA | Positive for hly |
| SKJ16-E2 | *E. coli* | Sheep | NA | Positive for stx1 and hly |
| SKJ16-E3 | *E. coli* | Sheep | NA | Positive for stx2 |
| SKJ16-E4 | *E. coli* | Sheep | NA | Positive for stx1 and hly |
| SKJ16-E5 | *E. coli* | Sheep | NA | Positive for stx1 and hly |
| SKJ16-E6 | *E. coli* | Sheep | NA | Positive for stx1 |

| List of cultures submitted on 2016 from SKUAST-J | | | | |
|---|---|---|---|---|
| **Depositors ID** | **Bacterial species** | **Source** | **Serogroup/ serotype** | **Remarks** |
| SKJ16-E7 | *E. coli* | Sheep | NA | Positive for stx1 and hly |
| SKJ16-E8 | *E. coli* | Sheep | NA | Positive for stx1 and hly |
| SKJ16-H1 | *Staphylococcus aureus* | Human | NA | Positive for *nuc, mec, coa, spa, pvl, hla, sea, ermC and aac* |
| SKJ16-H2 | *Staphylococcus aureus* | Human | NA | Positive for *nuc, mec, coa, spa, pvl, hla, sea, ermC and aac* |
| SKJ16-H3 | *Staphylococcus aureus* | Human | NA | Positive for *nuc, mec, coa, spa, pvl, hla, sea, ermC and aac* |
| SKJ16-H4 | *Staphylococcus aureus* | Human | NA | Positive for *nuc, mec, coa, spa, pvl, hla, sea, ermC and aac* |

## 3.4 Research Stations/Centres

### 3.4.1 Regional Agricultural Research Station, Rajouri

#### BARLEY

**Advanced Varietal Trial Rainfed:**

Nine entries of the Barley crop was conducted at RARS, Rajouri during Rabi season 2015-2016. The experiments included one Advanced Varietal Trial-Timely Sown - Rainfed namely AVT–I. The coded varieties along with Check were evaluated and the recorded data will be send to the Directorate of Wheat Research, Karnal for compilation.



AVT Rainfed Trial conducted at RARS, Rajouri

#### RICE

Four trials of ACRIP (Rice) in the *kharif* season of 2015-16 was conducted at the RARS, Rajouri. The experiment included two Advance Varietal Trials (AVT) namely AVT 1 –Early (Hills) and AVT 1 Medium (Hills) and two Initial Varietal Trials (IVT) ) namely IVT –Early (Hills) and IVT Medium (Hills). The coded varieties along with the National Check – Vivek Dhan - 86, Zonal

AVT Rainfed Trial conducted at RARS, Rajouri

Check – Shalimar Rice – 3 and Local Check – K 39 was evaluated and the recorded data has been sent to the Indian Institute of Rice Research, Hyderabad for compilation.

## MAIZE

Under ACRIP (Maize) two trials in the *Kharif* season of 2015-16 was conducted at the RARS, Rajouri. The experiments included one Medium Maturity namely AVT – I Year and one Early Maturity namely AVT – II Year. The coded varieties along with Check were evaluated and the recorded data has been sent to the Indian Institute of Maize Research, New Delhi for compilation.

ACRIP Rainfed Trial conducted at RARS,Rajouri

### 3.4.2 Maize Research Centre, Udhampur

#### Germplasm collection, evaluation, maintenance and its enhancement

Thirty three local maize germplasm collections (Yellow, white, blue etc.) representing Udhampur district, some parts of Reasi, Kathua and Doda districts are being maintained and advanced through selfing.

200 numbers of inbred lines are being maintained through selfing and the appropriate elite lines are being used in hybrid development programme by taking advantage of Winter Nursery Centre Rajendra Nagar, Hyderabad for generation advancement facility provided by ICAR, Indian Institute of Maize Research.

#### Development of Maize varieties/ hybrids with emphasis on single cross hybrids for improved nutritional adequacy and health

Seven single cross hybrids viz. UDMH-101, UDMH-112, UDMH-114,UDMH-115, UDMH-121, UDMH-122, UDMH-124 contributed by AICRP Maize Centre Udhampur in public sector hybrid maize varietal evaluation trial conducted by Division of PBG, SKUAST Jammu, Main campus Chatha, Jammu.

AICRP Maize Centre Udhampur has contributed one single cross hybrids UDMH-127 for testing in Co ordinated trial No. 62 IVT during Kh. 2015 conducted by ICAR, Indian Institute of Maize Research, Pusa Campus New Delhi.

AICRP Maize Centre Udhampur has also contributed three single cross hybrids UDMH-121, UDMH-122, UDMH-123, for testing in Zonal Co ordinated trial no.102 conducted by CSKHPKV, HAREC Bajaura and three single cross hybrids viz. UDMH-124, UDMH-125, UDMH-126 for testing in Zonal Co-ordinated Trial No. 103 conducted by VPKAS, Almora, (U.K.) during Kh. 2015.zzzz

### 3.4.3 Maize Breeding Research Sub Station, Poonch

#### Evaluation, development and maintenance of Inbred/germplasm lines :

- A sum of 1000 inbred/germplasm lines (Poor lines have been discarded due to non availability of selfed seed) 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* 2015. 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 station entries through AICRP IET trials

- Two promising composites i.e. PMSY3 and PMSW4 and one hybrid PHM 34 were evaluated in IET trial no. 62 (A) and 62 (B), respectively through AICRP on maize at five Zones of India during *kharif* 2015. Further one QPM and two speciality corn composites were evaluated trial no. QPM123 and Trial popcorn/sweetcorn, respectively during kharif 2015 in AICRP. The grain yield (kg./ha) results are mentioned below:

| | Trial 62 A (MM) NIVT-M Kh. 2015 | | | | | | |
|---|---|---|---|---|---|---|---|
| | NHZ | NWPZ | NEPZ | PZ | CWZ | Mean | Check |
| PMSW4 | 6043 | 8453 | 4865 | 6711 | 4883 | 6186 | 6194 |
| PMSY3 | 5983 | 8523 | 4923 | 6912 | 5279 | 6362 | |
| | Trial 62 B (MM) NIVT-M Kh.2015 | | | | | | |
| PHM34 | 7034 | 9627 | 5015 | 6582 | 4686 | 6403 | 6250 |
| | Trial no. QPM 123 Kh. 20156 | | | | | | |
| PMSQ5 | 5046 | 6463 | 4860 | 5793 | 5722 | 5620 | 5949 |
| | Speciality corn Trial No. Popcorn kharif 2015 | | | | | | |
| SJPC1 | 3105 | 4186 | 3547 | 4250 | 3010 | 3650 | 3080 |
| | Speciality corn Trial No. Sweetcorn kharif 2015 | | | | | | |
| SJSC1 | 6852 | 7389 | 4108 | 8475 | 5190 | 5956 | 6585 |

Based on the performance of SJPC1 in IVT trial during *Kharif* 2015, the entry has been promoted to AVT 1st year during *kharif* 2016.

### Evaluation of station entries in public sector Multilocational trial

Five station entries of promising single cross hybrids/composites PHM 34, 15, 17, PMSY3 and PMSW4 identified in station hybrid evaluation trial were evaluated in Public sector multilocational trial during kharif 2015, constituted by Division of PBG and conducted across the area jurisdiction of SKUAST-J at two locations Poonch, and Chatha.. Where all the station entries showed yield superiority with respective check hybrid over the locations.

| | Poonch | Chatha | Mean |
|---|---|---|---|
| PHM 15 W | 41.25 | 52.62 | 46.935 |
| PHM 17 W | 35.11 | 54.68 | 44.895 |
| PMSY3 Y | 45.54 | 52.27 | 48.905 |
| PMSW4 W | 54.21 | 47.82 | 51.015 |
| PHM34 W | 40.49 | 56.62 | 48.555 |
| Check Y | 38.87 | 46.40 | 42.635 |
| Check W | 37.11 | 42.30 | 39.705 |

## 3.4.4 Rainfed Research Sub-Station, Raya:

### Screening of elite germplasm of kagzi lime (*Citrus aurantifolia L)* germplasm in Jammu subtropics

Survey was conducted to identify and assess the naturally superior germplasm of seedling kazgi lime in various locations of local habitat and farmer field in Jammu sub-tropics areas. Among the identified location it was observed that rainfed areas the maximum diversity is existing in *kandi* areas of Jammu, Samba and Kathua districts, (J&K). Selected plants were marked and their fruits samples were analyzed in research laboratory of RRSS, SKUAST-Jammu. Among the selected six superiors strain after screening of elite germplasma, it was observed that section code 1001 was best in terms of almost maximum numbers of physio-chemicals parameter during investigation and the maximum average fruit size (55.60 g), fruit length (48.21 mm), fruit width (47.37 mm), minimum number of seed per fruit (2.33), seed length (5.66 mm), seed width (3.55 mm), fruit volume (48.6 $cm^3$), specific gravity (1.1.4), predominate colours (green), fruit skin colour at maturity stage (yellow), TSS (7.2°Brix) and fruit acidity (6.79%) was recorded during investigation

### Screening of Elite Red Fleshed Guava (*Psidium guajava* L) germplasm in Jammu subtropics.

Survey was conducted to identify and assess the naturally superior germplasm of red flesh guava in various locations of local habitat and farmer field in Jammu sub-tropics areas. Among the identified location it was observed that the maximum diversity is existing in mid hill of Rajouri district, Wide variability exist in: tree shape (upright, tall and medium spreading), leaves (wide and elliptical to oblong in shape), fruit shape (round, smooth oblong-ridged and pear shape), fruit skin colous (green and light yellowish), flesh colour (red and purple), seed (soft

and hard), seed core (around to large shape), fruit surface (smooth surface and dots) fruit are medium to large and weight varies from (78-142g), fruit length (56.59 to 70.0 mm), fruit width (48.73 to 61.63 mm) and TSS ranges from (7.3- 11.0$^0$ Brix) was noticed during investigation .

### Studies on epidemiology and management of powdery mildew (*Oidium mangiferae* ) of mango in rainfed subtropics .

Weather parameters, *i.e.* maximum temperature ($^0$C), minimum temperature ($^0$C), relative humidity morning (%), relative humidity evening (%), rainfall (mm), dew point temperature morning ($^0$C) and dew point temperature evening ($^0$C ) influenced the powdery mildew. Two years data revealed that weather parameters, *i.e.* maximum and minimum temperature were positively correlated with the development of powdery mildew with the correlation value of 0.47 and 0.25, respectively. Relative humidity (morning) had significant positive correlation (0.73) with disease development. However, rainfall had negative correlation (-0.65) with development of powdery mildew.

### Management of Powdery Mildew of Mango:

An experiment was conducted for management of powdery mildew of mango during flowering season comprising of six fungicides i.e. Triademefon 25 WP (0.05%), benomyl 50WP (0.1%), hexaconazole 5EC (0.05%), dinocap 48EC (0.1%), sulphur 80WP (0.25%) and copper oxychloride (0.25%). Out of these, hexaconazole was found most effective and reducing 68.70% disease intensity.

### Standardization of rootstocks for Kinnow under rainfed conditions of Jammu sub-tropics

The seeds of different citrus root-stock i.e. Zatti khatti, Cleoptra mandarin, Sweet lime, Karan Jambhiri, Rangpur lime, Karna khatta, Carrizo, Galgal were introduced from Fruit Research Station, Abohar (PAU) and also selected from rainfed area to standardized the suitable root stock for Kinnow propagation. The budding has been done during rainy season of 2015 and spring season of 2016. After proper growth the plants will be transferred in the field for further studies.

**Production of Quality planting materials:** The production of quality planting material of major and minor's sub- tropical fruits i.e. Aonla, mango, citrus, custard apple, phalsa and bael etc. is going on for distribution among the farmers.

## 3.4.5 Regional Horticultural Research Sub-Station, Bhaderwah

### Productivity enhancement of elite apple cultivars through high density planting and efficient *water and pollination management*

Different cultivars of apple on MM-106 rootstock planted at a spacing of 2.5m x 2.5m were studied for their plant survival, plant height, girth, spread, flowering, fruit set and yield parameters for the second year. Gap fillings in the experiment were also done.

- **Medium density orcharding for higher almond productivity**

  Seven almond cultivars viz. Non-Pariel, Merced, Primorskii, Pranyaz, Waris, Shalimar and Makhdoom were planted at a spacing of 4m x 4m and data on their growth and flowering characteristics was recorded. Gap fillings were also met.

- **Plant architectural engineering for higher energy harvest vis-à-vis productivity in apple**

  Apple cultivar Red Delicious (standard) and cultivar Starkrimson (dwarf) on clonal apple rootstock MM-106 and MM-111 were planted for further studies at a spacing of 2.5m x 2.5m for Modified Central Leader System, 1.5m x 2.5m for Spindle Bush System, 1.5m x 3.0m for Trellis system, 1.5m x 2.5m for Head and Spread system, 0.75m x 1.5m for Vertical Axis and 1.5m x 3.0m for Cordon System. The plants were trained in respective training systems.

- ***Multi-location testing of elite walnut genotypes under medium density***

  Growth parameters of different walnut genotypes namely CITH-W-01, CITH-W-02, CITH-W-03, CITH-W-04, CITH-W-05, Hamdan, Sulaiman and Opex Culchery planted at a spacing of 6m x 6m have been recorded.

- ***Multi-location testing of elite apricot genotypes under medium density***

  Different genotypes of apricot namely, CITH-Apr-01, CITH-Apr-02, CITH-Apr-03 and New Castle planted at a distance of 5m x 5m have been studied at RHRSS, Bhaderwah.

- **Survey and mapping of major pests and diseases of temperate fruits**

  Data on the attack and severity of major pests and diseases in temperate fruit crops viz. apple, almond, walnut, apricot and cherry have been collected as under.

| Fruit crop | Disease/ s | | Pest/ s | |
|---|---|---|---|---|
| Apple | Powdery Mildew<br>Scab<br>Alternaria Leaf Spot | April – May<br>April – July<br>August - September | Mites<br>Sanjose scale | June – August<br>April - September |
| Almond | Leaf spot/ shot hole<br>Leaf Curl<br>Almond blight<br>Gummosis<br>Perennial Canker | May – June<br>May – September<br>July – August<br>April – September<br>April - September | Leaf curling aphid<br>Mites | April – June<br>May - September |
| Walnut | Leaf blotch | June – September | Walnut weevil | April - August |
| Apricot | Powder mildew<br>Leaf curl | April - August<br>March - May | | |
| Peach | Leaf Curl<br>Powdery mildew | April – August<br>March - July | Aphids | April – May |
| Pear | Leaf spot<br>Scab | May – June<br>July | | |
| Cherry | Leaf spot<br>Shot hole | May<br>June | | |
| Strawberry | Leaf spot | May - August | | |

- **Testing of identified genotypes of temperate fruit crops**

  Different walnut genotypes viz. CITH-W-06, CITH-W-07, CITH-W-08, CITH-W-09 & CITH-W-10 & local, cherry genotypes viz. CITH-C-01 & CITH-C-02 & local, and apple genotypes viz. CITH-Apple-Lodh-01 & local have been planted at RHRSS, Bhaderwah and taken under study for further evaluation.

- ***Water harvesting and moisture conservation techniques in apple***

  Rain water harvesting systems viz. half moon system, full moon system, cup and plate system and trench system, along with mulching techniques viz. Paddy straw mulch and plastic mulch have been laid out for further studies at RHRSS, Bhaderwah.

- **Low cost poly house propagation techniques in walnut**

  Two low cost poly house structures have been installed and walnut seedlings have been planted in the polyhouse for further studies at RHRSS, Bhaderwah.

- **Imparting training to stakeholders for technology outreach**

  Five trainings of one day each for farmers were conducted on 'Outreach of Technologies for Temperate Fruit Crops' during 2015-16, as under:

  i. Canopy management and plant architectural engineering for higher productivity and quality in apple.
  ii. High density planting for higher productivity in apple and almond.
  iii. Rejuvenation of old senile orchards in apple and almond.
  iv. Rain water harvesting and moisture conservation techniques in apple and almond.
  v. Low cost propagation of walnut under poly house conditions.

- **Exploitation of natural variability of walnut for export related traits**

  Walnut germplasm with superior traits from erstwhile Doda district is being surveyed and two genotypes have been collected from Bounjwah block for further evaluation at RHRSS, Bhaderwah.

- **Survey of Ambri apple variants in Doda district**

  Ambri apple germplasm with superior traits from erstwhile Doda district is being surveyed and one genotype have been collected for further evaluation at RHRSS, Bhaderwah.

- **Propagation studies in walnut**

  Walnut seedlings have been planted under low cost polyhouse and under open conditions at RHRSS, Sartangal, for further evaluation of propagation studies using different methods at different time.

- **Study of the efficacy of eco-friendly products against peach green aphid**

  The experiment has been concluded for recommending the use of *Verticillium lecanii* @$10^8$cs/mp followed by azadirachtin 1500ppm @4ml/liter of water against peach green aphid in nectarines and conducting the OFT.

- **Nutritional survey of apple orchards of Doda district with respect to important micro-nutrients.**

  Carried out survey of major apple growing areas of district Doda. A total of 105 orchards were selected. Soil and leaf samples (0-20 cm & 20-40 cm depths) were drawn from selected orchards and analysed for physico-chemical properties and micronutrient status. Statistical data analysis is under process for final conclusion.

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

  - Seed was multiplied of two entries of pole type Rajmash namely BR 104 (50 kg) and BR 39 (10 kg) at farmers field, while seed of rest of the entries were multiplied at RHRSS, farm Bhadarwah (BR 303: 3.5 kg, BR 301: 2.0 kg, BR 37: 500 g, BR 35: 4.7 kg, BR 33: 4.0 kg).
  - A total of forty four entries (thirty from the farmers of different villages of Bhadarwah valley and fourteen entries obtained from Directorate of Research SKUAST-Jammu) were grown at RHRSS farm Bhadarwah, for purification. Seeds of these entries were purified during kharif 2015 for characterization and further evaluation

- **Variability among Rajmash lines collected from Bhadarwh valley is given below:**

1 2 3 4

5 6 7 8

9 10 11 12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**Scientists during survey for Rajmash Village under PPP Mode in District Kishtwar**

**Evaluation of rice varieties (Farmers varieties) Kotarnal, Gizza, Shalimar Rice -2 (SKUA 341), Shalimar Rice-3 (SKUA 382) and Local variety.**

Five varieties of rice were evaluated at RHRSS, Bhadarwah during kharif 2015 for yield and yield contributing traits. Under "Evaluation of rice varieties (Kotarnal, Gizza, Local, S-341, S-382)", local variety was found superior among all the varieties.

**To work out the organic package of Maize+Rajmash(1:1)+Pea cropping system under the hilly tracts (Bhaderwah) of Jammu conditions.**

Sowing of Maize+Rajmash in Kharif 2015 and Peas in Rabi 2015 were done as per the technical programme and observations were recorded. In terms of Rajmash, the observations for length of pod, number of pods per plant, number of grains per pod, test weight (1000 grain weight) and grain yield were recorded and preliminary observations showed that supplement of nutrients with through FYM, vermi-compost, neem cake and pine needles in combination with biofertilizers performed better. The experiment will be repeated this year.

## 3.4.6 Advanced Centre for Rainfed Agriculture, Dhainsar

### Permanent manurial trial

The sarson equivalent yield differed significantly with various treatments. The highest sarson equivalent yield of 12.80 q/ha was obtained with the application of FYM @ 10 t/ha (T8) during kharif followed by ($T_7$) 50% recommended NPK + 50% N through (FYM) 11.99q/ha. The lowest sarson equivalent yield of 5.53 q/ha was obtained in the control. The RWUE and B.C ratio was found maximum in $T_8$ while minimum in $T_1$ (Control)

### Integrated plant nutrient supply system in Pearl millet- Gobi Sarson

The grain and straw yield of Gobhi sarson crop differed significantly with different treatments. The seed yield of Gobhi sarson was found highest to the tune of 14.17 q/ha with B:C ratio of 3.18 under $T_8$ where 100% N throughV.C was applied and was found statistically at par with $T_5$, $T_7$ and $T_4$ with the corresponding values of 13.80 ,13.09 and 12.48 q/ha' respectively. The lowest seed yield observed under control ($T_1$). The rain water use efficiency was found highest in $T_8$ followed by $T_5$, $T_7$, $T_4$,whereas lowest cost benefit ratio was found in $T_1$ (1.56).

### Energy Management

Among the Tillage treatments, significantly highest grain yield was recorded in treatment $T_3$ (50 % CT + Weedicide + interculture) and amongst fertilizer management treatments, grain yield was statically at par in $F_3$ treatment (100 % N through inorganic fertilizer) followed by $F_2$ (50 % N through inorganic fertilizer + 50 % N through organic manures)

### Development and testing of Agri-horti-silvi-pastoral system models

Data revealed that gobi sarson grown in the alleys of Aonla trees under Agri-Horti-Pastoral ($T_5$) system is the most remunerative system as compared to all other systems which recorded the highest net returns of Rs. 59480/ha with a B:C ratio of 3.53.However, cropping of gobi sarson in the alleys of Aonla trees proved to be more beneficial as the system is also providing fruits

### Intercropping System (Paired Row)

Data revealed that paired gobi sarson with 2 rows of chickpea ($T_1$) is the most remunerative system as compared to all other systems which recorded the highest net returns of Rs.37321.4/ha with a B:C ratio of 3.23.

### Drought management strategy

Significantly higher grain yield of chickpea (730 kg/ha) was obtained in $T_{11}$ treatment with highest B:C ratio of 1.85 where seed hardening with $CaCl_2$ (2%) + Foliar Spray of NAA (40 ppm) at flowering & fruit set was done with RWUE of 3.83 and was found statistically at par with $T_7$ with grain yield and B:C ratio of 710 kg/ha and 1.81, respectively where Seed hardening with $CaCl_2$ (2 %) + Foliar Spray of NAA (20 ppm) at flowering & fruit set was applied with RWUE of 3.72 followed by $T_{14}$, $T_{13}$ and $T_{12}$ while the lowest grain yield was obtained in $T_{16}$ (control) with grain yield and B:C ratio values of 505 kg/ha and 1.31, respectively.

### National Initiative on Climate Resilient Agriculture (NICRA)

**Practices demonstrated under Real Time Contingency Planning**

**(i) Varietal evaluation (Maize)**

Out of the four maize varieties sown during the onset of *monsoon* , the hybrid variety *Double Dekalb* produced maximum yield to the tune of 2190 kg/ha with the highest net returns, B.C ratio and RWUE values of Rs.18849/-, 1.96 and 3.26 kg/ha/mm , respectively.

**(ii) Intercropping**

Intercropping of mash (*Uttara*) and moong (*SME 668*) was done with maize (var. *Double Dekalb*) crop at DLRSS, Rakh Dhiansar in additive series (2+1) with no extra fertilizers for intercrop (Table 2). Grain yield to the tune of 1590 and 155 kg/ha was obtained for maize and mash crops, respectively. The intercropping system registered a maize equivalent yield (maize + mash) of 2065kg/ha with a B:C ratio of 1.59.

**(iii) Cropping sequences**

Under cropping sequence programme, seven different cropping sequences *viz:* Pulse-Oilseed

(Moong-Mustard), Pulse-Pulse (Mash-Chickpea), Pulse-Cereal (Moong-Wheat), Cereal-Cereal (Maize-Wheat),Cereal-Oilseed (Maize-Mustard), Oilseed-Oilseed (Til-Mustard) and Pastoral-Pastoral (Fodder-Fodder) were tested and Pastoral-pastoral system recorded highest net returns, B.C ratio and RWUE of Rs.16150/- , 2.36 and 42.50 kg/ha/mm, respectively followed by maize crop sown under Cereal-Oilseed and Cereal-Cereal systems which produced net returns of Rs. 16106/- and 14288/- with B.C ratio of 1.83 and 1.74, respectively.

Sesame, Pulse and maize crop sown under different cropping sequences Practice demonstrated under Energy management.

**(iv) Improved method of sowing by Maize planter**

Maize crop was sown on 18-07-2014 on the station by broadcasting (farmers practice) and by Maize Planter (improved practice) and harvested on 06-10-2014. Sowing maize by improved technique i.e by maize planter resulted in crop yield increase by 27.6% over the farmer's practice (broadcasting).

**Practice demonstrated under alternate land use system:**

(i) Sowing of mixed fodder with Aonla (Aonla + mixed fodder)

Aonla + mixed fodder (maize+jowar+bajra) - gobhi sarson was demonstrated at DLRSS, RakhDhiansar and comparison was drawn with farmer's practice. The results revealed that mixed fodder yield to the tune of 212 q/ha with RWUE of 26 kg/ha/mm. The mixed fodder realized B:C ratio of 1.76 with net returns to the tune of Rs 7329/ha.

The maize yield under Aonla + Maize (100% NPK) system on farmers fields ranged from 1630 to 1715 q/ha with mean yield of 1673 q/ha. RWUE ranged from 2.43 to 2.60 kg/ha/mm with mean RWUE of 2.51 kg/ha/mm. The net returns per hectare ranged from Rs 9194/ha to Rs 10574 /ha with B:C ratio of 1.48 to 1.56 respectively. Mean net returns was found to the tune of Rs 9884/ha with B:C ratio of 1.52.

Mixed fodder in Aonla for delayed monsoon

Aonla + maize (Maize with recommended dose of fertilization)

## 3.4.7 Pulses Research Sub-Station, Samba

### Crop improvement

**Rabi 2014-15**

**Experiments:**

I. **Pulses Germplasm maintained:** 40 germplasms lines were maintained.

II. **Pulses breeding programme:** Old crosses were maintained and fresh crosses were also attempted

III. **AICRP on Chickpea:** following experiments were conducted under this project and promising entries were :

| S. No | Experiment | Total Entries | Best check Seed yield (Kg/ha) | Promising test entries superior(%)to best check in seed yield |
|---|---|---|---|---|
| 1. | Chickpea AVT-2 (Desi ) | 05 | GNG-469(1684) | No entry could surpass best check in seed yield |
| 2. | ChickpeaIVT (Desi ) | 31 | DCP-92-3(996) | PG-170(21),CSJ-763 (16.77), Phule-G-12107 (12.85), BGD (12.85), RVSSG ( 10.84),CSJ-822(10.84) |
| 3. | Chickpea AVT (R.F) | 08 | RSG-931(1403) | No entry could surpass best check in seed yield |
| 4. | ChickpeaIVT-(R.F) | 23 | RSG-931(1020) | RVSSG29 (8.24) and CSJ-834(6.19) |

**MULLaRP (Rabi 2014-15)**

| S. No | Experiment | Entries | Best check Seed yield (Kg/ha) | Superior entries ( seed yield ) |
|---|---|---|---|---|
| 1. | LentilAVT(L.S) | 05 | DPL-15(989) | No entry could surpass best check in seed yield. |
| 2. | LentilIVT- (L.S) | 26 | IPL-406(1445) | PL-194(4.78) |
| 3. | LentilIVT(S.S) | 27 | L-4147( 787) | NDL-14-22 (18.81) and BL-14-2(12.96) |
| | | | **Kharif-2015** | |
| 1. | MoongbeanIVT | 26 | IPM-02-3(756) | Seed yield in approximately all the entries remained below average except IPM-02-3 due to abnormal weather conditions though many of the entries were superior to local check. |
| 22. | UrdbeanIVT | 28 | PU-31(846 ) | PU-31 recoded best seed yield over all other entries with 59.4% increase over the best check of Uttara. |

**IV. Maintenance breeding: Rabi 2014-15**

| S. No. | Crop | Variety | Category of seed | Quantity produced(Kg) |
|---|---|---|---|---|
| 1. | Chickpea | GNG-469 | Breeder | 11.00 |
| 2. | Fieldpea | Parkash | Breeder | 51.00 |
| 3. | Lentil | L-4147 | Breeder | 181.00 |
| 4. | Wheat | PBW-175 | FoundationII | 2000.00 |

***Kharif* 2015**

| S. No. | Crop | Variety | Category | Quantity Produced(kg) |
|---|---|---|---|---|
| 1. | Urdbean | Uttara | Breeder | 68.00 |

## Crop Production

**G 4: Conservation agriculture practices for enhancing productivity of chickpea based cropping systems (cereal/oilseed/pulse-chickpea) in rainfed areas.**

The one year study on conservation agriculture in chickpea-Maize cropping system revealed that the treatment where conventional tillage coupled with mulching given to chickpea crop recorded significantly higher grain yield over Reduced and Zero Tillage plots.

Tillage treatments differ significantly among themselves and conventional tillage where two cultivator each followed by planking recorded significantly higher chickpea yield(9.68q/ha) as compared to reduced and zero tillage. The reduced tillage(7.20q/ha) is also recorded significant higher chickpea grain yield over zero tillage(6.50q/ha). However, the mulching treatments recorded significantly higher chickpea grain yield of 8.68q/ha than as recorded in without mulching treatments(6.90q/ha). The system productivity, netreturns and B:C ratio of this one year study also indicated that the same set of treatments were proved to be the promising one than other treatment combinations under study.

**Bioefficacy of different herbicides for broad spectrum weed management in chickpea.**

Among the eleven treatments including herbicidal and non herbicidal treatments,the weed free treatment recorded significantly higher grain yield of chickpea (1436Kg/ha) over all other treatment except the application of Pendimethalin 30 EC formulation+ Imazethapyr 2% (Ready mix combination)*@1.0kg/ haPE +one hoeing at 30-35 DAS which registered agrain yield of 1331Kg/ha and was significantly higher grain over all other treatments followed by Pendimethalin30EC formulation+Imazethapyr2% (Readymixcombination) @1.0kg/ha PE with 958kg/ ha grain yield of chickpea. The lowest grain yield of chickpea (438Kg/ha) was recorded with treatment weedy check treatment. The weed flora commonly observed in the experimental area includes *Fumeriaparvi flora, Anagalis arvensis, Chenopodium album, Cyperusrotundus, Cynodondactylon, Melilotusindica, Phalaris minor*. However, infestation of railway creeper (*Ipomoea dumetorum*) was more in the plots where the herbicide Imazethapyr 2% (Ready mix combination) @1.0kg/ha PE was not applied. It is pertinent to mention here that this weed is emerging a serious problem now a days in almost all the rabi crops especially chickpea. No phototoxic effect was observed on the chickpea crop with the use of these chemicals during thecourse of investigation.

**Note :** No phototoxic effect on crop was observed during the course of investigation.

**AICRP on Chickpea-Plant Breeding Coordinated Trials during Rabi, 2014-15**

1. **AVT-1 (Rainfed)-** Out of eight entries, only entry GNG-469, GNG2226 and CSJ515 were found resistant against *Ascochyta* blight disease.
3. **AVT-2 (Desi)-**Out of six entries, **e**ntry GNG2171 was found resistant against *Ascochyta* blight disease.
4. **IVT (Rainfed)-**Out of 23 entries, none was found resistant against *Ascochyta* blight disease.
5. **IVT (Desi)-**Out of 31 entries, H11-58 and GNG 2264 were found resistant against *Ascochyta* blight disease.

**ICRISAT Nurseries-2014-15**

**International Chickpea Varietal Trial Desi (ICVT-Desi) 2014-15-** Out of 20 entries, entries ICCV14107,14109, 14110,14111 and 14114 were found resistant against *Ascochyta* blight disease.

**Plant Breeding Coordinated Trials screened by Plant Pathologist -**

**Kharif. 2015**

1. **IVT (Mungbean):** Out of 25 entries, including L.Check, only KM-15-60,KM- 15-67 and KM-15-70 have shown moderately resistant reaction and rest entries were found resistant against Mungbean Yellow Mosiac virus.
2. **IVT(Urdbean):** Out of 27 entries, including L.Check, only KU-15-48,KU- 15-52,KU-15-60 and KU-15-62 have shown susceptible to highly susceptible disease reaction and rest entries were found resistant to moderately resistant against Mungbean Yellow Mosiac virus.

Mass multiplication of *Trichoderma harzianum* to treat pulses seed of mungbean and urdbean before sowing.

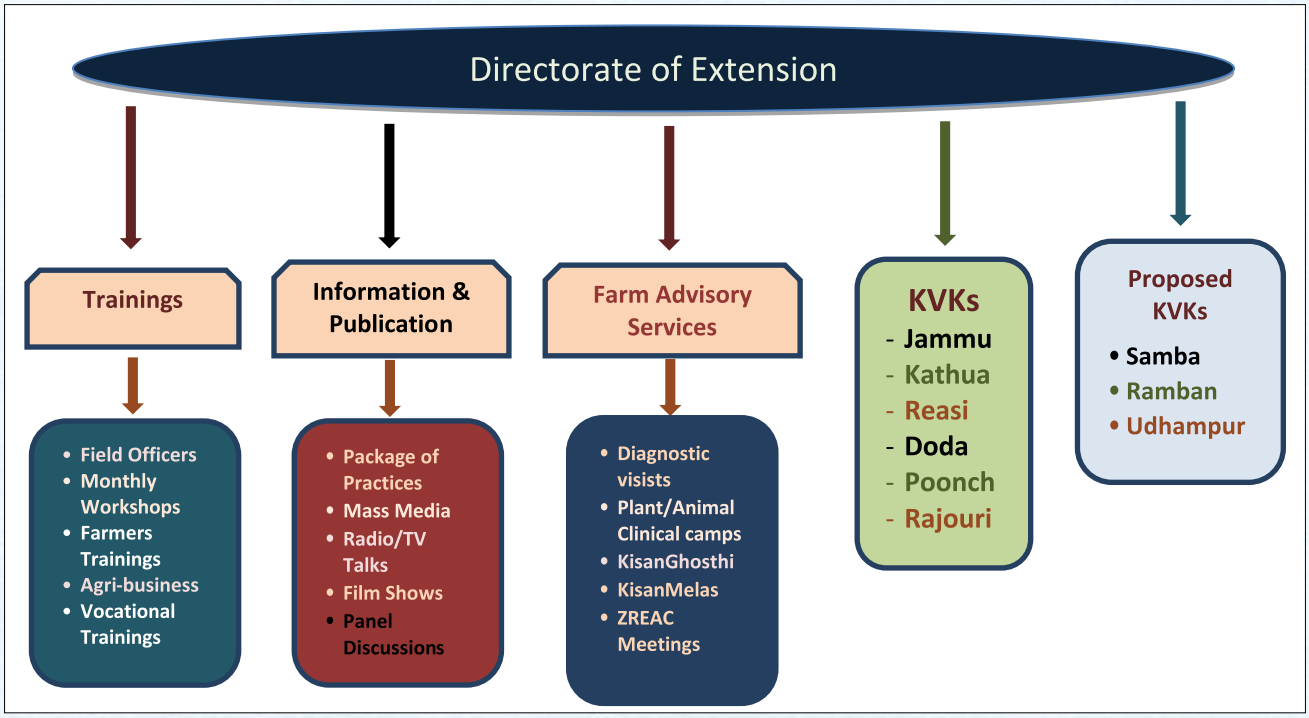
## Maintenance Breeding

Associated in production of following quantities of Breeder Seed of pulses in Rabi and Kharif and Certified II and Foundation II category seed of Wheat in the capacity of Farm Manager and Plant Pathologist.

# Extension

4

At the national level Extension Education has recently been realized to be one of the most important components for bringing desired improvements in agriculture production and productivity at the farmers' level. Extension education is one of the most important mandates of the Sher-e-Kashmir University of Agricultural Sciences and technology of Jammu. The Directorate of Extension popularly known as the "Field Extension Wing", is taking care of the farm advisory services in the villages surrounding the main campus of the university and at different districts through Krishi Vigyan Kendra. The responsibility for planning, organizing, conducting and coordinating the extension activities of the university in the Jammu region of Jammu & Kashmir State lies with the Directorate of Extension. Its main aim is to transfer the proven/tested technologies to the farmers, livestock owners, rural youth, field staff of State Govt. and other personnel engaged in developmental and professional activities in the fields of agriculture, animal husbandry, horticulture, home science and other allied areas through its well planned, skill-oriented and need based programmes. The Directorate acts as bridge between the research scientists and the farmers and other stakeholders to provide feedback. Therefore, the role of the Directorate is twofold, i.e., transfer of technologies from scientists to the ultimate users i.e. farmers through field functionaries and to find out the problems of the field to be passed on to various research divisions of Faculty of Agriculture, Faculty of Veterinary sciences & A.H. Farm Advisory Service (FAS) is the major wing and field arm of the Directorate of Extension Education covering the entire Jammu Division through Krishi Vigyan Kendras (KVKs) located in various districts of Jammu Division. The scientists working in these KVKs have a direct contact with farmers and render the necessary advice about the crops and livestock production and protection, soil and water management, child care, family and farm resource management etc. at their door steps. 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 main responsibilities/functions of the Directorate of Extension are:

- To Plan and execute Extension Education activities of the University.
- To coordinate extension education activities among Divisions of two Faculties, Research Stations, Sub-Stations, KVKs etc. of the University.
- To act as a strong liaison between university scientists and allied developmental department, national & international institutes and farming community for developing demand driven technologies.
- To timely transfer the innovative/proven technologies through KVKs.
- To supplement and complement the efforts of state development departments through elite/ frontline/limited extension work.
- Organizing training programmes for officers, farmers and un-employed/ rural youth.
- Organizing skilled demonstrations, on farm trials, exhibitions, fairs etc.
- Communicating/updated farm information through package of practices, books, booklets, leaflets, folders, posters, bulletins, pamphlets and through print and electronic media.

  Farm advisory services

## Major Works and Programmes Organized by Directorate of Extension

### Zonal Research & Extension Advisory Committee (ZREAC) Meetings

#### ZREAC *Kharif* 2015

The Zonal Research and Extension Advisory Committee (ZREAC) meeting for *Kharif* 2015 for Jammu province was held on 11th May, 2015 under the chairmanship of Prof. P.K. Sharma, Hon'ble Vice Chancellor, SKUAST-Jammu in the conference Hall of SKUAST-J, Main Campus, Chatha.

All Directors of University and line departments, Heads of Divisions of Faculty of Agriculture, Programme Coordinators of Krishi Vigyan Kendra, Incharge Stations, Resource personnel of the officers monthly workshops, representatives of the directorate of Horticulture, Chief Agriculture Officers, Chief Horticulture officers as well as other officers of Agriculture, and allied departments participated in the meeting.

Prof. P.K. Sharma, Vice chancellor, SKUAST-J urged the scientists of the university and officers of the line departments to work in close coordination in order to steer the agricultural research in a proper direction and to achieve the desired results. He further emphasized on ensuring maximum participation of the scientists of the university as well as officers from the line departments in such type of meetings. Prof. Sharma gave following instructions for boosting the Agriculture and allied sector in the Jammu region.

- Adaptation of Seed village concept on buy back arrangement system for production of quality seed.
- Capping the gap between the production potential and current production of improved varieties of field crops. Stress may be laid on high yielding self-pollinated classical varieties for tapping such gap.
- Mitigating the potential gaps in traditional technologies and available resources for best utilization.
- Diversification of rice varieties keeping in view the ecological importance and must concentrate on Basmati 370 as being the niche area in R S Pura.
- Advance Centre for Rainfed Agriculture at Dhiansar and Advance Centre for Horticulture Research at Udheywalla have been established for generating technologies related to rainfed crops and Horticulture crops, respectively.
- Polyhouse model and fertigation model have been developed and shall be demonstrated at the farmers' fields.
- Production of quality planting material by the university shall be taken up on the basis of feedback and requirement received from Horticulture and Floriculture Departments.

#### ZREAC *Rabi* 2015-16

Zonal Research and Extension Advisory Committee (ZREAC) meeting for Rabi 2015 for Jammu province was held on 6th Nov, 2015 in the conference

Hall of SKUAST-J, Main Campus, Chatha under the chairmanship of Prof. P K Sharma, Hon'ble Vice Chancellor, SKUAST-Jammu. All Directors of University and line departments, Heads of Divisions of Faculty of Agriculture, Programme Coordinators of Krishi Vigyan Kendras, Incharge Stations, Resource personnel of the officers monthly workshops, Chief Agriculture Officers, Chief Horticulture officers as well as other officers of Agriculture, Horticulture and other line departments participated in the meeting.

Prof. P K Sharma, Vice Chancellor, SKUAST-J desired that meeting should focus on the feedback from the line department so that site specific researchable issues can be addressed by the University. He was satisfied with the active participation of the scientists of the university as well as officers from the line department in different meetings. Prof Sharma projected the following key areas for boosting the Agriculture and allied sector in the Jammu region.

- University shall provide training to the extension functionaries of the line department on standardization of soil testing equipments and soil testing for compilation of the soil health cards for Jammu region to be issued on Soil Health day (5th Dec, 2015). The financial support raised by the line departments for addressing the researchable issues especially in centrally sponsored schemes/ projects.
- Development of organic farming practices with specific requirement for horticulture crops.
- Quality planting material production should be undertaken on the basis of feedback and requirements from Horticulture and Floriculture Departments.


Release of Publications


Dr. Pradeep K. Sharma, HVC Chairing ZREAC Meeting

## Workshop on Technological Support, Extension and Demonstration Service to Farmers (Agro-Climatic Region, Zone-I, Western Himalayan Region)

The Indian Council of Agricultural Research (ICAR) organized one day brainstorming workshop for Agro-climatic Zone -1 of Western Himalayan Region States of Jammu & Kashmir, Himachal Pradesh and Uttarakhand in collaboration with Directorate of Extension, SKUAST-Jammu on 4th November 2015. On the directives from the Prime Minister, NarendraModi, the brainstorming workshops are to be organized all over India in different agro-climatic zones to address the technological support, extension and demonstration service to farmers and to formulate roadmaps to provide the technological interventions and extension services. Dr N.K.Krishan Kumar, Deputy Director General (Horticultural Science), ICAR, chaired the workshop in which Vice-Chancellor of SKUAST-Jammu Dr. Pradeep K Sharma and Vice-Chancellor CSKHPKVV, Palampur, Dr. K.Katoch participated. On this occasion, background note on Agro-climatic Zone-1 was released for discussion. Dr P K Mishra, Director Indian Institute of Soil Water Conservation, Dehradun presented the background note of the workshop to initiate the discussion. Dr. Krishan Kumar, DDG, stressed upon the need for identifying micronutrient deficiencies and developing formulations for foliar application especially in horticultural crops. He laid emphasis on strengthening KVKs and use of ICTs like mobile technology for dissemination of innovations to farmers.

The scientists from the ICAR, SKUAST-Kashmir, SKUAST-Jammu, CSKHPVK Palampur, YS Parmar

University of Horticulture and Forestry Solan and Uttarakhand Agricultural Universities participated in the workshop and presented their view point on technological support in crop production, horticulture, agroforestry, natural resource management, animal husbandry, fisheries, agricultural engineering and agricultural extension. The directors of agriculture, horticulture and allied departments from J&K, Himachal Pradesh & Uttarakhand presented their response & feedback about the agricultural and horticulture scenario in their States. Selected farmers from these states, present in the meeting, apprised the scientists about their problems.

Glimpses of Workshop

## Aonla Day Celebrated at SKUAST-Jammu

Sh. N. N. Vohra, Hon'ble Governor, J&K and Chancellor Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu (SKUAST J) inaugurated the "Anole Exhibition" organized by the Krishi Vigyan Kendras (KVKs) of Jammu & Kathua districts in collaboration with Division of Fruit Science and the Directorate of Extension Education, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu on 31st December, 2015.

The aonla day was attended by about three hundred farmers who participated and displayed their anola produce. The Governor interacted with the farmers on this occasion while paying a visit to anola exhibits displayed by the farmers. He also addressed the fruit growers in the conference hall of the university. In his address, he directed the university for establishing a cooperative models for anola processing and marketing so that it becomes economically remunerative. The university publications in vernacular language for the farmers were also released by the chancellor. The winner farmers in the anola exhibition were given awards by the Governor. Dr. P.K. Sharma in his address presented the overview of anola cultivation in Kandi areas and emphasized on efforts to increase quality and productivity in light of climate change.


Glimpses of Aonla day celebrated at SKUAST-Jammu

## Workshop on PPV&FRA organised in collaboration with ATARI, Zone I

One day workshop on Protection of Plant Varieties & Farmers Rights Act was organised on 6th February 2016 at Directorate of Extension, SKUAST-Jammu in which 50 KVK scientists from state agricultural

universities of SKUAST-Jammu and SKUAST-Kashmir participated.

Glimpses of Workshop on PPV&FRA

## State level Kisan Mela organized at SKUAST-Jammu

Sh. N.N. Vohra, Governor of Jammu and Kashmir (J&K) and Chancellor of Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu (SKUAST-J) inaugurated two days' Kisan Mela at SKUAST-J, Main Campus Chatha. Daljit Singh, Vice-Chairman Kisan Advisory Board, Surinder Choudhary MLC, M A Bukhari Commissioner Secretary Agriculture Production Department, Professor Pradeep K Sharma Vice-Chancellor SKUAST-J were present at the inaugural. It is pertinent to mention here that the Kisan Mela of SKUAST-Jammu provides an opportunity to showcase the latest agriculture and veterinary related technologies from across the country for the farming community. Agricultural universities namely Punjab Agricultural University, Indira Gandhi Agricultural University, Chatisgarh, YS Parmar University of Horticulture and Forestry Solan Himachal Pradesh, Rajmata Vijayaraje Scindia Krishi Vishwavidyalaya Gawalior, the University of Agricultural Sciences Bangalore and many Indian Council of Agricultural Research(ICAR) institutes displayed the technological innovations at the Kisan Mela. Private industries, farmers, self-help groups and non-governmental organizations have also set up stalls to display their products. J&K Bank Ltd. and Canara Bank offered their services to the farmers for various schemes. Thousands of farmers from every nook and corner of Jammu province thronged the Kisan Mela. An animal show is also organized to display various new breeds of poultry and cattle. Kisan Mela 2016 is being organized in partnership with J&K State Advisory Board for Development of Kisans, Agriculture Production Department J&K, Department of Agriculture, Department of Horticulture, Department of Animal Husbandry, Department of Floriculture, Department of Sericulture, Department of Sheep Husbandry, Department of Fisheries and Command Area Development.

Governor N.N. Vohra while appreciating the technological display hoped that the latest technologies will be available to the farming community for augmenting farm and animal productivity. He expressed concern over the food, meat and milk deficit in the state and impressed upon the researchers, extension personnel and farmers to make state self-sufficient. While addressing the farmers, the Governor said that this is for the first time in the history of independent India that 70 per cent of the Union Budget has been earmarked for agriculture and rural development. He lauded the schemes launched by Government of India like Pradhan Mantri Krishi Sinchai Yojana and Pradhan Mantri Fasal Bima Yojana where farmers have to pay only 2, 1.5 and 5% as premium for *kharif*, *rabi* and annual commercial crops respectively. While appreciating the efforts of the university, the governor urged the university scientists and officers of the allied department to highlight these beneficial schemes launched by the Union Government. He advised the Vice-chancellor to put more emphasis on developing sound and scientific technologies for rain fed agriculture as 60% of area of the state is rain fed. The farmers showed keen interest in visiting the stalls and interacting with scientists. A total of 73 display

units covering a broad spectrum of agriculture and allied activities were the main attraction for farmers besides demonstration units of the research farm, especially to the integrated farming system model of the university. Dr. Sharma, Vice-Chancellor SKUAST-J assured the chancellor that the university will take all necessary steps to implement his vision for the development of agriculture and allied sectors. Daljit Singh Vice Chairman Kisan Development Board appreciated the efforts of the university in organizing such Melas that will add to the existing knowledge of the farming community. M A Bukhari Commissioner Secretary Agriculture Production Department urged the department and university to work tirelessly with zeal to serve the farmers. Prof. Pradeep Sharma, Vice Chancellor, SKUAST-J appreciated the directorate of extension for organizing such a mega mela at the university. Dr. K.S. Risam, Director Extension extended the vote of thanks.

During the Valedictory function of two days Kisan Mela, Jenab Khurshid Ahmed Ganai, Advisor to Hon'ble Governor was the chief guest. While addressing the gathering, he advised to strengthen the extension system and to establish strong linkage between University and development departments. Mr. Ganai also advocated to reduce the time lag for transfer of technologies from lab to land so that new technologies can reach to the farmers field at the earliest possible. Mr. Ganai also emphasized that the state should be self-sufficient in meeting the demand regarding the grain, milk and meat production. He hoped that in coming days all the requirement of food consumption will be met from the state itself. He advised the Vice-chancellor to put more emphasis on developing sound and scientific technologies for rainfed agriculture as state is having more than 70% of area under rainfed condition. Mr. Ganai appreciated the Directorate of Extension for organizing such a mega mela at university level. Many farmers were also awarded for their achievements in the field of agriculture and allied sectors. Prof. Pardeep K. Sharma, Vice-Chancellor SKUAST-J assured that university will take all necessary steps to implement the ideas put forth by the chief guest. The formal vote of thanks was presented by Dr. R.K. Arora, Associate Director Extension, SKUAST-J.

Glimpses of State Level Kisan Mela

## University Level Workshop of KVKs

One day University Level Workshop of all Krishi Vigyan Kendras under SKUAST-Jammu was held on 30$^{th}$March, 2016 at the University Head Quarter in which Heads of the divisions from Faculty of Agriculture and Faculty of Veterinary Sciences & A.H and scientific staff of all KVKs participated. The workshop provided a platform to 65 participants to interact on the technology generation, refinement and dissemination and to deliberate upon the proven technologies generated through research for dissemination through FLDs with farmers participation in the Jammu region and those technologies which require assessment in the various districts and their refinement for location specificity at KVK level as On Farm Trials (OFTs).

## Officers Monthly Workshops:

Monthly Officer's Workshops are planned 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 54 Officers Monthly Workshops at various KVKs and district headquarters of the Jammu region during the period 2015-16. The workshops were attended by the district and sub-divisional level officers from Department of Agriculture and Department of Horticulture.

## Scientific Advisory Committee (SAC) Meetings of KVKs:

The scientific Advisory Committee meetings of KVKs under the administrative control of Directorate of Extension were conducted in order to plan, review and monitor the action plan of KVKs. The details are placed below:

| S. No. | Name of KVK | Date |
|---|---|---|
| 1. | Krishi Vigyan Kendra Jammu | 22.01-2016 |
| 2. | Krishi Vigyan Kendra Rajouri | 22-12-2015 |
| 3. | Krishi Vigyan Kendra Poonch | 21-12-2015 |
| 4. | Krishi Vigyan Kendra Reasi | 14-01-2016 |
| 5. | Krishi Vigyan Kendra Kathua | 28-12-2015 |

## Technological backstopping of KVKs

The Directorate is organizing capacity building programmes for scientific staff of all KVKs for providing technological backstopping. 03 one day 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.

| S. No. | Title of the training programmes | Date |
|---|---|---|
| 1. | Gender budgeting and Mainstreaming Women in Agriculture and Allied Sectors | 4th to 5th March 2016 |
| 2. | Monitoring & Evaluation of KVK activities | 28th March 2016 |
| 3. | PM Fasal Bima & PM Krishi Sinchai Yojana | 29th March 2016 |

## Trainings Programmes Organized by Directorate of Extension

- One day training Programme for Level –II experts of Kisan call centre was organized in the Directorate of Extension on 20th April 2015 in which 9 experts from SKUAST-Kashmir and SKUAST-Jammu participated. Dr. P.K. Sharma, Vice Chancellor, SKUAST-Jammu and Dr. M.S. Gill, Director Extension, PAU, Ludhiana were the resource persons who delivered lectures on fields of their specialization besides discussing various aspects of the climate resilient agriculture.
- One day training Programme for Level –I experts of Kisan call centre was organized in the Directorate of Extension on 4th January 2016 in which 6 experts from Kisan Call Centre owned by IFFCO, Jammu participated. The scientists from SKUAST-Jammu delivered lectures in the training programme on agriculture and allied aspects.
- One day Stakeholders Workshop on the theme 'Upscaling Water Productivity in Ranbir Canal Command' on the Ocassion of World Water Day and Jai KrantiAbhyian on 22nd March 2016 in collaboration with National Institute of Hydrology-Western Himalayan Regional Centre, Jammu.

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

Under the ATMA scheme, Directorate of Extension is the nodal agency designated as State Agriculture Management Extension Training Institute for Jammu Division. As per the SREP of each district the trainings are being organized for the Masters training Programme.

1. Two Days Training Programme entitled"Assuring Food Security under the Challenges of Climate Change" was organized by SAMETI – Jammu w.e.f. 21 – 22 April 2015. The training programme was attended by 12 officers from Agriculture & allied Sectors.
2. Two Days Training Programme entitled "Organic Livestock Farming" was organized by SAMETI – Jammu w.e.f. 23 – 24 April 2015. The training programme was attended by 19 officers

from Animal Husbandry & Sheep Husbandry Department.

3. Two Days Training Programme entitled "Maize Production Technology for Jammu Region"was organized by SAMETI – Jammu W.e.f. 13–14 May 2015. The training programme was attended by 30 officers from Agriculture Department.
4. Four Days Training Programme entitled "Urban Agriculture" was organized by SAMETI – Jammu w.e.f. 18 – 21 May 2015 in collaboration with MANAGE Hyderabad. The training programme was attended by 25 officers from Agriculture & allied sectors.
5. Two Days Training Programme entitled "Maintenance of Agriculture Implements for Field Assistants & Horticulture Technicians"was organized by SAMETI – Jammu W.e.f. 20 – 21 August 2015. The training programme was attended by 19 officers from Agriculture & Horticulture Departments.
6. Three Days Training Programme entitled "Application of ICT's in Extension Reforms"was organized by SAMETI – Jammu in collaboration with MANAGE – Hydrabadw.e.f. 17 – 19 September 2015. The training programme was attended by 32 officers from ATMA &KrishiVigyanKendras of Jammu region.
7. Three Days Training Programme entitled "Rabi Oil Seed Technology for Jammu Region"was organized by SAMETI – Jammu w.e.f. 20 – 21 October 2015. The training programme was attended by 19 officers from Agriculture Department.
8. Five Days Training Programme entitled "Organic Management and Production/QC of Organic Inputs"was organized by SAMETI – Jammu in collaboration with Regional Centre of Organic Farming, Panchkula, Haryanaw.e.f. 02 – 06 November 2015. The training programme was attended by 20 officers from Agriculture Department
9. Two Days Training Programme entitled "Management of Sericulture under Different Conditions"was organized by SAMETI – Jammu w.e.f. 17 – 18 November 2015. The training programme was attended by 18 officers from Sericulture Department.
10. Two Days Training Programme entitled"Climate Resilient Fruit Production Technologies"was organized by SAMETI – Jammu w.e.f. 01 – 02 December 2015. The training programme was attended by 24 officers from Horticulture Department.
11. Two Days Training Programme entitled "Multiple Use of Water through Sunken/Raised Bed Planting Techniques"was organized by SAMETI – Jammu w.e.f. 03 – 04 December 2015. The training programme was attended by 23 officers from Agriculture, Horticulture & Fisheries Department.
12. Two Days Training Programme entitled "Fish–cum–Livestock Farming"was organized by SAMETI – Jammu w.e.f. 21 – 22 December 2015. The training programme was attended by 14 officers from ATMA & Fisheries Department
13. Two Days Training Programme entitled "Integrated Pest Management on Fruits & Vegetables"was organized by SAMETI – Jammu w.e.f. 21 – 22 December 2015. The training programme was attended by 17 officers from Agriculture & Horticulture Department.
14. Two Days Training Programme entitled "Physiological & Bio Chemical Aspects of Abiotic & Biotic stress in crop Plants" was organized by SAMETI – Jammu w.e.f. 21 – 22 January 2016. The training programme was attended by 18 officers from Agriculture & Horticulture Department.
15. Two Days Training Programme entitled "Propagation Techniques in Fruit Crops"was organized by SAMETI – Jammu w.e.f. 27 – 28 January 2016. The training programme was attended by 24 officers from Horticulture Department.
16. Two Days Training Programme entitled "Agroforestry Models for Livelihood Security in Kandi Belt of Jammu Region" was organized by SAMETI – Jammu w.e.f. 03 – 04 February 2016. The training programme was attended by 25 officers from Agriculture & Horticulture Department.
17. Two Days Training Programme entitled "Soil Test Based Nutrient Management"was organized by SAMETI – Jammu w.e.f. 09 – 10 February 2016. The training programme was attended by 27 officers from Agriculture & Horticulture Department.
18. Two Days Training Programme entitled "Diagnosis

& Control of Zoonotic Diseases of Livestock"was organized by SAMETI – Jammu w.e.f. 11 – 12 February 2016. The training programme was attended by 18 officers from Animal Husbandry & Sheep Husbandry Departments.

19. One Day Training Programme entitled "Guidelines for Operationalization of Diploma in Agricultural Extension services for Input dealers (DAESI)" was organized by SAMETI – Jammu on 24 February 2016. The training programme was attended by 32 officers from ATMA, Agriculture Department, KVK's & Managers from Fertilizer Companies.
20. Two Days Training Programme entitled "Management of Bees for Enhancingproductivity of crops with special emphasis on multiplication of Bee Colonies" was organized by SAMETI – Jammu on 25-26 February 2016. The training programme was attended by 19 officers from Agriculture & Horticulture Department.
21. Two Days Training Programme entitled "Gender Budgeting & Mainstreaming women in Agriculture and allied sector" was organized by SAMETI – Jammu on 03-04 March 2016. The training programme was attended by 19 officers from Agriculture &allied sectors.
22. Two Days Training Programme entitled "Market Led Extension"was organized by SAMETI – Jammu on 08-09 March 2016. The training programme was attended by 19 officers from Agriculture &allied sectors.
23. Five Days Training Programme entitled "Soil Analysis for Soil Health Card" was organized by SAMETI – Jammu on 14-18 March 2016. The training programme was attended by 16 Technical officers working in the soil testing Laboratories of different districts of Jammu division from Agriculture Department.
24. Three Days Training Programme entitled "Operationalization of submission on Agricultural Extension under NMAET"was organized by SAMETI – Jammu on 28-30 March 2016. The training programme was attended by 21 officers from ATMA /Agriculture Department.
25. Two Days Training Programme entitled "Scientific Management Practices for enhancing on farm Water Productivity"was organized by SAMETI – Jammu on 10-11 March 2016. The training programme was attended by 43 officers from Agriculture, Horticulture Department & CAD.
26. Two Days Training Programme entitled "Application of Engineering Technologies for improving water use efficiency" was organized by SAMETI – Jammu on 15-16 March 2016. The training programme was attended by 42 officers from Agriculture, Floriculture Department & CAD.

## Training programmes and Other Extension activities organized by KVKs

Krishi Vigyan Kendras (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 have been mentioned as below:

## Farmers' Training Programmes

Krishi Vigyan Kendras (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 Table below indicates the farmers training programmes undertaken by different KVKs during the year 2015-16.

| Trainings | KVK Jammu | KVK Rajouri | KVK Doda | KVK Reasi | KVK Poonch | KVK Kathua |
|---|---|---|---|---|---|---|
| No. of trainings | 45 | 46 | 40 | 70 | 42 | 47 |
| No. of Participants | 999 | 997 | 655 | 1425 | 848 | 1315 |

### In-service Training Programmes

| Trainings | KVK Jammu | KVK Rajouri | KVK Doda | KVK Reasi | KVK Poonch | KVK Kathua |
|---|---|---|---|---|---|---|
| No. of trainings | 05 | 07 | 13 | 09 | 08 | 13 |
| No. of Participants | 96 | 128 | 193 | 129 | 125 | 281 |

## Rural youth/Vocational Training programmes including Skill development trainings

| Trainings | KVK Jammu | KVK Rajouri | KVK Doda | KVK Reasi | KVK Poonch | KVK Kathua |
|---|---|---|---|---|---|---|
| No. of trainings | 05 | 05 | 04 | 11 | 06 | 05 |
| No. of Participants | 105 | 89 | 45 | 397 | 129 | 160 |

Glimpses of Vocational Training programmes

## Technology transferred and assessed (KVK Wise)

| S. No. | Name of Technology | Technical Intervention | Economic Benefit (C :B Ratio) | Feedback |
|---|---|---|---|---|
| **KVK Jammu** | | | | |
| 1. | Assessment of wheat varieties for yield potential | PBW-621<br>HD-2967<br>JAUW-584 | 1:1.36<br>1:1.56<br>1:1.39 | Wheat variety HD 2967 performed better as compared recording 23.0 q/ha yield as compared to JAUW-584 |
| 2. | Assessment of high yielding Oat varieties for higher biomass | Kent<br>Sabjar<br>Palampur-1 | 1:1.52<br>1:1.80<br>1:1.88 | Sabjar and Palampur-1 varieties performed satisfactorily at farmers field |
| 3. | Assessment of yield potential of different composite under Rainfed condition | PMSY-3<br>PMS-4 | 1:1.77<br>1:2.0 | Farmers were responsive with respect to the two maize composite varieties |
| 4. | Assessment of improved Basmati varieties for yield potential | Pusa-1509<br>Pusa-1612<br>Pusa-1401 | 1:1.86<br>1:2.0<br>1:1.77 | Farmers preferred Pusa-1509 variety however Pusa 1612 recorded 44.0 q/ha yield |
| 5. | Assessment of conoweeder for weed management in farmers field | Bisprribac Sodium (50 ml/ha 20-25 DAT<br>Conoweeder<br>25,30 and 45 DAT) Basmati-370 | 1:2.60<br><br>1:2.77 | Conoweeder has proved to be effective in reducing the drudgery |

| S. No. | Name of Technology | Technical Intervention | Economic Benefit (C :B Ratio) | Feedback |
|---|---|---|---|---|
| 6. | Integrated Nutrient Management in Okra | Recommended dose (25 t/ha FYM, N 100 Kg, P 60 Kg, K 60 Kg)<br>Recommended (25 t/ha FYM, N 100 Kg, P 60 Kg, K 60 Kg) + seed treatment with biofertilizer (Azetobactor @800g / ha) | 1:3.66<br>1:3.84 | Addition of bio fertilizer increased the yield and farmers were responsive for the seed treatment |
| 7. | Assessment of impact of feed supplement on fish production | Recommended – rice bran+ oil cake (1:1) @ 3% of body weight<br>New Intervention – Recommended + Agrimin forte @ 20g/kg feed<br>New Intervention – Recommended + Agrimin forte @ 20g/kg feed | 1:2.05<br>1:2.38 | Farmers actively adopted the addition of Agrimin forte |
| 8. | Assessment of improved perennial grasses for herbage production under subtropical conditions | Napier Hybrid (NB-1<br>Setaria (PSS-1)<br>*Cenchrusciliaris (CAZRI-1)* | 1:2.86<br>1:1.87<br>1:1.01 | Napier hybrid produced more herbage and till 1st week of December |
| **KVK Rajouri** | | | | |
| 1. | Disease Management in Paddy | T1: Farmer practice<br>T2: Seed Treatment (Carbendazim) + Seedling Dip<br>T3: T2 + One spray at Tillering | 1:2.0<br>1:3.2<br>1:3.9 | Seed treatment, as a practice of disease control has been popularised among the farmers |
| 2. | Effect of organic/ bio-fertilizers and inorganic fertilizers on blackgram. | T1: Farmer practice (Imbalance use of fertilizers)<br>T2: (75 % of Recommended dose of NPK + FYM)<br>T3: T2+ Rhizobium @ 200 g/10 kg seed | 1: 1.87<br>1:2.00<br>1:2.18 | Farmers perceive the use of bio-fertilisers in pulses as an innovative intervention |
| 3. | Management of cut worm (Agrotisipsilon) in maize under mid hills | T1: Farmer practice (High Seed Rate)<br>T2: Carbofuran<br>T3: Fipronil | 1:2.6<br>1:3.2<br>1:3.1 | Cutworm is the major problem in the area and farmers were satisfied with the results of the trials |
| 4. | Management of fruit fly in bottle gourd. | T1: Farmer practice (Insecticides)<br>Baiting<br>IPM<br>(Sanitation+ Pheromone Traps+ Malathion) | 1:1.8<br>1:5.2<br>1:5.8 | The results of the trail will be beneficial for management of insect |
| **KVK Doda** | | | | |
| 1. | Seed rate in maize | Appropriate seed rate<br>T1: farmers Practice<br>T2:Seed rate 35kg/ha<br>T3: Seed rate 45kg/ ha. | <br>1:1.81<br>1:1.94<br>1:2.41 | Economic returns were higher |
| 2. | Herbicide Use & Weed management | Herbicides use<br>T1:Farmers practice(2 Hand weeding)<br>T2:Atrazine @1.0 kg/ha.(0-3DAS ) + 1 hand weeding (20-25 DAS)<br>T3:T2+ 2-4D Amine@ 500 ml/ha (30-40 DAS) | <br>1:1.43<br>1:1.75<br>1:1.92 | Production was higher |
| 3. | Use Of Composite Varieties of maize | Composite variety of maize<br>T1:Local/ Desi (white)<br>T2:PMSY-3<br>T3: Vijay | <br>1:1.31<br>1:1.59<br>1:1.89 | Higher production and productivity achieved in T3 |

| S. No. | Name of Technology | Technical Intervention | Economic Benefit (C :B Ratio) | Feedback |
|---|---|---|---|---|
| **KVK Reasi** | | | | |
| 1. | Technology Assessed:<br>Integrated weed management in wheat | T1 – Farmer practice(1 HW 20 DAS)<br>T2- Pendimethlene(0.9 kg/ha) as PE(recommended)<br>T3- Metsulfuron methyl (6g/ha) as PoE(25-30 DAS)<br>T4- 2 4 D Aminsalt 0.75 kg/ha as PoE (25-30 DAS)<br>T5 – Chdinofop 60 g/ha as PoE(25-30 DAS) | - | Farmers were satisfied after observing the initial results |
| 2. | Integrated weed management in mash | T1- Farmer Practice(1 HW after 30 DAS)<br>T2 – Stomp 30 EC 600 ml/acre + 1 HW 30 DAS)<br>T3- Stomp 30 EC 1 ltr/acre (recommended)<br>T4 – Fluchloralin( 0.675 lt/acre) | T1:9.2qt/ha<br>T2:8.6qt/ha<br>T3:10.2qt/ha | Farmers were satisfied after observing the results of T3 |
| 3. | Intercropping of Turmeric with Agroforestry trees to assess the yield under shade. | $T_1$- Control (Yield in open field)<br>$T_2$- Turmeric cultivation under trees. | T1-4.5q/ha<br>T2-3.2q/ha | Farmers were satisfied after observing the results of T1 |
| 4. | Study the productivity of different wheat varieties under agri-horti system. | T1 – Control (yield in open field)<br>T2 – Yield under Orchard<br>(Var. PBW175<br>Raj. 3765<br>Raj. 3077) | In progress | Farmers were satisfied after observing the initial results |
| 5. | Evaluation of different wheat varieties. | T1-JAUW-598<br>T2-Raj.3765<br>T3-PBW-175. | 1:2.23<br>1:2.78<br>1:3.12 | Farmers were satisfied after observing the results of PBW-175 |
| 6. | Effect of concentrate mixed feeding with maize and standardized (Pre starter, starter, finisher) feeding on the growth of poultry birds. | T1-Farmer prctice<br>T2-Concentrate feed mixed with maize<br>T3-Standardized feed | In progress | Farmers were satisfied after observing the initial results |
| 7. | Effect & Role of leaf meals on growth, production and parasitic control in sheep and goat | T1-Farmer practice<br>T2-Leaf meal<br>T3-Urea treatment | In progress | Feed block machine from FVSc. &A.H has been received last month and yet to be installed by Animal Nutrition div FVSC,R.S.Pura. |
| 8. | Management of Rhizome rot in Ginger. | T1-Farmers' practice<br>T2-Recommended practice<br>(Seed treatment with Mancozeb+bavistin or Ridomil)<br>T3-Recommended practice + Drenching bavistin or ridomil | 90 q/ha<br>125 q/ha<br>140 q/a | Farmers were satisfied after observing the results of T3. Seed treatment with metalaxy 0.25 % yielded better results of ginder |
| 9. | Chilli wilt disease management. | T1-Farmers' practice (without Seed treatment).<br>T2-Recommended (Seed treatment with Carbendazim+Thiram 1:1ratio) .<br>T3- Drenching with Carbendazim | T3 gave better results | Farmers were satisfied after observing the results of T3 |

| S. No. | Name of Technology | Technical Intervention | Economic Benefit (C :B Ratio) | Feedback |
|---|---|---|---|---|
| **KVK Poonch** | | | | |
| 1. | Management of cutworm in Maize + Rajmash under mixed cropping | Seed treatment with Fipronil @ 2 ml/kg<br>Soil application of Carbofuran @ 20 kg/ha | 2.42<br>2.65 | Farmers preferred Carbofuran application @ 20 kg/ha for the control of cut worm. |
| 2. | Management of sheath blight in paddy | Seed treatment with Carbendazim @ 2gm/kg + Spray Carbendazim @1 g/l<br>Seed treatment with Thiram @ 2 gm/kg + Spray of Mancozeb @ 3 gm/l | 3.62<br>3.29 | Farmers preferred Seed treatment with Carbendazim @ 2 gm/kg + Spray of Carbendazim @ 1 gm/l |
| 3. | Nutrient Management in Apple | Urea(525g/tree), DAP (325g/tree), MOP (730g/tree), + 100 kg FYM & ( Cacl2(0.5%), ZnSo4(0.5%), MnSo4(0.5%) and Boron(0.1% , if needed)<br>Intervention (application of Fertilizer dose based on test) | - | - |
| 4. | Nutrient management in Plum | Urea (735 g/tree) + DAP (280 g/tree) + MoP (1080 g/tree)+FYM (50kg/plant)<br>Intervention (application of Fertilizer dose based on test) | - | - |
| **KVK Kathua** | | | | |
| 1. | Performance of new basmati rice varieties under sub tropics of Kathua | Farmers Practice (Pusa-1121)<br>Pusa-1509<br>Pusa-1612 | 1:2.2<br>1:2.5<br>1:2.5 | Farmers were overwhelmed with the yield of Pusa-1509 and Pusa-1612 and desired to continue with this technology provided suitable market shall be ensured. |
| 2. | Comparative performance of different varieties of Okra under Sub tropics of Kathua | Farmer Practice (ParbhaniKranti)<br>Pusa A-4<br>JBS-02 | 3.0<br>3.7<br>3.4 | Farmers are satisfied with the performance of Okra variety Pusa A-4 there is an increase of 75% yield over farmer practice |
| 3. | Management of Bakane (Foot Rot)Disease in Paddy Through Seed Treatment | $T_1$. Farmers Practice ( No Treatment)<br>$T_2$. Carbendazim 50 WP @ 2g/kg of seed (Recommendation)<br>$T_3$. $T_2$+Seedling dip in Carbendazim(0.2%) (Intervention) | -<br>26.08<br>52.17 | Carbendazim 50 WP @ 2g/kg of seed and +Seedling dip in Carbendazim(0.2%) manage the Bakane disease and increase the yield |
| 4. | Effect of Mulching on the Yield of Strawberry | Farmers Practice (No mulch)<br>Plastic Mulch($T_1$)<br>Paddy straw mulch ($T_2$) | 2.3<br>3.5<br>3.2 | Mulching with black polythene resulted 45% increase in yield over farmer practice |
| 5. | Evaluation of effect of UMMB in Dairy cows | Farmers practice (common salt)<br>Mineral mixture<br>UMMB | 0.8<br>1.2<br>1.6 | Farmers were satisfied with the performance of UMMB |
| 6. | Evaluation of effect of replacement of wheat straw with maize cobs | Farmers practices (Wheat straw)<br>20% maize cobs<br>50% maize cobs | 0.85<br>1.1<br>1.3 | Farmers were satisfied with the performance / weight gain of the animals |






**Glimpses of Technology Assessment & Refinement carried out by KVKs during 2015-16**

## Front Line Demonstrations

| S. No. | Crop/Enterprise | Variety | Name of District | Area | No. of Participants | Crop Impact % Increase |
|---|---|---|---|---|---|---|
| **KVK Jammu** | | | | | | |
| 1. | Paddy | 1509 | Jammu | 2.0 | 11 | 20.6 |
| | | | | 4.2 | 29 | 24.6 |
| | | 1401 | | 2.0 | 10 | 16.0 |
| | | 1612 | | 1.6 | 07 | 31.4 |
| | | | | 0.7 | 03 | 32.4 |
| | | B-370 | | 8.0 | 32 | 13.2 |
| 2. | Maize | Double Dekalb | | 6.0 | 33 | 10.43 |
| 3. | Mash | Uttara | | 1.0 | 10 | 13.9 |
| 4. | Gram | GNG 1581 | | 22.0 | 197 | - |
| 5. | Harad | JH-1<br>JH-2<br>JH-3 | | 0.75 | 29 | Good survival |
| 6. | Okra | Arka<br>Anamika | | 0.5 | 10 | 8.9 |
| 7. | Bottle gourd | Naveen | | 0.25 | 09 | Results awaited |
| 8. | Wheat | HD-2967 | | 10.60 | 39 | Results awaited |
| 9. | Mustard | Pusa - 28<br>Pusa - Vijay<br>Giriraj | | 1.9<br>2.2<br>0.7 | 16<br>24<br>6 | Results awaited |
| 10. | Gobi Sarson | (DGS-1) | | 2.0 | 27 | Results awaited |
| 11. | Fisheries | Catla<br>Rohu<br>Mrigal<br>Grass carp<br>Silver Carp<br>Common Carp | | 1.5 | 15 | 28 |
| **KVK Rajouri** | | | | | | |
| 1. | Maize | Proagro-4794<br>Tip-Top<br>PAC-781<br>HQPM-4<br>HQPM-9 | Rajouri | 2.3<br>1.45<br>1.9<br>0.9<br>0.8 | 10<br>07<br>10<br>0.9<br>0.8 | 60%<br>60%<br>47%<br>40%<br>38% |
| 2. | Paddy | K-343 | | 2.1 | 06 | 30% |
| 3. | Blackgram/ Urdbean | Uttara | | 3.05 | 29 | 29% |
| 4. | Pheromone traps | - | | 2.0 | 10 | - |
| 5. | Pheromone traps | - | | 2.0 | 05 | - |
| 6. | Chicks (Backyard poultry) | Chabro | | 700 chicks | 55 | - |
| 7. | Wheat | HD-2967<br>HS-507 | | 7.15<br>0.45 | 37<br>03 | - |
| 8. | Oats | Kent | | 3.1 | 15 | - |
| 9. | Gram | GNG-1581 | | 21 | 121 | - |
| 10. | Mustard | NRJ-112 | | 3.3 | 11 | - |
| 11. | Gobi Sarson | HPM-1 | | 1.0 | 03 | - |

| S. No. | Crop/Enterprise | Variety | Name of District | Area | No. of Participants | Crop Impact % Increase |
|---|---|---|---|---|---|---|
| **KVK Doda** | | | | | | |
| 1. | Maize | DMH-7314 | | 10.0 | 50 | Yield was higher than local check |
| 2. | Paddy | Tricyclazole in spray | | 6.0 | 16 | Crop stand was good and better yield than non- FLD |
| 3. | Mash | Uttara | | 0.7 | 7 | Yield was higher than local check |
| 4. | Chicks (No.) | Chabro | | 500 | 50 | Performance of Live weight and Average diligain were better than local Breed (Non-descript) |
| 5. | Oats | Sabzar | | 4.2 | 21 | Result awaited |
| **KVK Reasi** | | | | | | |
| 1. | Maize | Double Deklab | Reasi/ Udhampur | 5 | 43 | 60.71 % increase |
| 2. | Wheat | WH-1105 | Reasi/Udhampur | 5 | 43 | 59.37 % increase |
| 3. | Black gram | Shekhar-3 | Reasi | 2 | 31 | 50 % increase |
| 4. | Green gram | SML-688 | Reasi | 1 | 10 | 45.16 % increase |
| 5. | Chickpea | HC-5 | Reasi | 1.2 | 12 | 37.5 % increase |
| 6. | Mustard | Pusa Bold | Reasi | 6 | 30 | 25 % increase |
| 7. | Oats | Kent | Reasi | 2 | 20 | 30 % increase |
| 8. | Okra & Bottle gourd | Varsha Uphaar | Reasi | 3 | 120 | In progress |
| 9. | Mushroom (bags) | Dhingri | Reasi | 16 | 64 bag | Good |
| 10. | Poultry | Chandigarh broiler | Reasi | 152 | 1705 | In progress |
| **KVK Poonch** | | | | | | |
| 1. | Wheat | HS-490, WH-1105 | Poonch | 2.6 | 15 | 16 % increase |
| 2. | Paddy | K-343 | | 2.9 | 6 | 21 % increase |
| 3. | Maize | Double Dekalb, Pro-Agro-4794, Bioseed-9621, Kanchan-612 | | 21 | 84 | 34 % increase |
| 4. | Oats | Kent | | 19.7 | 131 | 11 % increase |
| 5. | Rajmash | Local | | 6.0 | 30 | 38 % increase |
| 6. | Gobhisarson | DGS-1 | | 1.6 | 23 | 15 % increase |
| **KVK Kathua** | | | | | | |
| 1. | Paddy | P-1121<br>P-1509<br>B-564 | Kathua | 38.0 | 64 | 57.3% increase (B:C ratio: 2.21) |
| 2. | Maize | Double Dekalb<br>B-52<br>PAC-740 | | 10.0 | 35 | 84.20 % increase &B:C ratio: 3.40 |

| S. No. | Crop/Enterprise | Variety | Name of District | Area | No. of Participants | Crop Impact % Increase |
|---|---|---|---|---|---|---|
| 3. | Sesamum | RT-346 | | 1.0 | 7 | 44% increase & B:C ratio: 3.4 |
| 4. | Mash | Him Mash-1 | | 6.0 | 20 | 25% yield increase with B:C ratio of 3.25 |
| 5. | Okra | Varsha Uphar | | 1.3 | 17 | 38% yield increase with B:C ratio of 3.47 |
| 6. | Wheat | HD-3086 HD-2976 WH-1105 DBW-88 PBW-621 HS-490 | | 32.0 | 103 | 50.0 % increase in yield with B:C ratio of 1.95 |
| 7. | Toria | RSPT-2 | | 3.4 | 13 | 100.0 % increase in yield with B:C ratio of 0.19 |
| 8. | Gobhi Sarson | DGS-1 | | 5.0 | 13 | 24.28 % increase in yield with B:C ratio of 2.30 |

Glimpses of Front Line Demonstrations conducted by KVKs

## Farm Advisory Services (FAS)

### KVK Jammu

- Providing weather forecast to the farmers and allied departments with the help of Agro-meteorological Unit of SKUAST-J, Chatha.
- Agro-advisory services are provided to the registered farmers via SMS through M-Kissan portal. A number of advisories were passed on to 10000 farmers.

### KVK Rajouri·

- About **500 SMS** are sent every month to the farmers of the district regarding Farm Advisory Services.
- T&V workshops are conducted every month

### KVK Doda

- Kisan Mobile Advisory Services were provided to about 3500 farmers covering agriculture and allied disciplines.

### KVK Reasi

- Kisan Mobile Advisory Services including weather and disease were provided to the farmers of the district.

### KVK Poonch

- KVK is providing weekly weather forecast to the farmers and allied departments with the help of Agro-meteorological Unit of SKUAST-J.
- Unit of Regional Agriculture Research Station, Rajouri.
- KVK is also providing current prices of the commodities with the help of NCDEX through NSE/BSE.

### KVK Kathua

- Kisan Mobile Advisory Services were provided to 650 registered farmers covering agriculture and allied disciplines through SMS and 4500 SMSs were sent for bi-weekly weather forecast.
- KVK is also providing current prices of the commodities with the help of NCDEX through NSE/BSE.
- Advisories were also issued in relation to mushroom cultivation, horticulture and poultry & dairy farming.

## Consultancy Services provided to different departments/organizations

| S. No. | Department | Type of consultancy | Place/ Organization |
|---|---|---|---|
| **KVK Jammu** | | | |
| 1. | Department of Agriculture, Jammu | Diagnostic visits<br>Insect Pest management<br>Rejuvenation of Vermicompost units | Kirpind, R S Pura, Miransab,RiapurSajda, SungalBagwanechak |
| **KVK Rajouri** | | | |
| 1. | Department of Agriculture, Jammu | Diagnostic visits<br>Insect Pest incidence control<br>Rejuvenation of Orchards | Budhal, Sunderbani, Rajouri, Thanamandi, Darhal, Doongi, Nowshera |
| 2. | Govt. PG College, Rajouri | Establishment of Apiary and Mushroom Unit | Rajouri |
| **KVK Reasi** | | | |
| 1. | Department of Agriculture, Reasi & Udhampur | Training of AEO's, JAA's and SMSs. Diagnostic visits | Reasi |
| 2. | Department of Horticulture, Reasi & Udhampur | Formulating training and demonstration programmes | Reasi |
| 3. | Department of Animal Husbandry Reasi & Udhampur | Participation in various programmes of livestock improvement and organization of clinical camps | Reasi |
| 4. | Department of Sheep Husbandry Reasi & Udhampur | Collaboration for formulation of action plan | Reasi |
| 5. | NABARD, Reasi & Udhampur | Collaboration on formation of Farmers Club, for formulation of action, plan and conducting of training programme | Reasi |
| 6. | Nehru Yuva Kendra, Reasi & Udhampur | Collaboration in various capacity building training programmes for rural youths | Reasi |
| 7. | Department of Floriculture, Reasi & Udhampur | Formulating trainings and demonstrations programmes | Reasi |
| **KVK Kathua** | | | |
| 1. | Department of Agriculture, Kathua | Identifying needs and field problems, training of AEO's, JAA's and SMS. Monthly Workshops and diagnostic visits | Kathua |
| 2. | Department of Horticulture, Kathua | Formulating training and demonstrations programmes on pruning & training of fruit plants | Kathua |
| 3. | Department of Animal Husbandry | Participation in various programmes of livestock improvement and organization of clinical camps | Kathua |
| 4. | Department of Sheep husbandry | Collaboration for formulation of action plan and conducting of training programmes | Kathua |
| 5. | NABARD, Kathua | Collaboration on formation of Farmers Club, for formulation of action plan and conducting of training programme | Kathua |
| 6. | RSETI, Kathua | Collaborating on skill development programmes for rural youth | Kathua |
| 7. | District Rural Development Agency (DRDA) | Formulation of training programmes for rural youths | Kathua |
| 8. | Nehru Yuva Kendra | Collaboration in various capacity building training programmes for rural youths | Kathua |
| 9. | Punjab Agriculture University, Ludhiana | Procurement of the seed of new varieties of various crops along with package of practices | Ludhiana |

| S. No. | Department | Type of consultancy | Place/ Organization |
|---|---|---|---|
| 10. | Directorate of Wheat Research, Karnal | Procurement of seed and technical assistance regarding wheat crops | Karnal |
| 11. | Indian Agricultural Research Institute (IARI) | NEP project; Post office Linkage | New Delhi |
| 12. | Division of Plant Breeding & Genetics, SKUAST-Jammu | Procurement of seed of Paddy &Wheat | Jammu |
| 13. | Faculty of Veterinary Sciences & Animal Husbandry, SKUAST-Jammu | Technical guidance & skill, organization of veterinary clinical camps | Jammu |

## Farmers Educative Events

| S. No. | Programme | KVK Jammu | | KVK Rajouri | | KVK Kathua | | KVK Doda | | KVK Reasi | | KVK Poonch | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | P | N | P | N | P | N | P | N | P | N | P |
| **KVK Jammu** | | | | | | | | | | | | | |
| 1. | Field days | 8 | 338 | 07 | 168 | 02 | 63 | - | - | - | - | - | - |
| 2. | KissanGhoshti | 7 | 572 | 03 | 56 | 02 | 27 | - | - | - | - | - | - |
| 3. | Awareness programme cum campaigns | 10 | 509 | 14 | 767 | 02 | 138 | - | - | 01 | 100 | 02 | 77 |
| 4. | Animal camp | 01 | 117 | 02 | 141 | 01 | 59 | - | - | - | - | 02 | 130 |
| 5. | KissanMela (Organised) | 02 | 545 | 01 | 220 | 01 | 398 | 01 | 404 | 01 | 500 | 02 | 740 |
| 6. | KissanMela (Participated) | 02 | 1693 | 02 | 350 | 03 | 1300 | - | - | - | - | 02 | 620 |
| 7. | Celebration of important days | 04 | 703 | 03 | 1004 | 05 | 473 | - | - | - | - | 03 | 407 |
| 8. | Students visits to KVK | 04 | 117 | - | - | - | - | - | - | - | - | - | - |
| 9. | Radio talks | 02 | - | - | - | - | - | - | - | - | - | 07 | - |
| 10. | Exposure visits | 05 | 349 | - | - | - | - | 01 | 30 | | | | |
| 11. | Farmers Scientist interactions | 10 | 711 | 04 | 63 | 04 | 68 | 04 | 56 | 03 | 58 | 10 | 140 |
| 12. | Lectures delivered by scientific staff | 27 | - | 01 | 59 | 06 | 165 | - | - | - | - | - | - |
| 13. | Scientist visits to farmers field | 76 | 189 | - | 292 | 26 | 35 | 22 | 64 | 12 | 14 | 15 | 24 |
| 14. | Diagnostic visits | 58 | 783 | - | - | 15 | - | 12 | 70 | 03 | 05 | 10 | 112 |
| 15. | Farmers visit to KVK | 1202 | - | 393 | - | 124 | - | 75 | - | 130 | - | 132 | - |
| 16. | Research Papers | 10 | - | - | - | 04 | - | 02 | - | 04 | - | - | - |
| 17. | Extension literature | 22 | - | - | - | 03 | - | 05 | - | - | - | 03 | 1500 |
| 18. | Film Show | - | - | - | - | 02 | 200 | - | - | - | - | - | - |
| **N: No. of Programmes; P: No. of Participants** | | | | | | | | | | | | | |

# 5 Infrastructure Development

## 5.1 Works completed during the year 2015-16

| S.No. | Name of work |
|---|---|
| 1 | Construction of Office Building for Controller of Examination at Main Campus Chatha |
| 2 | Construction of Building for School of Agri Business Management at Main Campus Chatha |
| 3 | Construction of Post Office and Shopping Complex at Main Campus Chatha. |
| 4 | Construction of Examination Hall Complex (G+1) including associated sanitary and internal electrification at Main Campus, Chatha. |
| 5 | Construction of Lecture Theatre (04 No.) (G+1) including associated sanitary and internal electrification at Main Campus, Chatha. |
| 6 | Construction of Office-cum-Lab complex including sanitary fittings and internal electrification for 02 Divisions of Faculty of Veterinary Science & Animal Husbandry (Division of Animal Genetics & Breeding and Veterinary Extension) at R.S. Pura, Jammu. |
| 7 | Laying of 11 KVA HT independent Feeder (UPS line) from Rangpur Mullana (Baspur) R.S. Pura to FVSc & AH Campus R.S. Pura |
| 8 | Providing separate independent Feeder (UPS line) to the Seed Multiplication Farm, Chakroi, R.S. Pura. |

Examination Hall Complex

Faculty of Basic Sciences

Shopping Complex

Controller of Examination

| S.No. | Name of work |
|---|---|
| **Repair/Reonvations works completed during the year 2015-16** | |
| 1 | Repair/Renovation to the Main Faculty building by way of Textured paint (outside) and other civil works in Block Nos. (1), (2), (7) and (8) at Main Campus, Chatha, Jammu. |
| 2 | Repair/Renovations to the Water Supply System including extension to new blocks (Sports etc.) in the Faculty building at Main Campus, Chatha, Jammu. |
| 3 | Repair/Maintenance by way of civil and sanitary works including drainage to Administrative Block, Farmers' Hostel, Students' Centre and Conference Hall at Main Campus, Chatha, Jammu. |

| S.No. | Name of work |
|---|---|
| 4 | Repair/Maintenance of the existing SST poles used for HT/LT line Distribution alongwith street light at Academic and Residential Area at Main Campus, Chatha, Jammu. |
| 5 | Repairs to electrical work by way of extension of LT conductor in the Experimental Area of different Divisions of Research Farm at Main Campus, Chatha, Jammu. |
| 6 | Repair/Maintenance to the drainage System at Main Campus, Chatha, Jammu. |
| 7 | Repair/Renovations to the Main Faculty building (old) by way of snowcem and distempering (front portion upto Old Plant Pathology Section) & other civil works at FVSc & AH Campus, R.S. Pura. |
| 8 | Repair/Renovations by way of painting, distempering, whitewashing and other minor works to the Teaching Veterinary and Clinical Complex. (front portion) at FVSc & AH Campus, R.S. Pura |
| 9 | Repair/Renovations by way of sanitary fittings, drainage, plumbing and other minor works to the Teaching Veterinary and Clinical Complex at FVSc & AH Campus, R.S. Pura. |
| 10 | Repair/Renovations to the sanitary and plumbing to the Main Old Faculty building at FVSc & AH Campus, R.S. Pura. |
| 11 | Repair/Renovations to the sanitary and plumbing to the Pragati Hostel and Medical Section at FVSc & AH Campus, R.S. Pura. |
| 12 | Repair/Renovation by way of repairing of sanitary and drainage works in the Lakshya Hostel at FVSc & AH Campus, R.S. Pura. |
| 13 | Repair/Maintenance to the Guest House/PG Hostel at FVSc & AH Campus, R.S. Pura. |
| 14 | Electrical repair work to the existing street lights, Office building and Research Farm at Advanced Centre for Horticulture Research, Udheywalla, Jammu. |
| 15 | Repair/Maintenance by way of whitewashing, distempering, snowcem and other minor civil and sanitary works to the Office-cum-Lab building at DLRSS, Dhiansar |
| 16 | Reconstruction of damaged floors in the Administrative Block and Farmers' Hostel at Main Campus, Chatha, Jammu. |
| 17 | Electrical repair work to the existing building and street lights at DLRSS, Dhiansar. |
| 18 | Repair/Maintenance by way of whitewashing, distempering, snowcem and other minor civil and sanitary works to Office-cum-Lab building at PRSS, Samba. |
| 19 | Electrical repair work to the existing building and street lights at PRSS, Samba |
| 20 | Electrical repair work to the existing building and street lights at RRSS, Raya |
| 21 | Repair/Maintenance by way of protection work to the Residential Area at KVK Reasi. |
| 22 | Repair/Maintenance by way of protection work (crate work) to the Farm fencing at KVK Reasi (Part-I). |
| 23 | Repair/Maintenance by way of protection work (crate work) to the Farm fencing at KVK Reasi (Part-II). |
| 24 | Repair/Maintenance by way of protection work (crate work) to the Farm fencing at KVK Reasi (Part-III) |
| 25 | Repair/Maintenance by way of white washing, distempering and other minor works to LPM Division at FVSc & AH, R.S.Pura Campus |
| 26 | Rehabilitation of Main Office building damaged due to Earthquake at Gwari under KVK Doda. |
| 27 | Repair/Renovations to the Teaching Staff Residential Quarters at FVSc & AH Campus, R.S. Pura, Jammu. |
| 28 | Repair/Renovations to the Non-Teaching Residential Quarters at FVSc & AH Campus, R.S. Pura, Jammu. |
| 29 | Repair/Maintenance of the existing A.C. Plant of 49.5 Tons capacity and Servo Voltage Stabilizer installed at Conference Hall, FVSc & AH Campus, R.S. Pura, Jammu. |
| 30 | Providing uninterrupted water supply to old Boys and Girls Hostel at FVSc & AH Campus, R.S. Pura, Jammu |
| 31 | Supplying, installation, testing and commissioning of EPABX CORAL 350 line IRIS IVDX compatible with TDM/PCM ISDN (BRI & PRI both) IP switch, 100 % truly non-blocking, expandable upto 512 ports at Faculty of Agriculture, Main Campus, Chatha, Jammu. |
| 32 | Repair/Renovation to the Conference Hall including new stairs for exit at FVSc & AH Campus, R.S. Pura, Jammu. |

## 5.2 Works in progress during 2015-16

| S. No | Description |
|---|---|
| **New works** | |
| 1 | Internal finishes of under construction University Auditorium by way of Acoustic treatment, Audio-Video & Stage lightening System, HVAC System, Fire Fighting System and Internal Electrification works (Composite work) at Main Campus, Chatha, Jammu. |
| **Repair/Renovation works** | |
| 1 | Construction of Tubewell Room, Platforms and other allied works for Electrical Sub-Station of Seed Production Farm, Chakroi, R.S. Pura, Jammu. |
| 2 | Repair/Maintenance by way of providing platforms for electrical substations near School of Biotechnology/Seed Processing Unit and other locations including providing and fixing of 02 Nos. collapsible shutters in Urja Hostel at Main Campus, Chatha. |
| 3 | Electrical repair work by way of providing DG Set ( 250KVA) supply to the School of Biotechnology, School of Agri. Business Management, Controller of Examination and 3 phase supply to the Dean Office and Block No. 5 with LT Conductor at Faculty of Agriculture, Chatha. |
| 4 | Repair/Renovation to the Instructional Farms at FVSc & AH Campus, R.S. Pura. |
| 5 | Repair/Maintenance to Old Staff Residential Quarters (10 sets) at FVSc. & A.H. R.S. Pura |
| 6 | Electrical repair work by way of providing and laying of weasel conductor on the existing SST Poles alongwith PVC cable & allied material providing 3 phase DG Set supply to the PG Hostel/Guest House and electrical repair to the Division of LPM and Solar System at FVSc. & A.H. R.S. Pura, Jammu. |
| 7 | Repair/Maintenance by way of white washing, distempering and other minor works to Office-cum-Stores, Workshop and Tubewell Room building at SPF,Chakroi. |

## 5.3 New works proposed for the year 2016-17

| S. No | Description |
|---|---|
| 1 | Construction of New Girls Hostel (Double storeyed) alongwith associated sanitary fittings and internal electrification at Main Campus, Chatha, Jammu. |
| 2 | Construction of Boys' Hostel (Double Storeyed) alongwith associated sanitary fittings and internal electrification at Main Campus, Chatha, Jammu. (Balance work) |
| 3 | Construction of Compound Wall, Guard Room & Internal paths of Vice-Chancellor's Residence at Main Campus Chatha. |
| 4 | Construction of Office/Meeting Hall on the first floor of existing Sr. Scientist building at Advanced Centre for Rainfed Agriculture (ACRA), Dhiansar. |
| 5 | Construction of Tissue Culture Lab including electrification at Advanced Centre for Horticulture Research at Udheywalla, Jammu. |
| 6 | Creation of 630 KVA Substation, transformer, DG Sets, Panels and other allied electrical works of University Auditorium at Main Campus, Chatha, Jammu. |
| 7 | Construction of Platform and Control rooms for 630 KVA Sub-Station and synchronizing panels for University Auditorium at Main Campus, Chatha, Jammu. |
| 8 | Construction of Main Gate/wall, Reception counter and modification to laboratories / office building (1st Floor) for Centre of Excellence at Advanced Centre for Horticulture Research, Udheywalla, Jammu |
| 9 | Repair/Maintenance by way of Construction of Main Gate and conversion of Store into Training Hall Office building at KVK Kathua. |
| 10 | Supplying, installation, testing and commissioning of EPABX System at FVSc & AH, R.S. Pura |
| 11 | Repair/Renovation to the Adminstrative Block by way of Textured painting, distempering and other civil works at Main Campus Chatha. |
| 12 | Repair/Renovation to the Adminstrative Block by way of civil and sanitary and other allied works at Main Campus, Chatha. |
| 13 | Construction/Installation of Fountain in the courtyard of Administrative Building at Main Campus, Chatha, Jammu. |
| 14 | Modular Cabins for office use in the offices of Directorate of Research, Project Planning & Monitoring Officer's Office and Estates Division at Chatha and Dean's Office at FVSc & AH, R.S. Pura, Jammu. |
| 15 | Construction of Animal Shed at Veterinary Teaching and Clinical Complex at FVSc & AH Campus, R.S. Pura, Jammu. |

| S. No | Description |
|---|---|
| 16 | Construction of Equine and Canine Shed and electrification to equine, Canine and Animal sheds at Veterinary Clinic and Veterinary Referral Hospital-cum-Clinical Complex at FVSc & AH Campus, R.S. Pura (55'-0" x 32'-0") |
| 17 | Establishment of Bio-control Laboratory by way of modification & alteration in the existing building (old Pathology building) at Advanced Centre for Horticulture Research, Udheywalla, Jammu. |
| 18 | Repair/Maintenance by way of white washing, distempering and other minor works to Office buildings at RARS, Rajouri. |
| 19 | Providing and fixing of Telephone wire along with MDF box and socket with PVC conduit in the newly constructed buildings of Directorate of Extension, SAMETI, Controller of Examination, School of Agribusiness Management, Health Centre, Estates Division, School of Biotechnology, Examination Hall Complex, Lecture Theatres, Urja Hostel, Main Gate, Seed Processing Unit and FSR at Main Campus, Chatha, Jammu. |
| 20 | Repair to existing building by way of providing and fixing of Telephone wire along with MDF box and socket with PVC conduit at Administrative Block, Dean's Office, Central Library and Main Faculty buildings at Main Campus, Chatha. |
| 21 | Providing & fixing Fire Extinguishers in the Office/Labs at Chatha & R.S. Pura Campuses. |
| 22 | Providing internal electrification to Bio-Control Lab at Advanced Centre for Horticulture Research at Udheywalla, Jammu. |
| 23 | Repair/Maintenance by way of providing and fixing street lights and other allied electrical works at KVK, Gwari, Bhaderwah. |
| 24 | Providing internal electrification to Farmers' Hostel at KVK Bhaderwah, Distt. Doda. |
| 25 | Construction of Asstt. Professors' Residence alongwith associated sanitary fittings, internal electrification and furniture/ furnishings complete (48-sets in Blocks) at Main Campus, Chatha |
| 26 | Construction of Professors'/Assoc. Professors' Residence (24-sets in Blocks) alongwith associated sanitary fittings, internal electrification and furniture/furnishings complete at Main Campus, Chatha |
| 27 | Construction of Residential quarters for Deans/Directors/Officers of the University (5-sets) alongwith associated sanitary fittings, internal electrification and furniture/furnishings complete at Main Campus, Chatha |
| 28 | Construction of Housing Facilities for Section Officer/Head Assistant & equivalent (Non-Teaching) (18-sets) alongwith associated sanitary fittings, internal electrification and furniture/furnishings complete at Main Campus, Chatha |
| 29 | Construction of Class-IV employees Residential Quarters (12 sets) (Three storeyed) alongwith associated sanitary fittings, internal electrification and furniture/furnishings complete at Main Campus, Chatha |
| 30 | Construction of PG Students Hostel alongwith associated sanitary fittings, internal electrification and furniture/furnishings complete at Main Campus, Chatha |
| 31 | Construction of Girls Hostel (Three storeyed) alongwith associated sanitary fittings, internal electrification and furniture/ furnishings complete at Main Campus, Chatha |
| 32 | Construction of Boys Hostel for UG Students alongwith associated sanitary fittings, internal electrification and furniture/ furnishings complete at Main Campus, Chatha |
| 33 | Construction of Sports Facilities at Main Campus, Chatha |
| 34 | Construction of Teachers Home alongwith associated sanitary fittings, internal electrification and furniture/furnishings complete at Main Campus, Chatha |
| 35 | Construction of Spine & addition/alteration to the existing Museum at Main Campus, Chatha |
| 36 | Providing & fixing Fire fighting equipments in the buildings at different Stations of SKUAST-J |
| 37 | Construction of Asstt. Professors' Residence (24-sets in Blocks alongwith associated sanitary fittings, internal electrification and furniture/furnishings complete at FVSc & AH Campus, R.S. Pura, Jammu |
| 38 | Construction of independent Dean's Residence (G+1) alongwith associated sanitary fittings, internal electrification and furniture/furnishings complete at FVSc & AH Campus, R.S. Pura, Jammu |
| 39 | Construction of Office-cum-Labs Complex and Accounts Section alongwith associated sanitary fittings, internal electrification and furniture/furnishings complete at FVSc & AH Campus, R.S. Pura, Jammu |
| 40 | Construction of PG Students Hostel alongwith associated sanitary fittings, internal electrification and furniture/furnishings complete at FVSc & AH Campus, R.S. Pura, Jammu |
| 41 | Construction of Girls Hostel (Three storeyed) alongwith associated sanitary fittings, internal electrification and furniture/ furnishings complete at FVSc & AH Campus, R.S. Pura, Jammu |
| 42 | Construction of Sports Facilities at FVSc & AH Campus, R.S. Pura, Jammu |

# 6

# Awards and Recognitions

Dr. Anil Bhat, received best paper presentation award in 1st national case Study Conference held at School of Business, Shri Mata Vaishno Devi University Katra (J&K) w.e.f 24th to 26th April, 2015

Dr. Vikas Sharma, awarded best research paper in National Symposium at SKUAST, Jammu

Dr. Vivak M. Arya, received best Research Paper award from Sh. Kavinder Gupta, Honorable Speaker Legislative assembly (J&K) at 4th J&K Science Congress on 1st Nov. 2015.

Dr. Akash Sharma, received first prize in Poster Presentation under the theme area Horticulture Crops, SKUAST-J

Dr. Parshant Bakshi, Best Oral presentation award in National Seminar on Technology Management and Micro-irrigation, SKUAST-J


KVK, Reasi won 9 awards in different category of Farmers sample display in exhibition during Kissan Mela, SKUAST-J

7

# Organization of National/ International Seminars /Symposia /Conferene / Short Courses /Trainnings/ Workshops/ Summer And Winter Schools.

## Major Programmes

### International Conference at SKUAST-Jammu

The three days International Conference on "Natural Resource Management: Ecological Perspectives" organized by Sher-e-Kashmir University of Agricultural Sciences and Technology (SKUAST) of Jammu and the Indian Ecological Society in collaboration with Centres for International Projects Trust (CIPT), World Wide Fund for Nature (WWF) and Indian Council of Agricultural Research (ICAR) w.e.f.18-20 Feb., 2016. The conference was inaugurated by Dr. Jatinder Singh, Hon'ble Union Minister of state with independent charge for the Ministry of Development of North Eastern Region, Prime Minister Office, Personnel, Public Grievances and Pensions, Atomic Energy and Space. The conference was attended by more than 500 delegates from within as well as from outside the country. Dr. Jatinder Singh, in his address, emphasized that organization of this international conference is very timely and it will have a greater impact at national and international level in view of our commitment to ensure food and nutritional security to the ever increasing population without putting a strain on natural resources. He further stressed that the conference would provide innovation ideas for achieving goal of sustaining agricultural growth at 4 per cent per annum, maintaining sound health of soil and water, enhancing input use efficiencies, and applying environmentally sound conservation agricultural practices. Dr. P.K.Sharma, Vice Chancellor, SKUAST-J opined that the importance of natural resources, comprising land, water and vegetation, is higher than ever before for the need to ensure sustainability in the face of changing climate, increased biotic pressure and declining resource productivity.

In the inaugural function, conference publications were released and awards/ fellowships were conferred on the scientists. The lifetime achievements awards were presented to Dr. A.S.Atwal, Former Advisor to Jammu and Kashmir Government and Vice Chancellor (Designate) for two years and who prepared the project for establishing the SKUAST J&K, Dr. G.S.Dhaliwal, former renowned entomologist of Punjab agricultural University Ludhiana and Dr. Om Gouri Dutt Sharma, Deputy Director General at Doordarshan Kendra, Jalandhar. The fellowship awards were presented to Dr. Kamal Vatta, Director of Centers for International Projects Trust (CIPT), Dr. Meera D. Ansal, Sr.Scientist Cum Head, Department of Aquaculture, GADVASU, Ludhiana, Dr. RajinderPeshin Associate Professor, Division of Agricultural Extension Education SKUAST-Jammu, Dr. Sanjeev Kumar Chauhan, Professor in Forestry and Natural Resources, PAU Ludhiana, Dr. Santanu Kumar Bal, Principal Scientist (Agrometerology) National Institute of Abiotic Stress Management ICAR and Dr. S.S.Walia, Senior Agronomist, Department of Agronomy, PAU Ludhiana.

In the Valedictory function of the International Conference, Advisor to the Governor Mr. Khurshid Ahmed Ganai called for concerted efforts for taking corrective as well as preventive measures to arrest the environmental degradation and said that every section of the society should contribute its bit in the same. A video message from PrakashJavadekar, Union Minister for Environment, Forests and Climate change was played as he could not make it to the conference. Dr. Pradeep K. Sharma Vice-Chancellor, SKUAST-JAMMU in his address hoped that the recommendations of the Conference will provide a road map to support the holistic development

agenda, demand-driven research programme and their applications in the entire value chain with farmers and market occupying the central place.



Glimpses of International Conference

- **Division of Agricultural Extension Education** organized Eight days Model Training Course (MTC) on Information Communication Technology(ICT) applications from 2-9 Nov., 2015 in which the delegates of state line departments from the states of Haryana, Arunachal Pradesh & Jammu & Kashmir participated.
- **Division of Agricultural Economics, ABM and Statistics** organized 08 days Model Training Course on "Marketing Research for value Chain in Fruits" w.e.f 18th to 25th of Jan.,, 2016 sponsored by Ministry of Agriculture, GoI, Dept. of Agriculture & Cooperation.
- **Division of Agricultural Economics, ABM and Statistics** organized 02 days Training Course on 'Market Led Extension' w.e.f. 8th to 9th of Mar.,, 2016, with collaboration of SAMETI, SKUAST-Jammu.



- **Division of Sericulture** organized Five trainings at district Udhampur and 372 silkworm rearers were trained on different aspects of mulberry cultivation and silkworm rearing techniques
- **Division of Agroforestry** Organized two farmers training programmes on "Awareness about boundary planting of trees" at villages Chak Bagwana (Bishnah) and Dateryal (Marh) in Jammu district on Jan., 19, 2016 and Jan., 25, respectively under AICRP on Agroforestry.
- **Division of Agroforestry** organized One Day State Level Workshop on "Promotion of Bamboo Cultivation in J&K" at Chatha on Mar., 29, 2016 sponsored by National Bamboo Mission, GOI under the National Bamboo Mission Project in the division.
- **Division of AGB** organized National Symposium on "Policy Planning for Livelihood Security through Domestic Animal Biodiversity"& XIII annual convention of Society for Conservation of Domestic Animal Biodiversity (SOCDAB) from Feb., 11 - 12, 2016.
- **Division of LPT** organized five, two days training programmes on value addition, preservation, shelf life extension and packaging of meat and meat products for rural women in the DBT funded project entitled "Social economic upliftment of rural women through development of value added meat products"
- **Division of LPT** organized five, two days training programmes on preparation, value addition, shelf life extension and packaging of milk and milk products training programmes for rural women in the DST funded project entitled "Empowerment of rural women through training programme on the development of value added livestock products"
- **Division of VMC** organized Laboratory training for Field Assistants for 03 days. A total of 13 participants were trained for laboratory techniques.
- **Division of VAHEE** organised one day Farmers Awareneess Programme at Gharana , R. S. Pura, Jammu to provide the first hand information to the farmers about the importance of improved livestock practices. The division also distributed the mineral mixture and antihelminthetics to the practising livestock farmers

- **Division of VAHEE** organised two "Village Visit Programmes" at Gharana , R. S. Pura, Jammu to apprise the students about village situations and the condtions of livestock farmers at field level.

- **Division of TVCC** organized one day training programme on "Handling and Management of Goats" for the beneficiaries under DBT sanctioned project entitled "Economic Empowerment of Rural

Goat Farmers through Scientific Intervention in Block R.S. Pura of Jammu Division".

- **Division of VPT** organized National Science Day-2016 on 22nd of Mar., 2016 at F.V.Sc & A.H, SKUAST-J, R.S. Pura on the theme "Wellness Through Innovation" catalyzed and supported by the National Council for Science & Technology Communication, DST, New Delhi & J&K State Science Technology & Innovation Council. Noted speakers from different National Institutes and Universities shared their experience and deliberated on the topic.
- **Division of vegetable science and floriculture** organized
  - Training programme (NABARD-FSPF) titled "Nursery raising on scientific lines" on 29.4.2015 at SKUAST-Jammu where 42 participants were present.
  - Training programme (NABARD) titled "Production technology of chrysanthemum on scientific lines" on 17.09.2015 at Ban–Sultan (Miran Sahib) where 50 participants were present.
  - Training programme (NABARD) titled "Nursery raising of marigold on scientific lines" on 07/10/2015 where 72 participants were present.
  - Training programme (MIDH) titled "Importance of rare exotic vegetable and spice crops in crop diversification" on 25/01/2016 at Pinjore, Kanachak where 50 participants were present.
  - Seedling distribution week "Dissemination and distribution of quality planting material of vegetables" on 23rd Feb., to 29th Feb.,, 2016, SKUAST-Jammu, Chatha where 500 participants were present.
  - Awareness programme (CSIR and MIDH) "Ginger Cultivation" on 10.03.2016 at Sirla, Reasi, where 100 participants were present.
- **Division of Entomology** organized
  - Training programme (NABARD-FSPF) titled "Scientific intervention for validation and popularization of traps for management of insect pests in vegetable growing areas of Jammu Region" on 11.03.2016 at SKUAST-Jammu, where 75 participants were present.
  - Training programme (NABARD) titled "Awareness cum training programme for bee keepers of Ramban" on 04-05th of Feb.,, 2015 where 25 participants were present.
- **Division of Fruit Sciences** organized
  - Training & demonstration on rejuvenation of old unproductive aonla orchards" (MIDH) on 08.02.2016 at Aonla orchard Nai Basti, Akhnoor where 85 participants were present.
  - Training & demonstration on rejuvenation of old unproductive aonla orchards (MIDH) on 23.02.2016 at Aonla orchard at Chainpura Kathua where 99 participants were present.
  - Training & demonstration on rejuvenation of old unproductive aonla orchards (MIDH) on 15.03.2016 at Vill. Sial Jattan Udhampur where 78 participants were present.
  - Measures for training/pruning of high density plantation of guava and its demonstration (MIDH) on 24-032016 at ACHR, Udheywalla where 45 partipants were present.
- **RHRSS, SKUAST-J, Bhaderwah** organized following training programmes sponsored by Indian Council of Agricultural Research (ICAR) sponsored Network Project on 'Outreach of Technologies for Temperate Fruit Crops'
  - Canopy management and plant architectural engineering for higher productivity and quality in apple on 03.02.2016 where 15 participants were present.
  - High Density Planting for Higher Productivity in Apple and Almond on 26.02.2016 where 14 participants were present
  - Rejuvenation of old senile orchards in apple and almond on 15.03.2016 where 28 participants were present
  - Rain water harvesting and moisture conservation techniques in apple and almond on 16.03.2016 where 21participants were present
  - Low cost propagation of walnut under poly house conditions on 30.03.2016 where 14 participants were present

# 8

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

- Dr. Rakesh Sharma, SMS, KVK, Jammu attended 1st National conference of SWAHE on Push to Livestock Farming at GADVASU, Ludhiana w.e.f. 18-20 Nov., 2015.
- Dr. Arvind Kumar Ishar, SMS, KVK, Rajouri attended
  - Short Training on " IPM of different Crops" by NCIPM, New Delhi at PAU, Ludhiana w.e.f. 20-22 Aug., 2015
  - International training on " Pest Risk Analysis" by NIPHM, Hyderabad at NIPHM, Hyderabad
- Dr. Parul Gupta, SMS, KVK, Rajouri attended
  - 10 days training on "Good Dairy farming Practices" at NDRI, Karnal w.e.f. 17-26 Aug., 2015
  - 1st National conference of SWAHE on Push to Livestock Farming at GADVASU, Ludhiana w.e.f. 18-20 Nov., 2015
  - Workshop on Backyard Poultry and current issues at SKUAST-K w.e.f. 21st-23rd, Jan., 2016
- Dr. A. S. Charak, SMS, KVK, Doda attended
  - Entrepreneurship development through on farm agro processing for Augmenting Rural Prosperity at CATE, MPUAT, Udaipur w.e.f. 3-23 June, 2015
  - Global Research Initiatives for sustainable agriculture and allied Sciences at Astha Foundation, Meerut (U.P.) w.e.f. 12-13 Dec., 2015.
- Dr. Narinder Paul, SMS, KVK, Doda attended
  - Summer school on Enterprenuership Development programme at PAU, Ludhiana w.e.f. 8-28 July, 2015
  - 1st National conference of SWAHE on Push to Livestock Farming at GADVASU, Ludhiana w.e.f. 18-20 Nov., 2015
- Dr. Amitesh Sharma, SMS, KVK, Doda attended
  - Summer school on Tillage and nutrient dynamics for better crop production at G.B. Pant University, PantNagar, Uttarakhand w.e.f. 10-29 Oct., 2015
  - Global Research Initiatives for sustainable agriculture and allied Sciences at Astha Foundation, Meerut w.e.f. 12-13 Dec., 2015.
- Dr. B. Brahma, SMS, KVK, Doda attended 1st National conference of SWAHE on Push to Livestock Farming at GADVASU, Ludhiana w.e.f. 18-20 Nov., 2015
- Dr. Sanjay Swami, Programme Coordinator, KVK, Poonch attended
  - Participation in the 2nd Management Development Programme (MDP) for New PC Recruits of KVKs at NAARM, Hyderabad w.e.f. 16 April to 22 May, 2015
  - 9th National Conference on KVK-2015 on "Skill Intensive Agriculture" at Patna, Bihar w.e.f. 25-26 July, 2015
  - 21 days Winter School on "Advances in Organic Production System and Conservation Agriculture" at Jorhat, Assam w.e.f. 24 Sept., to 14 Oct., 2015
- Dr. Muneeshwar Sharma, SMS, KVK, Poonch attended Training Programme on IPM for Important crops for KVKs of Zone 1, PAU Ludhiana at PAU, Ludhiana w.e.f. 20-22 Aug., 2015
- Mr. Suraj Parkash, SMS, KVK, Poonch attended 1st National conference of SWAHE on Push to Livestock Farming at GADVASU, Ludhiana w.e.f.

18-20 Nov., 2015

- Dr. Muzaffar Mir, SMS, KVK, Poonch attended National Conference on Temperate Fruits and Nuts at CITH, Srinagar w.e.f. 6-9th Nov., 2015
- Dr. Amrish Vaid, Programme Coordinator, KVK, Kathua attended
  - NEP- Workshop at ICAR-IARI, New Delhi w.e.f. 10th April, 2015
  - Review cum Action Plan Meeting of NICRA Project at ICAR-CSSRI, Karnal w.e.f. 2nd May, 2015
  - 9th National Conference on KVK-2015 on "Skill Intensive Agriculture" at Patna, Bihar w.e.f. July, 25-26, 2015
  - NEP- Workshop at ICAR-IARI, New Delhi w.e.f. 9th Oct., 2015
  - National Youth Convention and Action Plan meeting of ARYA Project at NAAS Complex, New Delhi w.e.f. 27-28, Jan., 2016
  - International Conference of Indian Phytopathological Society, New Delhi at NAAS Complex, New Delhi w.e.f. 23-27, Feb., 2016
- Dr. Neerja Sharma, SMS, KVK, Kathua attended Winter School on "Recent Advances in Improvement of vegetable crops" at Y.S.P University of Hort. &Forestry, Solan w.e.f. 17th Feb., to 8th Mar., 2016
- Dr. Berjesh Ajrawat, SMS, KVK, Kathua attended
  - National Seminar on "Strategy to drive skill based agricultural development forward for sustainability and rural employability" at BHU, Varanasi w.e.f. 5-7 Nov., 2015
  - National Seminar on Livestock farming through knowledge empowerment of the farmers at GADVASU, Ludhiana w.e.f. 18-20, Nov., 2015
  - National Youth Convention and Action Plan meeting of ARYA Project at NAAS Complex, New Delhi w.e.f. 27-28, Jan., 2016
- Dr. Anamika Jamwal, SMS, KVK, Kathua attended Training Programme on IPM for Important crops for KVKs of Zone 1, PAU Ludhiana at PAU, Ludhiana w.e.f. 20-22nd Aug., 2015
- Dr. Vijay Kumar Sharma, SMS, KVK, Kathua attended International Training Programme on Diary Nutrition (ITPDN); 2015 at Ghent University, Belgium w.e.f. 2nd Oct., to 11th Dec., 2015
- Dr. S.A. Mallick, Professor,(Biochemistry) attended 4th Jammu and Kashmir Agricultural Science Congress held at SKUAST-Jammu w.e.f. 28-30th Oct., 2015.
- Dr. Sanjay Guleria, Associate Professor, (Biochemistry) attended 4th Jammu and Kashmir Agricultural Science Congress held at SKUAST-Jammu w.e.f. 28-30th Oct., 2015.
- Dr. Moni Gupta, Associate Professor,(Biochemistry) attended
  - 4th Jammu and Kashmir Agricultural Science Congress held at SKUAST-Jammu w.e.f. 28-30th Oct., 2015 and presented poster paper on Phaseloin and Biochemical Indices in Kidney Bean Phaseolus vulgaris (L.)
  - attended International Conference of Indian Ecological Society at SKUAST-Jammu w.e.f. 18-20th Feb., 2016 and presented a oral paper on Dof: Plant Specific Transcription Factors Associated With Diverse Phenomena Unique to Plants.
- Dr. Gurdev Chand, Asstt. Professor (Plant Physiology) attended
  - 21 days training programme on " Advanced Breeding strategies for biotic and abiotic stress tolerance in vegetable crops" at IIHR, Bengaluru, Oct., 08 to 28, 2015.
  - 21 days training programme on "Novel Approaches and Technologies for Processing and Value Addition of Agricultural produce" at ICAR Institute CIPHET Ludhiana, Punjab, Aug., 04 to 24, 2015.
  - International Conference on "Natural Resource Management: Ecological Perspectives" at SKUAST- Jammu, w.e.f. Feb.,18-20 , 2016.
- Dr. Manish Kumar Sharma Assoc. Professor (Statistics) attended the meeting of Executive Council as executive member of Indian Society of Agril. Statistics chaired by the Hon'ble President of the society, Dr. S Ayyappan, Secretary, DARE & Director General, ICAR held at Committee Room of Secretary, DARE & Director General, ICAR, Krishi Bhavan, New Delhi from 03.08.2015.

- Dr. Vikas Sharma, Asstt. Professor (Biochemistry) attended
  - "4th Jammu and Kashmir Agricultural Science Congress on Technological Innovations…. Livelihood Security" at SKUAST-Jammu, J&K w.e.f.28-30 Oct., 2015
  - "Brain Storming on Climate Change (in collaboration with NAS and CSIR) at CSIR-IIIM, Jammu, J&K w.e.f 19-20th May, 2015
  - National Conference on "Natural Resource Management in Arid and Semi–Arid Ecosystem for Climate Resilient Agriculture and Rural Development" at S.K. Rajasthan Agricultural University, Bikaner-Rajasthan w.e.f 17-19 Feb., 2016.
  - attended National Seminar on "New Vistas in Plant and Microbial Sciences" at Department of Botany, University of Jammu, J&K w.e.f 11-12 Mar., 2016.
- Dr. B. K. Sinha, Asstt. Professor (Plant Physiology) attended
  - 4th Jammu and Kashmir Agricultural science congress on "Technological Innovations, Opportunities and Challenges for sustainable rainfed agriculture for food and livelihood security" at Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu Chatha, Jammu w.e.f. Oct., 28-30, 2016.
  - 21 days training programme (winter school) on "Importance of Plant Growth Regulators and Nutrients in Agriculture and Horticulture: Status and Prospective in Present Scenario" at NDUAT, Kumarganj, Faizabad (U.P.), Mar., 07 - 27, 2016.
- Dr. R.K. Gupta participated in DST-Lockheed Martin India Innovation Growth Programme 2016 at Jammu in Jan., 2016
- Dr. Manish Kumar Sharma, Associate Professor (Statistics) organized a technical session of 18th Annual Conference on Society of Statistics, Computer & Applications as co-convener held at Deptt. of Statistics, Jammu University from 18.02.2016 to 20.02.2016.
- Dr. S.E.H. Rizvi Professor (Statistics) & Head participated and delivered invited lecture on "Categorization of Jammu District based on land holdings and income using optimum stratification" during 18th Annual Conference on Society of Statistics, Computer & Applications held at Deptt. of Statistics, Jammu University from 18.02.2016 to 20.02.2016.
- Dr. M. Iqbal Jeelani Asstt.Professor (Statistics) participated and presented a paper on "On Some Aspects of Rank set sampling in context to Agricultural & Allied surveys"during 18th Annual Conference on Society of Statistics, Computer & Applications held at Deptt. of Statistics, Jammu University from 18.02.2016 to 20.02.2016.
- Dr. V. Kaul, Professor and Head (Entomology) attended
  - International Conference on Natural Resource Management: Ecological Perspectives organized by Indian Ecological Society w.e.f 18-20 Feb., 2016 at SKUAST-Jammu
  - 4th J&K Agricultural Science Congress, 28-30 Oct., 2015; SKUAST-Jammu
- Dr. D.P. Abrol, Professor (Entomology) attended
  - International Conference on Natural Resource Management: Ecological Perspectives organized by Indian Ecological Society w.e.f 18-20 Feb., 2016 at SKUAST-Jammu
  - 4th J&K Agricultural Science Congress, 28-30 Oct., 2015; SKUAST-Jammu
  - 44th APIMONDIA International Apicultural Congress from Sept., 15-19, 2015 at Daejeon Convention Center, Korea organised by Korean Society of Apiculture South Korea.
- Dr. R. K. Gupta, Associate Professor (Entomology) attended
  - 4th J&K Agricultural Science Congress, 28-30 Oct., 2015; SKUAST-Jammu
  - Training Workshop on Environmental Risk Assessment (ERA) of Genetically Engineered Plants from Feb., 22-23, 2016, at National Academy of Agriculture Sciences, NASC Complex, Dev Parkash Shastri Marg, Opp Todapur Village, New Delhi 110012.
  - Workshop on ERA of Non Target Organisms for the Entomologists on Feb., 24, 2016 at National Academy of Agriculture Sciences, NASC Complex, Dev Parkash Shastri Marg, Opp Todapur Village, New Delhi 110012

- Brain storming workshop on "Climate change" 19-20th May 2015 at IIIM-Jammu.
- Training Workshop on Environmental Risk Assessment (ERA) of Genetically Engineered Plants from Feb., 22-23, 2016 at National Academy of Agriculture Sciences, NASC Complex, Dev Parkash Shastri Marg, Opp Todapur Village, New Delhi
- "Workshop on ERA of Non Target Organisms for the Entomologists" on Feb., 24, 2016 at National Academy of Agriculture Sciences, NASC Complex, Dev Parkash Shastri Marg, Opp Todapur Village, New Delhi
- Project monitoring committee visit 11-13th Mar., 2016. DBT-Led Socio-economic empowerment of farm women" being implemented at IARI, New Delhi , PRDF, Gorakhpur and DRI, Chitrakoot.
- Task Force meeting on 'Biotech based Programme for Women' held in DBT on 8-9th Dec., 2015
- Review meeting of NPCLIGR at KFRI, Thrissur, Kerala
- 3rd coordination committee meeting at SFRI, Jabalpur
- Workshop on glossary of terms in agriculture: Dogri to Hindi at chatha 15-19 July; 2015
- Workshop on glossary of terms in agriculture: Dogri to Hindi at chatha 16-20 Sept 2015
- Workshop on glossary of terms in agriculture: Dogri to Hindi at chatha 28 Dec to 1 Jan 2016
- Workshop on glossary of terms in agriculture: Dogri to Hindi at chatha 25-27 Feb 2016

- Dr. Uma Shankar, Assistant Professor (Entomology) attended
  - International Conference on Natural Resource Management: Ecological Perspectives organized by Indian Ecological Society w.e.f 18-20 Feb., 2016 at SKUAST-Jammu
  - 4th J&K Agricultural Science Congress, 28-30 Oct.,, 2015; SKUAST-Jammu
- Dr. Amit Kumar Singh, Assistant Professor (Entomology) attended 4th J&K Agricultural Science Congress, 28-30 Oct.,, 2015; SKUAST-Jammu
- Dr. Devinder Sharma, Assistant Professor (Entomology) attended
  - 21 days Winter School on "Designing Modern Crop Pest Combat Strategies with Nematodes and against Nematodes" held during Jan., 27th to Feb., 16th, 2016 in the Division of Nematology, ICAR- Indian Agricultural Research Institute, New Delhi
  - 4th J&K Agricultural Science Congress, 28-30 Oct., 2015; SKUAST-Jammu
  - One day Workshop on Climate change held on Mar., 01, 2016 at NABARD-Jammu.
  - International Conference on Natural Resource Management: Ecological Perspectives organized by Indian Ecological Society w.e.f 18-20 Feb., 2016 at SKUAST-Jammu
  - Brain storming workshop on "Climate change" 19-20th May 2015 at IIIM-Jammu.
- Dr. Rakesh Nanda, Professor, (Agricultural Extension Education)
  - participated in the regional workshop on Planning and Implementing Contract Farming Operations organized by FAO at Khon Kaen, Institute Thailand from 23-26 Nov., 2015.
  - participated and chaired a session in two days workshop on agricultural Extension Reforms in South Asia Status Challenges and Policy options organized by International Food Policy Research Institute(IFPRI) Washington at NASC- Pusa New Delhi from 17-18 Feb., 2015.
- Dr. Poonam Parihar, Assistant Professor, (Agricultural Extension Education) attended
  - 21 days refresher course on "Analytical Techniques for Decision Making in Agriculture Organized and conducted by NAIP, ICAR New Delhi w.e.f. 03-08-2015 to 23-08-2015
  - Capacity Building Programme on "Methodologies for Agriculture Extension Research organized by NASC and ICAR w.e.f. 21-24th Sept., 2015.
- Dr. L. K. Sharma Assistant Professor, (Agricultural Extension Education) attended 21 days summer school on "Entrepreneurship Development Programme" at PAU, Ludhiana w.e.f. 08-07-2015 to 28-07-2015.

- Dr. J. S. Manhas Assistant Professor, (Agricultural Extension Education) attended
  - 21 days summer school on "Entrepreneurship Development Programme" at PAU, Ludhiana w.e.f. 08-07-2015 to 28-07-2015.
  - participated in the 4th J&K Agricultural Science Congress held at SKUAST-J from 28-30 Oct., 2015.
- Dr. S.K. Gupta, Prof. (PBG) attended Group meeting of Rapeseed-mustard at Jaipur,Rajasthan from 03-05 Aug., 2015
- Dr. Sandeep Sehgal, Associate Professor (Agro forestry) participated in
  - International conference on Traditional Forest Knowledge and Culture in Asia: Linking Biological and Cultural Diversity to Landscape Management held at Nanjing Forestry University, China w.e.f Nov. 7- Nov. 9, 2015.
  - Natural Resource Management: Ecological Perspectives held at SKUAST-Jammu w.e.f. Feb., 18- Feb., 20, 2016.
- Dr. L. M. Gupta, Associate Professor (Agro forestry) attended
  - National Seminar on "Recent Advances in Research and Development in Medicinal and Aromatic Plants - A Country Scenario held at State Forest Research Institute, Jabalpur w.e.f. Nov. 27- Nov. 28, 2015.
  - Natural Resource Management: Ecological Perspectives held at SKUAST-Jammu w.e.f. Feb., 18- Feb., 20, 2016.
- Dr. Sushil Kumar Gupta, Professor (Agro forestry) attended
  - Annual Group Meeting of AICRP on Agroforestry at Shalimar Campus, SKUAST-K w.e.f. July 25- July 27, 2015.
  - DST sponsored training programme on "Climate Change Vulnerability and Adaptation Strategy" at ICFRE, Dehra Dun w.e.f. Feb., 8-Feb., 12, 2016.
- Dr. S.K.Gupta, Prof. (PBG) attended Field day on oilseed germplasm at NBPGR, ,New Delhi from 04-06 Mar., 2016
- Dr. Bikram Singh, Prof. (PBG) attended Annual Wheat Research workers Meet SDAU, Sardar Krushi nagar, Gujrat from 21-24th Aug., 2015
- Dr. S.K. Mondal, Prof. (PBG) attended Annual Wheat Research workers Meet SDAU, Sardar Krushi nagar, Gujrat from 21-24th Aug., 2015
- Dr. Anil Gupta, Chief Scientist (Plant Pathology) attended 50th Annual Rice Research Group Meeting (Golden Jubilee) at Directorate of Rice Research Hyderabad w.e.f 11th – 15th April, 2015.
- Dr. S.K. Sudan, Assoc. Prof. (PBG) attended 50th Annual Rice Research Group Meeting (Golden Jubilee) at Directorate of Rice Research Hyderabad w.e.f 11th – 15th April, 2015
- Dr. Tuhina Dey, Sr. Scientist (PBG) attended Annual Wheat Research workers Meet SDAU, Sardar Krushi nagar, Gujrat from 21-24th Aug., 2015
- Dr. M.K. Pandey, Jr. Scientist attended
  - Annual Wheat Research workers Meet SDAU, Sardar Krushi nagar, Gujrat from 21-24th Aug., 2015
  - one day workshop on Karnal Bunt free wheat for Export issues on 04 Jan., 2016, at IIWBR Karnal
- Dr. S.K. Rai, Jr. Scientist (PBG) attended
  - Group meeting of Rapeseed-mustard at Jaipur, Rajasthan from 03-05 Aug., 2015
  - Field day on oilseed germplasm at NBPGR, New Delhi from 04-06 Mar., 2016
- Dr. Bupesh Kumar, Jr. Scientist (PBG), attended 50th Annual Rice Research Group Meeting (Golden Jubilee) at Directorate of Rice Research Hyderabad w.e.f 11th – 15th April, 2015
- Dr. Rajan Salalia, Jr. Scientist (Entomology) attended 50th Annual Rice Research Group Meeting (Golden Jubilee) at Directorate of Rice Research Hyderabad w.e.f 11th – 15th April, 2015
- Dr. Anuradha Saha, Jr. Scientist (Agronomy) attended 50th Annual Rice Research Group Meeting (Golden Jubilee) at Directorate of Rice Research Hyderabad w.e.f 11th – 15th April, 2015
- Dr. Rajeev Bharat, Jr. Scientist (Agronomy) attended
  - 22nd Annual Group Meeting of AICRP (Rapeseed Mustard) at State Institute for Agricultural Management (SIAM), Durgapura, Jaipur w.e.f. Aug., 03-05, 2015.

- 25th Asian-Pacific Weed Science society Conference on Weed science for sustainable Agriculture, Environment and Biodiversity w.e.f. Oct., 13-16, 2015 at PJT State Agricultural University, Rajendranagar, Hyderabad, Andhra Pradesh, India - 500 060

- Dr. Sushmita M. Dadhich, Assistant Professor (Agriculture Engineering) attended 21 days training program on Geospatial Technology in Mapping, Monitoring and Management of Natural resources" w.e.f. 5-25 Aug., 2015 at ICAR-NBSS&LUP, Nagpur.
- Dr. Anil Kumar, Professor (Agronomy) attended 25th Asian Pacific Weed Science Conference held at PJSTAU, Hyderabad w.e.f. Oct., 13 to 16, 2015.
- Dr, Neetu Sharma, Assistant Professor (Agronomy) attended 25th Asian Pacific Weed Science Conference held at PJSTAU, Hyderabad w.e.f. Oct., 13 to 16, 2015.
- Dr. R. Puniya, Jr. Scientist, AIRCP-Weed Management attended
  - The 10 days training course on "Advances in Weed Management" at ICAR, Directorate of Weed Research, Jabalpur w.e.f. 12-21 Jan, 2016.
  - 25th Asian Pacific Weed Science Conference held at PJSTAU, Hyderabad w.e.f. Oct., 13 to 16, 2015.
- Dr. A. P. Singh, Sr. Scientist, AIRCP-Weed Management attended
  - National Conference on "Global Research Initiatives for Sustainable Agriculture & Allied Sciences" held on Dec., 12-13, 2015 at Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior (MP).
  - 25th Asian Pacific Weed Science Conference held at PJSTAU, Hyderabad w.e.f. Oct., 13 to 16, 2015.
- Dr. Sudhakar Dwivedi, Assoc. Professor (Agricultural Economics) participated and presented papers on 'Resource Use Efficiency of Small Broiler Units in Jammu & Kashmir State of India' and 'Improving Marketing Efficiency of Broiler for Small Production Units in Jammu & Kashmir State of India' in Indian Ecological Society International conference - 2016 on "Natural Resource Management: Ecological Perspective" held at SKUAST-Jammu w,e,f : 18-20, Feb., 2016.
- Dr. S.P. Singh, Asstt. Professor (Agril. Economics) participated and presented a paper in National Seminar on "Impact of Organic Farming in Sustainable Rural Development Through Agriculture" held at BHU-KVK, Barkachha, Mirzapur (U.P.) w.e.f : 08-09, Feb. 2016.
- Dr. Sudhakar Dwivedi, Assoc. Professor (Agril. Economics) delivered a Lead Lecture on 'Present Scenario and Future Prospects of Indigenous Technologies for Sustainable Agriculture and Better Tomorrow' and also acted as member of Judging Committee for Poster session in International Seminar on "Indigenous Technologies for Sustainable Agriculture and Better Tomorrow" held at CSIR – National Botanical Research Institute, Lucknow w.e.f : 9-10, Jan., 2016.
- Dr. Jyoti Kachroo, Professor (Agril. Economics) participated and presented a paper in 4th Jammu and Kashmir Agricultural Science Congress on "Technological Innovations, Opportunities and Challenges for Sustainable Rainfed Agriculture for Food and Livelihood Security" held at SKUAST-Jammu w,e,f : 28-30, Oct., 2015.
- Dr. Anil Bhat, Asstt. Professor (Agril. Economics) participated and presented
  - a paper on 'Meat Consumption Pattern in Jammu District' in 4th Jammu and Kashmir Agricultural Science Congress on "Technological Innovations, Opportunities and Challenges for Sustainable Rainfed Agriculture for Food and Livelihood Security" held at SKUAST-Jammu w,e,f : 28-30, Oct., 2015.
  - a paper on 'Rice Milling Enterpreneurship: A Case Study of Zamindara Rice & General Mills' and was declared IInd Best Case in the workshop on "1st National Case Study Conference" held at Shri Mata Vaishno Devi University, Katra w.e.f : 24-26, April, 2015.
  - "Competence Building in Food Processing Industry in Jammu & Kashmir" held at Shri Mata Vaishno Devi University, Katra w.e.f : 17-19, April, 2015.

- A paper on 'Financial Profitability Marketing Analysis & Technical Efficiency of Cabbage Cultivation in Jammu Region of J&K State' in Indian Ecological Society International conference - 2016 on "Natural Resource Management: Ecological Perspective" held at SKUAST-Jammu w,e,f : 18-20, Feb., 2016.

- Dr. Sachin Gupta, Assistant Professor (Plant Pathology) attended
  - 6th International Conference of Indian Phytopathological Society at New Delhi w.e.f 23-27th Feb., 2016.
  - National Seminar on New Vistas in Plant and Microbial Sciences held at University of Jammu w.e.f. 11-12th Mar., 2016.
- Dr. A.K. Singh, Assistant Professor(Plant Pathology) attended 21 days CAFT Training on "Plant Diseases Diagnosis and their Management" (13th Oct., to 2nd Nov., 2015) organized by CAS Division of Plant Pathology, IARI, New Delhi.
- Dr. Ranbir Singh, Assistant Professor (Plant Pathology) attended
  - National Seminar on "New Vistas in Plant and Microbial Sciences" held at Department of Botany, University of Jammu, Jammu w.e.f. 11-12th Mar., 2016.
  - Global Biotechnology Summit 2016 at Vigyan Bhawan, Central Secretariat, New Delhi w.e.f. 05-06th Feb., 2016
- Dr. Vishal Gupta, Asstt. Prfessor, (Plant Pathology) attended training programme on "Functional Analysis of Pathogenicity genes of Plant Pathogens" at Division of Plant Pathology, IARI, New Delhi w.e.f Jan., 02-22, 2016
- Dr. Vivak M. Arya, Assistant Professor (Soil Science) attended
  - Annual Workshop of AICRPAM (NICRA) at Agricultural College & Research Institute,TNAU,Madurai w.e.f 28th-30th April, 2015.
  - two days Consultative Meeting on "Revival of Village Ponds" under DST,GOI at PAU, Ludhiana w.ef. May 27th-28th, 2015.
  - a training programme and delivered lecture on sustainable cropping systems in Jammu Division on " Requirement of different inputs to maintain soil health (INM) while adopting sustainable cropping systems" at Krishi Bhawan, Talab Tillo , on 18th, 19th and 21st Dec., 2015.
  - International Conference on "Natural Resource Management in Arid and Semi-Arid Ecosystem for Climate Resilient Agriculture and Rural Development' at SKRAU-Bikaner (Rajasthan) w.e.f. 17th-19th Feb. 2016
- Dr. Sarabdeep Kour, Assistant Professor (Soil Science) attended National Conference on "Natural Resource Management in Arid and Semi-Arid Ecosystem for Climate Resilient Agriculture and Rural Development" scheduled held during 17-19 Feb., 2016 at SKRAU, Bikaner (Rajasthan)
- Dr. Vikas Sharma, Associate Professor (Soil Science) presented an oral paper at 'National Seminar on Soil Health management' during 28-29 Jan., 2016 held at Sabour, Bihar.
- Dr. Parshant Bakshi, Associate Professor (Fruit Science) attended National Conference on "Temperate Fruits and Nuts – A way Forward for Enhancing Productivity & Quality" at Central Institute of Temperate Horticulture, Srinagar (Kashmir) w.e.f. Nov., 6-9, 2016.
- Dr. Amit Jasrotia, Assistant Professor (Fruit Science) attended National Conference on "Temperate Fruits and Nuts – A way Forward for Enhancing Productivity & Quality" at Central Institute of Temperate Horticulture, Srinagar (Kashmir) w.e.f. Nov., 6-9, 2016.
- Dr. Rajesh Kumar, Assistant Professor (Fruit Science) attended National Conference on "Temperate Fruits and Nuts – A way Forward for Enhancing Productivity & Quality" at Central Institute of Temperate Horticulture, Srinagar (Kashmir) w.e.f. Nov., 6-9, 2016.
- Dr. Kiran Kour, Assistant Professor (Fruit Science) attended National Conference on "Temperate Fruits and Nuts – A way Forward for Enhancing Productivity & Quality" at Central Institute of Temperate Horticulture, Srinagar (Kashmir) w.e.f. Nov., 6-9, 2016.
- Dr. Arti Sharma, Assistant Professor (Fruit Science) attended 21 days winter school on "Novel

approaches in technologies for processing and value addition of Agricultural produce" w.e.f. 4th -24th Aug., 2015, at CIPHET, Ludhiana

- Dr. Akash Sharma, Asstt. Professor (Fruit Science) attended 21days winter school on precision Citriculture for sustainable production and post harvest management organized by ICAR-Central Citrus Research Institute Nagpur-440010 (Maharashtra) w.e.f Oct., 15th to Nov. 04th , 2015.
- Dr. Monica Sood, Asstt.Professor (FST) attended 21 days ICAR sponsored summer school at CIPHET Ludhiana on "Novel approaches and technologies for and value addition of agricultural produce: w.e.f. 04th -24th Aug., 2015
- Dr A.K. Pathak, Assistant Professor (ANN) attended
  - XVI Biennial conference of Animal Nutrition Society of India (ANSI) on "Innovative Approaches for Animal Feeding and Nutritional Research" at NDRI, Karnal on 6-8 Feb., 2016.
  - advanced short course entitled Clinical Nutrition Approaches for Gut Health of Animals at Niche Area for Excellence in Clinical Nutrition, Div. of Animal Nutrition, IVRI, Izatnagar, Bareilly on 5-14 Mar., 2016.
- Dr R.K. Sharma, Professor and Head (ANN) attended Workshop on 'Current Status and Future Prospects of Animal Production System in North Western Himalayan Region' at ICAR-IVRI, Palampur on 13-14 Oct., 2015.
- Dr. Shalini Suri, Professor, (VAN) attended XXX Annual Convention of Indian Association of Veterinary Anatomists. held in Kolkata, w.e.f. Dec.,16$^{th}$ to 18$^{th}$, 2015 organized by Department of Veterinary Anatomy F/VAS, W.B.U.A.F.Sc., Kolkata-37, West Bengal.
- Dr. Ankur Rastogi, Assistant Professor (ANN) attended 3$^{rd}$ Biennial National Conference of Indian Academy of Veterinary Nutrition and Animal Welfare on 'Interventions in livestock production-cum-health and crop mixed farming for nutritional security' at CSK HPKVV, Palampur on Nov., 4-5, 2015.
- Dr. Arvind Kumar, Assistant Professor (LPT), attended ICAR Sponsored 21 days summer School on "Principles and Concepts of Livestock Disease Informatics and Modelling in Veterinary Epidemiology" from 10 to 30$^{th}$ June, 2015, Organized by ICAR- National Institute of Veterinary Epidemiology and Disease Informatics, Bengaluru.
- Dr. H.K. Sharma, Asstt. Prof. (VPE) attended "International School on One Health: A Team Science Approach for the Protection of Animal, Human and Environmental Health"- An Integrated View on Infectious Diseases, Food Safety and Zoonoses w.e.f. 9$^{th}$ to 15$^{th}$ Feb., 2016 at GADVASU, Ludhiana.
- Dr. J.S. Soodan, Prof. & Head (TVCC) attended 34$^{th}$ Annual Convention-cum-National Symposium of ISVM at GADVASU, Ludhiana w.e.f. 17-19 Feb., 2016.
- Dr. Jafrin Ara Ahmed, Asstt. Prof. (VPB) attended XXIV Annual Conference of SAPI & National Symposium on "Physiological approaches for development of Climate Resilient Livestock Farming" held at Assam Agricultural University, Khanapara Guwahati, Assam w.e.f. 21 to 22$^{nd}$ Jan., 2016.
- Dr. Jonali Devi, Assoc. Prof. (VPB) attended XXIV Annual Conference of SAPI & National Symposium on " Physiological approaches for development of Climate Resilient Livestock Farming" held at Assam Agricultural University, Khanapara Guwahati,Assam w.e.f. 21 to 22$^{nd}$ Jan., 2016.
- Dr. M.S. Bhadwal, Prof. (VSR) and Dr. A.K. Gupta, Assoc. Prof. & Head attended 39$^{th}$ Annual Congress of Indian Society for Veterinary Surgery w.e.f. 01-9-2015 to 03-9-2015 at SKUAST- K.
- Dr. Mudasir Sultana Prof. & Head (VPT) attended 15$^{th}$ ISVPT conference at ICAR-NDRI Karnal in Jan., 2016.
- Dr. N.K. Pankaj, Asstt. Prof. (VPT) presented research poster in 15$^{th}$ ISVPT conference at ICAR-NDRI Karnal in Jan., 2016.
- Dr. P.S. Mahapatra, Assoc. Prof. & Head (VPB) attended National Conference and annual convention of Society of Veterinary Biochemist & Biotechnologist of India & National Symposium on "Use of advance Technologies of Biochemistry & Biotechnologies in Livestock Health, Production & Reproduction" at OUAT, Bhubaneswar, w.e.f 11-12$^{th}$ Mar., 2016.

- Dr. Pranav Kumar, Asstt. Prof. (VAHEE) participated and presented poster the 44th Dairy Industry Conference "Make in India: Dairying 2030" at ICAR-National Dairy Research Institute, Karnal w.ef 18th -20th Feb., 2016.
- Dr. Pratiksha Raghuwanshi, Asstt. Prof. (VPB) attended 3rd Biennial National Conference of IAVNAW on "Interventions in Livestock Production-cum-Health and Crop Mixed Farming for Nutritional Security"at CSK HPKV, Palampur w.e.f 4-5th Nov., 2015.
- Dr. R.K. Bhardwaj, Asstt. Prof. (VMD) attended
  - 5th National Conference on Zoonotic Disease Control and Observing World Zoonosis Day-2015 on 5th July, 2015 at Indian Medical Association House, New Delhi jointly organized by Millennium India Education Foundation, Heart Care Foundation of India, ICAR and IMA.
  - 34th Annual convention of Indian Society of Veterinary Medicine and National symposium on Newer apporoaches in diagnosis and management of animal diseases for sustainable health and production cum conference workshop on clinical procedures held at Division of Veterinary Medicine, COVsc, GADVASU-Ludhiana w.e.f. 17-19th Feb., 2016.
  - National Congress on Canine Practice and 12th Convention of Indian Society for Advancement of Canine Practice (ISACP) and National Symposium on "Challenges in Diagnosis and Management of Emerging Diseases of Canine" organized by ISACP and held w.e.f 17th-19th June, 2015 at Hotel Kanha Shyam, Civil Lines, Allahabad-U.P.
- Dr. R.K. Taggar, Professor and Head (AGB) participated in 3rd Biennial National Conference and Symposium on "Interventions in Livestock Production-cum-Health and crop Mixed farming for Nutritional security" at College of Veterinary Sciences and Animal Husbandry Palampur
- Dr. R.B. Kushwaha, Assistant Professor (TVCC), attended 21 days short training programme on "Hands on training in specialized procedure in Veterinary Anesthesia and Surgery" from 10-30 Sept., 2015 at Department of Veterinary Surgery and Radiology (CAFT), College of Veterinary Sciences, GADVASU, Ludhiana, Punjab
- Dr. S.K. Gupta, Professor (VM) attended 34th Annual convention of Indian Society of Veterinary Medicine and National symposium on Newer apporoaches in diagnosis and management of animal diseases for sustainable health and production cum conference workshop on clinical procedures held at Division of Veterinary Medicine, COVsc, GADVASU-Ludhiana w.e.f. 17-19th Feb., 2016.
- Dr Rajiv Singh, Professor (VM) attended 34th Annual convention of Indian Society of Veterinary Medicine and National symposium on Newer apporoaches in diagnosis and management of animal diseases for sustainable health and production cum conference workshop on clinical procedures held at Division of Veterinary Medicine, COVsc, GADVASU-Ludhiana w.e.f. 17-19th Feb., 2016.
- Dr. V.S. Wazir, Professor (VM) attended 34th Annual convention of Indian Society of Veterinary Medicine and National symposium on Newer apporoaches in diagnosis and management of animal diseases for sustainable health and production cum conference workshop on clinical procedures held at Division of Veterinary Medicine, COVsc, GADVASU-Ludhiana w.e.f. 17-19th Feb., 2016.
- Dr. S.R. Upadhayay, Professor (VM) attended 34th Annual convention of Indian Society of Veterinary Medicine and National symposium on Newer apporoaches in diagnosis and management of animal diseases for sustainable health and production cum conference workshop on clinical procedures held at Division of Veterinary Medicine, COVsc, GADVASU-Ludhiana w.e.f. 17-19th Feb., 2016.
- Dr. S.A. Khandi, Asstt. Prof. (VAHEE) attended training programme on Emerging Issues in Agricultural Policy Research from 19-25 Mar., 2015 organised by National Institute of Agricultural Economics and Policy Research, New Delhi.
- Dr. S.K. Kotwal, Professor (VPE) attended XIV NAVS convocation cum conference on Antimicrobial resistance in Livestock Health and Production on 4th Nov., 2015 at ICAR- IVRI- Izatnagar.
- Dr. Sanjay Agarwal, Asstt. Prof.(VGO) attended

- training programme on "Current concepts and frontier technologies for fertility management in farm animals" held at Livestock Research Centre, National Dairy Research Institute, Karnal-132001 Haryana w.e.f. 05th -25th Oct., 2015.
- training programme on "Improving reproduction rate in ruminants by suitable reproductive technologies" at Deptt. of VGO, CVSc, GADVASU, Ludhiana w.e.f. 02-22 Sept., 2015.

- Dr. Sunil Kumar, Associate Professor and Head (LPT) attended 44th Dairy Industry Conference on "Dairying in India by 2030: Make in India" organized by National Dairy Research Institute, Karnal w.e.f. 18 th -20th Feb., 2016.
- Dr. Nazam Khan, Asstt. Prof. (ILFC) attended
  - workshop cum brainstorming session on "Current status and Future prospects of Animal Production System in North Western Himalayan Region " organized by ICAR-Indian Veterinary Research Institute, Regional Station, Palampur (HP) from 13-14 Oct., 2015.
  - 3rd Biennial National Conference on "Interventions in Livestock Production-cum-Health and Crop Mixed Farming for Nutritional Security" organized by Department of Animal Nutrition, College of Veterinary and Animal Sciences, CSKHPKV in collaboration with IGFRI, Centre and IVRI station, Palampur-176062 from 04-05 Nov., 2015.
  - ICAR Sponsored 21 days CAFT training on "Micronutrients in Animal Nutrition" from 3- 23rd Feb., 2016, organized by ICAR- Indian Veterinary Research Institute.
- Dr. Suraj Amrutkar, Asstt. Prof. (ILFC)attended
  - XIII annual convention on "National Symposium on Policy Planning for Livelihood Security through Domestic Animal Biodiversity" organized by SOCDAB from 11-12 Feb., 2016.
  - 3rd Biennial National Conference on "Interventions in Livestock Production-cum-Health and Crop Mixed Farming for Nutritional Security" organized by Department of Animal Nutrition, College of Veterinary and Animal Sciences, CSKHPKV in collaboration with IGFRI, Centre and IVRI station, Palampur-176062 from 04-05 Nov., 2015.
- Dr. Manpreet Kour, Asstt. Prof. (ILFC) attended XIII annual convention on "National Symposium on Policy Planning for Livelihood Security through Domestic Animal Biodiversity" organized by SOCDAB from 11-12 Feb., 2016.
- Dr. Vikas Mahajan, Asstt. Prof. (ILFC) attended XIII annual convention on "National Symposium on Policy Planning for Livelihood Security through Domestic Animal Biodiversity" organized by SOCDAB from 11-12 Feb., 2016
- Dr. S.K. Gupta, Head Division of ILFC attended 34th Annual Convention and National Symposium of Indian Society for Veterinary Medicine at GADVASU, Ludhiana campus from Feb., 17-19, 2016. He acted as Chairman in the Technical session (TS-7) "Equine and Pack Animal Medicine on Friday 19th Feb, 2016.
- Dr. Deepak Kumar, Asstt Prof. / Jr. Scientist (Agronomy) attended Annual Project Review Meeting of DST sponsored QPM Project held at Simla w.e.f. 03-04th July, 2015.
- Dr. Vikas Sharma, Asstt Prof. / Jr. Scientist (Agronomy) attended
  - Annual Project Review Meeting of DST sponsored QPM Project held at Simla w.e.f. 03-04th July, 2015
  - Asia Pacific Weed Science Society, Conference, held at Hyderabad from 12th to 16th Oct., 2015
- Dr Narinder Panotra, Asstt Prof. / Jr. Scientist (Agronomy) attended
  - 4th Jammu and Kashmir Agricultural Science Congress on Organic Agriculture Prospects in Jammu and Kashmir on 28-30 Oct., 2015 at SKUAST-Jammu.
  - The Indian Ecological Society: International Conference on Natural Resource Management: Ecological Perspectives on 18-20 Feb., 2016 at SKUAST-J, Jammu organized by The Indian Ecological Society.
  - two day Kisan Mela on theme "Diversified Agriculture-Sustainable Agriculture at SKUAST-Jammu on 18-19 Mar., 2016 organized

by Directorate of Extension, SKUAST-Jammu.

- 21 days training programme on "Applications of computer Algorithms and statistical software packages in Agriculture" from 18th Dec., to 07th Jan., 2016 at Division of Computer Sciences, IASRI, New Delhi

- Dr. Rohit Sharma, Technical Officer (Agro meteorology) participated/attended
  - seven days workshop/training programme on "Use of Crop Simulation Model and Decision Support System in Agromet Advisory Service" from 8th to 14th June, 2015 organized by Agrometeorlogical Field Unit – Srinagar (SKUAST – Kashmir).
  - 21 days training programme on "Remote Sensing and GIS for Crop Growth monitoring and Yield Prediction" from 31st Aug., to 20th Sept., 2015 at Indian Institute of Remote Sensing (ISRO), Kalidass Road, Dehradun.
  - 9th annual review meeting (ARM) of "Gramin Krishi Mausam Sewa (GKMS)" from 23rd to 25th Nov., 2015 organized by UAS Dharwad (Karnatka).
- Dr. Ravinder Singh Sudan (Sr. Scientist, PBG), AICRP on Maize Centre, Rakh Sansoo, Udhampur in 58th AICRP Maize Centre, Rakh Sansoo, Udhampur participated
  - Annual Maize Workshop held at PAU, Ludhiana, Punjab w.e.f 4th to 6th April, 2015.
  - Participated in 4th J&K Agricultural Science Congress at SKUAST-J Chatha w.e.f. 28th to 30th Oct., 2015.
- V. B. Singh, Jr. Scientist (Plant Pathology) attended 4th Jammu and Kashmir Agricultural Science Congress on "Technological Innovations, Opportunities and Challenges for Sustainable Rainfed Agriculture for Food and Livelihood Security" at S. K. University of Agricultural Sciences & Technology of Jammu w.e.f. Oct., 28-30, 2015.
- Neeraj Gupta, Jr. Scientist (Post Harvest Technology) attended
  - 4th Jammu and Kashmir Agricultural Science Congress on "Technological Innovations, Opportunities and Challenges for Sustainable Rainfed Agriculture for Food and Livelihood Security" at S. K. University of Agricultural Sciences & Technology of Jammu w.e.f. 28-30 Oct., 2015.
  - International Conference on Natural Resources Management Ecological Perspectives" at S. K. University of Agricultural Sciences & Technology of Jammu w.e.f. 18-20 Feb., 2016.
- Rakesh Kumar, Jr. Scientist (Fruit Science) attended
  - 4th Jammu and Kashmir Agricultural Science Congress on "Technological Innovations, Opportunities and Challenges for Sustainable Rainfed Agriculture for Food and Livelihood Security" at S. K. University of Agricultural Sciences & Technology of Jammu w.e.f. 28-30 Oct., 2015.
  - International Conference on Natural Resources Management Ecological Perspectives" at S. K. University of Agricultural Sciences & Technology of Jammu w.e.f. 18-20 Feb., 2016.
- Vijay Kumar, Jr. Scientist (Soil Science) attended
  - 4th Jammu and Kashmir Agricultural Science Congress on "Technological Innovations, Opportunities and challenges for sustainable Rainfed Agriculture for Food and Livelihood Security" at S. K. University of Agricultural Sciences & Technology of Jammu w.e.f. 28-30 Oct., 2015.
  - training programme on Biomass and biofuel; technologies, climate change & environment at ICAR- Central Institute of Agricultural Engineering, Bhopal w.e.f. 22 July - 11 Aug., 2015.
  - Training programme on Capacity building in Geospatial Technologies at University of Jammu, Jammu w.e.f. 22 Dec., 2015 –10 Jan., 2016.
- Dr. Mahital Jamwal, Sr. Scientist/ Assoc. Prof. (Fruit Science) attended "4th Special Summer School" at ICAR Short Training Course "Advances in Micro-Irrigation & Fertigation" at CSKHPKV, Palampur (Himachal Pradesh) w.e.f. 1-10 Oct., 2015.
- Dr. D.K. Chauhan, Jr. Scientist/ Asstt. Prof. (Plant Breeding & Genetics) attended 21 days winter school entitled "Bioinformatics and High Dimensional Genomic Data Analysis" held at IASRI, Pusa, New Delhi, w.e.f. 25th Nov., to 15 Dec., 2015.

- Dr Rohit Sharma, Jr. Scientist/ Asstt. Prof. (Agronomy) attended National workshop on "Nutrient management for sustainable crop production in rice-wheat cropping system"in "National workshop on Natural Resource Management for climate Resilient Agriculture in Lower Himalayas" held at Regional Research Station, Punjab Agricultural University, Ballowal Saunkhri, Distt SBS Nagar (Punjab), w.e.f. 22-23rd Dec., 2015.
- Dr Vikas Abrol, Sr Scientist (SS & Ag-Chem) deputed to undergo training for one year (Nov 2013-Oct 2014) entitled "Biochar: Mechanism of action in agricultural soils" by Government of Israel at Agricultural Research Organization, Institute of Soil, Water and Environment Sciences, The Volcani Centre, Bet Dagan, Israel to pursue research
- Dr. P.K. Rai, Sr. Scientist (Soil Science) participated in International Conference on "Natural Resource Management for Food Security and Rural Livelihood" from 10-13 Feb., 2015 at NASC, New Delhi organized by Soil Conservation Society of India, New Delhi.
- S.K. Singh, Jr. Scientist (Plant Pathology) attended 4th Jammu and Kashmir Agricultural Science Congress on "Technological Innovations, Opportunities and Challenges for Sustainable Rainfed Agriculture for Food and Livelihood Security" at S. K. University of Agricultural Sciences & Technology of Jammu w.e.f. 28-30 Oct., 2015.
- Dr. R.K. Pandey, Associate Professor (Floriculture), attended National Seminar on "Technology and Management of Micro Irrigation in Floriculture" organized by Division of Agricultural Engineering and Directorate of Extension at SKUAST-Jammu , Chatha w.e.f 19th -20th Mar., 2015
- Dr. Arvinder Singh, Associate Professor (Floriculture) attended National Seminar on "Technology and Management of Micro Irrigation in Floriculture" organized by Division of Agricultural Engineering and Directorate of Extension at SKUAST-Jammu , Chatha w.e.f 19th -20th Mar., 2015
- Dr. Nomita Laishram Associate Professor (Floriculture) attended National Seminar on "Technology and Management of Micro Irrigation in Floriculture" organized by Division of Agricultural Engineering and Directorate of Extension at SKUAST-Jammu , Chatha w.e.f 19th -20th Mar., 2015
- Dr. Manoj Kumar, Asstt. Professor (Vegetables) attended
  - AICRP (Vegetable Crops) group meeting at IIVR, Varanasi w.e.f 21st -24th May, 2015
  - ICAR sponsored short course training programme on "Total value chain for processing of vegetable crops for nutritional security" at IIVR, Varanasi w.e.f 1st -11th Sept.,, 2015
  - National Seminar on "Soil Health Management" at BAU, Sabour, Bhagalpur (Bihar) w.e.f. 28th-29th Jan., 2016
- Dr. Sanjeev Kumar, Asstt. Professor (Vegetable) attended 21 days advanced training on " Recent Advances in Development of Vegetable Crops" organized by Centre of Advanced Faculty Training in Horticulture (Vegetables) at Dr. Y.S. Parmar University of Horticulture and Forestry at Nauni, Solan w.e.f. 17th Feb.,- 8th Mar., 2016

# 9

# Externally Funded Adhoc Research Projects

**(as on 31.03.2016)**

| S. No. | Title of the Project | Name of the P.I. |
|---|---|---|
| **Funding Agency: Department of Biotechnology, GOI** | | |
| 1. | Development of single nucleotide polymorphisms (SNPs) for Brassica juncea | Dr. Ravinder Singh (School of Biotechnology) |
| 2. | Socioeconomic upliftment of rural women through development of value added meat products | Dr. Sunil Kumar (Livestock Products & Technology) |
| 3. | Erucic acid profiling and introgression of low erucic acid trait in desirable cultivars of Brassica juncea L. | Dr. Gyanendra Kumar Rai (Biotechnology) |
| 4. | Isolation, identification and characterization of plant viruses affecting solanaceous crops in different agro climatic zones of Jammu region | Dr. Ranbir Singh (Plant Pathology) |
| 5. | Expression profiling of dof genes for accumulation of seed storage protein and nitrogen profiling in beans (Rajmash) | Dr. Moni Gupta (Biochemistry) |
| 6. | Exploration of respiratory met genome of small ruminants and establishment of referral diagnostic facility | Dr. Anil Taku (Vety. Microbiology &Immunology) |
| 7. | Development of semi-dwarf blast and bacterial blight resistant version of Ranbir Basmati by marker assisted backcross breeding | Dr. R.K. Salgotra (Biotechnology) |
| 8. | Genetic dissection of heat tolerance in wheat using multiple bi-parental RIL mapping populations | Dr. R. R. Mir (Biotechnology) |
| 9. | Economic empowerment of rural goat farmers through scientific intervention in block R.S. Pura of Jammu Division | Dr. J.S. Soodan (Vety. Clinical complex) |
| 10. | SSR based Germplasm characterization for resistance to powdery mildew in cucumber (Cucumis sativus L.) | Dr. Susheel Sharma (Biotechnology) |
| 11. | Exploitation of existing bio-diversity for sustainability and farm profitability under rainfed agriculture | Dr. Meenakshi Gupta (Agro-meteorology) |
| 12. | Community based mass production for bio-agents in J&K: Popularization of low cost technology for agrientrepreneurship through farm based bio-control units | Dr. R.K. Gupta (Division of Entomology) |
| **Funding Agency: Department of Science & Technology, GOI** | | |
| 13 | Nutri-Genomics and transcriptomics for identification of genes for Zinc, Iron and protein content in common bean . | Dr. R.R. Mir (Biotechnology) |
| 14 | Design and development of a tractor operated soil compaction measurement device | Dr. Hemant Dadhich (Agrill. Engineering) |
| 15 | Exploitation of under-utilized fruits of kandi areas of Jammu region through value additrion for human resource development (Fast Track Scheme for Young Scientists) | Dr. Neeraj Gupta (Post Harvest Technology) |
| 16 | Development and Evaluation of Automatic Timer Based Variable Speed Device for Sprinkler System | Dr. Sushmita M. Dadhich (Agrill. Engineering) |
| 17 | Entrepreneurship opportunities for socio-economic upliftment of rural farmers through QPM hybrid seed production techniques | Dr. Vikas Sharma (Agronomy) |
| 18 | Empowerment of rural women through training programme on the development of value added livestock products | Dr. Zuhaib Fayaz Bhat (Livestock Products & Technology) |

| S. No. | Title of the Project | Name of the P.I. |
|---|---|---|
| 19 | Molecular marker assisted selection of powdery mildew resistance genes into the elite cultivars of pea (Pisum sativum L.). | Dr. Susheel Sharma (Biotechnology) |
| 20 | Farmers' participatory collection, characterization and conservation of endangered genetic diversity of ginger (Zingiber officinale Rosc.) in Shivaliks | Dr. Susheel Sharma ( Biotechnology) |
| 21 | Molecular marker assisted introgression and validation of blast resistance genes in the rice cultivar K 343 recommendation for the hill zone of Jammu and Kashmir. | Dr. Manmohan Sharma ( Biotechnology) |
| 22 | Promotion of soil & water conservation technologies for improving agriculture system in rainfed area of Jammu district. | Dr. R.K. Srivastava (Agril. Engineering) |
| 23 | Genome wide analysis of small c-terminally encoded peptide (CEP) multigene family and elucidating its role in abiotic stress tolerance in rice (Oryza sativa L.) | Dr. Sumita Kumari (School of Biotechnology) |
| 24 | Diversity analysis of Pseudomonas fluorescence and its utilization in disease suppression and nutrient management | Dr. Vishal Gupta (Plant Pathology) |
| **Funding Agency: Indian Meteorology Department (IMD),GOI** | | |
| 25 | Forecasting Agricultural Output using Space, Agrometerology and Land based observations (FASAL), Jammu | Dr. Mahender Singh (Agrometeorology) |
| **Funding Agency: Ministry of Human Resource Development (MHRD), GOI** | | |
| 26 | All India Survey on Higher Education (AISHE) | Dr. S.E.H. Rizvi (Economics & Statistics) |
| **Funding Agency: National Informatics Centre, GOI** | | |
| 27 | National Knowledge Network (NKN) | Dr. Munish Kumar Sharma (Economics & Statistics) |
| **Funding Agency: National Medicinal Board, New Delhi, GOI** | | |
| 28 | Conservation, Production and sustainable Management of Shatavar (Asparagus racemosus Willd) | Dr. L.M. Gupta (Agro-forestry) |
| **Funding Agency: J&K State Govt. ( Plan)** | | |
| 29 | National e-Governance Plan-Agriculture (NeGP-A) | Dr. Manish Sharma (Statistics) |
| 30 | Impact of deficient and untimely rainfall on Agriculture of Rainfed areas in Jammu division | Dr. Anil Kumar (Agronomy) |
| **Funding Agency: Rashtriya Krishi Vikas Yojna (RKVY), GOI** | | |
| 31 | Establishment of testing centre for testing of farm implements and machinery | Dr. Susheel Sharma |
| 32 | Detection of Acaricide resistance in ticks | Dr. Rajesh Katoch (Vety.Parasitology) |
| 33 | Nutritional enhancement of livestock through Urea Mollases Malnutrient Block and roughage block supplementation | Dr. Rajeev Singh (Vety.Madicine) |
| 34 | Production of quality planting material of commercially important vegetables of Jammu region | Dr. Sanjeev Kumar (Veg.Science) |
| 35 | Assessment of soil fertility and its spatial variability for nutrient management using GIS in various districts of Jammu Division | Dr. K.R. Sharma (Soil Science & Agril. Chemistry) |
| 36 | Establishment of Nut Centre in intermediate agro-climate zone of Jammu Province to augment requirement of quality planting material | Dr. Rajesh Kumar (Fruit Science) |
| 37 | Standardization of commercial protocol for condensed tannis enriched multi nutrient blocks | Dr. A.K. Pathak (Animal Nutrition) |

| S. No. | Title of the Project | Name of the P.I. |
|---|---|---|
| 38 | Development of organic production package for field crops | Dr. Vikas Sharma<br>(Soil Science & Agril. Chemistry) |
| **Funding Agency: Applications of Micro-organisms in Agriculture and allied Sectors (AMAAS),GOI** | | |
| 39 | Exploration of Plant Growth Promoting Rhizobacteria antagonistic and plant pathogenic microbial resources from high altitude agro-climatic/cropping systems of Jammu and Kashmir State for sustainable agriculture… | Dr. Vishal Gupta<br>(Plant Pathology) |
| 40 | Degradation and effective utilization of agro-wastes through technologies evolving mushroom or macro-fungi… | Dr. Sachin Gupta<br>(Plant Pathology) |
| **Funding Agency: National Bank For Agriculture and Rural Development (NABARD),GOI** | | |
| 41 | Production & demonstration of quality planting material of commercially important cut and loose flowers in Jammu region under FITF | Dr. R.K.Pandey<br>(Floriculture) |
| 42 | Diagnostic study of farmers in context of price spread analysis, marketing pattern and potential assessment of agricultural diversification in Chenani Block of Udhampur district | Dr. Anil Bhat<br>(Agril.Economics) |
| 43 | Commercial production of vegetable seedlings for livelihood security: An entrepreneurship venture | Dr.Manoj Kumar<br>(Veg.Science) |
| 44 | Interventional strategies for prevention and control of common parasitic zoonoses of sheep, goats and nomadic women for socio-economic up liftment of nomads | Dr. Modh. Rashid<br>(Vety.Public Health&Epidemiology) |
| 45 | Promotion of vermicomposting and vermiwash as a Venture for the upliftment of socio-economic status of the rural youth district Jammu and Samba | Dr. Pardeep Kumar Rai<br>(ACHR, Udheywalla ) |
| 46 | Scientific intervention for validation and popularization of traps intensive insect pest management in vegetable growing areas of Jammu region | Dr. Devinder Sharma<br>(Division of Entomology ) |
| 47 | Training and demonstration of Leaf Color Chart (LCC) based fertilizer N management to farmers under Climate Smart Agriculture Practices (CSAP) | Dr. Vivak M. Arya<br>Soil Science & Agril. Chemistry ) |
| 48 | Production and demonstration of quality planting material of commercially important medicinal trees for livelihood security | Dr. Punit Choudhary<br>(KVK, Jammu) |
| 49 | On-farm training and demonstration of biochar for carbon sequestration and climate change mitigation in kandi belt of Jammu | Dr. Peeyush Sharma<br>(Soil Science& Agril. Chemistry) |
| 50 | Setting up of spawn production | Dr Amrish Vaid<br>(KVK,Kathua) |
| **Funding Agency: National Food Security Mission (NFSM),GOI** | | |
| 51 | Quality seed production for higher productivity of pulses through farmer's participatory programme in Shiwalik foot hills of Jammu region | Dr. Brij Nandan<br>(Agronomy) |
| **Funding Agency: Horticulture Mission for North East Himalayas (HMNEH), GOI** | | |
| 52 | Establishment of root stock and bud wood bank at SKUAST-J and their large scale multiplication | Dr. Arti Sharma<br>(Fruit Science) |
| 53 | Domestication of naturally occurring and wild relatives of some fruits for specific horticultural traits | Dr. Amit Jasrotia<br>(Fruit Science) |
| 54 | Dissemination of refined production technology of rare exotic vegetable crops in Jammu region | Dr. R.K. Samnotra<br>(Veg.Science&Floriculture) |

| S. No. | Title of the Project | Name of the P.I. |
|---|---|---|
| 55 | High density orcharding of mango and guava in Jammu sub-tropics | Dr. Akash Sharma (Fruit Science) |
| 56 | Technology refinement and dissemination of ginger and turmeric in Jammu region | Dr. Sandeep Chopra (Veg.Science&Floriculture) |
| 57 | Development of Aonla based cropping system for Jammu sub-tropics | Dr. Deep Ji Bhat (Fruit Science) |
| 58 | Refinement and improvement of soil quality and water productivity enhancement technology in rainfed orchard of Jammu region | Dr. Vivek M Arya (Soil Science) |
| 59 | Training and demonstration on rejuvenation of old/unproductive orchards in Jammu subtropical | Dr. Prashant Bakshi (Fruit Science) |
| **Funding Agency: Mission for Integrated Development of Horticulture (MIDH),GOI** | | |
| 60 | Disease/Forecasting Unit | Dr. V.K. Razdan (Plant Pathology) |
| 61 | Establishment of biological control laboratory in SKUAST-J | Dr. R.K. Gupta (Entomology) |
| 62 | National Bamboo Mission | Dr. Sushil K Gupta (Agroforestry) |
| 63 | Centre of Excellence for Horticulture | Director Research |
| 64 | Setting up of New Tissue Culture Unit | Dr. V.K. Wali (Fruit Science) |
| 65 | Screening of elite Germplasm of Kagzi lime (Citrus aurantifolia Swingle) and their mass multiplication in subtropical areas of Jammu | Dr. Rakesh Kumar (RRSS Raya) |
| Funding Agency: National Mission for Sustainable Agriculture (NMSA),GOI | | |
| 66 | Establishment of micro irrigation systems under On farm water management component (NMSA) | Dr. Susheel Sharma (Agril.Engg.) |
| **Funding Agency: UMEED Govt. Of J&K** | | |
| 67 | Creation & capacity building of women self help group members from UMEED as paravets (Pashu Sakhi) of Jammu Division of J&K State…. (UMEED Govt. Of J&K) | Dr. M.S. Bhadwal (Vety.Animal Husbandry Ext. Education) |
| Funding Agency: National Science Foundation (NSF) USA,GOI | | |
| 68 | Green Chickpea project (National Science Foundation (NSF) USA) | Dr. R. R. Mir (Division of Plant Breeding& Genetics) |
| Funding Agency: Defence R & D Establishment, Ministry of Defence, Jhansi Road, Gwalior, GOI | | |
| 69 | Screening of suspected animal samples for the presence of Coxiella burnetii (DRDE) | Dr. S.K. Kotwal (Vety.Public Health and Epidemiology) |
| **Funding Agency: ICAR Extramural Projects, GOI** | | |
| 70 | Impact evaluation of integrated pest management of technologies | Dr. Rakesh Nanda (Agril. Exten. Education) |
| 71 | Unraveling occurrences pattern, molecular details of etiology and cost effective preventive measures of bovine mastitis and its impact milk quality and dairy food safety | Dr. Rajinder Peshin (Agril. Exten. Education) |

| S. No. | Title of the Project | Name of the P.I. |
|---|---|---|
| 72 | Unraveling occurrences pattern, molecular details of etiology and cost effective preventive measures of bovine mastitis and its impact milk quality and dairy food safety | Dr.Neelesh Sharma (Vety. Medicine ) |
| **Funding Agency: ICAR funded projects under NAIP, Mega Seed Project, NICRA etc., GOI** | | |
| 73 | Seed Production in Agricultural crops | Dr. Pradeep Wali (Directorate of Research) |
| 74 | National Initiative on Climate Resilient Agriculture (AICRPAM-NICRA) | Dr. Mahender Singh (Agrometeorology ) |
| 75 | National Initiative on Climate Resilient Agriculture, AICRPDA-NICRA-Component-II | Dr. A.P.Singh (Agronomy) |
| 76 | National Initiative on Climate Resilient Agriculture (AICRP) | Dr. Amrish Vaid (KVK, Kathua) |
| 77 | Climate change on lac crop performance (NICRA) | Dr. R. K. Gupta (Entomology) |
| 78 | Veterinary Type Culture Collection (VTCC) Network Centre | Dr. Anil Taku (Vety.Microbiology) |
| 79 | National Information System on Agricultural Network (NISAGENET) ICAR activity | Dr. Manish Kumar Sharma (Statistics) |
| **Funding Agency: National Horticulture Board, GOI** | | |
| 80 | Establishment of mother plant nurseries for high pedigree plant material for fruit crops. | Dr. V. K. Wali (Fruit Science) |
| **Funding Agency: All India Coordinated Research Project Networking/AICRP (Voluntary Centers) (ICAR)** | | |
| 81 | National Network Project on Insect Biosystematics | Dr. D.P. Abrol (Entomology) |
| 82 | Network project on outreach of technologies for temperate fruit crops | Dr. Mahital Jamwal (RHRSS,Bhaderwah) |
| 83 | Networking project on characterization of Bhakarwali Goat | Dr. R.K. Tagger (Animal Genetics &Breeding) |
| 84 | Networking project on characterization and conservation of Poonchi Sheep | Dr. R.K. Tagger (Animal Genetics &Breeding) |
| 85 | Conservation of Lac Insect Genetic Resources | Dr. R.K. Gupta (Entomology) |
| 86 | Outreach Programme on Zoonotic Disease | Dr. S.K. Kotwal (Vety.Public Health & Epidemiology) |
| 87 | Integrated Agro Advisory Services (Jammu) | Dr. Mahender Singh (Agrometerology) |
| 88 | Agro Advisory Services (Rajouri) mid to high intermediate zone of J&K (Gramin Krishi Mausam Sewa) | Dr Vinod Gupta and Dr Rohit Sharma (TO) (RARS, Rajouri) |
| 89 | Biotic stress management in wheat triple rust | Dr. Tuhina Dey(Division of Plant Breeding & Genetics) |
| 90 | Livelihood opportunity through agro-technological interventions of Tribal communities of Budhal Block | Dr Arvind Isher (KVK,Rajouri) |

| S. No. | Title of the Project | Name of the P.I. |
|---|---|---|
| **Funding Agency: All India Coordinated Research Project VOLUNTARY CENTRES (Long Term) (ICAR)** | | |
| 91 | All India Network Research Project on Onion and Garlic | Dr. Satesh Kumar (Division of Olericulture &Floriculture) |
| 92 | All India Co-ordinated Research Project on Vegetables | Dr R. K. Samotra (Vegetable Science & Floriculture) |
| 93 | All India Co-ordinated Project on Wheat and Barley, Rajouri | Dr. Narinder Panotra (Division of Agronomy) |
| 94 | All India Co-ordinated Rice Improvement Project, Rajouri | Dr. Deepak Kumar (Division of Agronomy) |
| 95 | All India Co-ordinated Research Project on Linseed | Dr. D.P. Abrol (Division of Entomology) |
| 96 | Coordinating Centre under AICRP on Agro-forestry | Dr. S.K. Gupta (Agroforestry) |
| 97 | All India Co-ordinated Maize Improvement Project, Maize | Dr. Saurav Gupta (RARS, Rajouri) |
| 98 | All India Co-ordinated Maize Improvement Project, Maize | Dr Praveen Singh (MBRSS,Poonch) |

## All India Coordinated Research Projects (ICAR)

| S.No. | Title of the project | Directorate/Division |
|---|---|---|
| 1 | All India Co-ordinated Rice Improvement Project, Chatha | Division of Plant Breeding&Genetics |
| 2 | All India Co-ordinated Project on Wheat and Barley, Chatha | Division of Plant Breeding&Genetics |
| 3 | All India Co-ordinated Research Project on Dryland Research | Directorate of Research (DLRSS,Dhiansar) |
| 4 | All India Co-ordinated Research Project on Integrated Farming System, Chatha | Division of Agronomy |
| 5 | All India Co-ordinated Research Project on Water Management, Chatha | Division of Soil Science&Agril.Chemistry |
| 6 | All India Co-ordinated Research Project on Chickpea | Directorate of Research (PRSS, Samba) |
| 7 | All India Co-ordinated Research Project on Agrometeorology, Chatha | Division of Agronomy |
| 8 | All India Co-ordinated Research Project on Rapeseed and Mustard, Chatha | Division of Plant Breeding& Genetics |
| 9 | All India Co-ordinated Research Project on Maize, Udhampur | Directorate of Research (MRC, Udhampur) |
| 10 | All India Co-ordinated Research Project on Weed Management | Division of Agronomy |
| 11 | All India Co-ordinated Research Project on Honeybee and Pollinators | Division of Entomology |

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# Research Publications in National/ International Journals


- Abrol V., Sharma, P., Maruti Shankar, G. R., Sharma, M.., Chandra, Ramesh and Sharma, V. 2015. Soil management effects on soil quality and crop performance in dry sub humid Inceptisoils of India. Indian Journal of Soil Conservation, 43 (1): 47-57.
- Abrol, D. P., Uma Shankar., Kapil, R. P. 2015. Utilization of Waste Materials for Management of Alfalfa Pollinating Megachilid Bees. Entomologia Generalis 35: 3. 177-185.
- Abrol, D. P. and Uma Shankar. 2015. Role of Pollination in Pulses. Advances in Pollen Spore Research, 33: 101-103.
- Abrol, D. P., Sharma, D., Uma Shankar, D., Chatterjee., Thakur, R. K. 2015. Apiculture Development In India with special reference to Jammu & Kashmir; Challenges and Opportunities. Advances in Pollen Spore Research, 33: 91-100.
- Ahmad, Irshad, Yadav, A., Katoch, R., Godara, R., Saleem, Taniya and Nisar, M.A. 2015. Prevalence and analysis of associated risk factors for Cryptosporidium infection in lambs in Jammu district. Journal of Parasitic diseases. 39(3): 414-417.
- Ahanger, R.R., Godara, R., Katoch, R., Yadav, A., Bhutyal, A.D.S., Katoch, M., Singh, N.K. and Bader, M.A. 2015. Deltamethrin resistance in field populations of Rhipicephalus (Boophilus) microplus (Acari: Ixodidae) in Jammu and Kashmir state of India. Experimental and Applied Acarology. 67: 467-475.
- Ahmad, M A, Gupta, L M and Gupta, M 2016. Effect of integrated nutrient management on growth and yield of Aloe barbadensis Mill. The Indian Journal of Agricultural Sciences, 86(1): 91-95
- Ahmad. M, Prawez, S. Sultana, M., Raina, R., Verma, P.K., Ahanger. A.A. and Pankaj. NK. 2015 Antidiabetic effect of sida cordifolia (aqueous extract) on diabetes induced in wistar rats using streptozotocin and its phytochemistry. International Journal of Pharmaceutical Research and Innovation, 8: 11-22.
- Akbar, A. Mondal, A. K., Walli, P. Rai, A. P., and Rai, P.K.2015. Changes in micronutrient status on submergence of basmati growing soils of Jammu. Journal of Soil and Water Conservation, 14 (4): 367-371.
- Amin Rohullah, Dwivedi Sudhakar & Sharma Pawan Kumar. 2016. India and Afghanistan: An Overview of their Economic Relations. Agro Economist – An International Journal. 3(1): 21-27.
- Baba N.A., Raina, R., Verma, P.K., Sultana, M. 2016. Free radicals induced nephrotoxicity following repeated oral exposure of chlorpyrifos alone and in conjunction with fluoride in rats. Turkish Journal of Medicinal Sciences. 46:512-517.
- Bagal Y S, Sharma L K, Singh L, Kour P, Sharma D and Gupta A, 2016 Factors Affecting Productivity of Wheat Crop in Jammu Region, Indian Journal of Ecology 592-595
- Bakshi, P., Kumar, R., Wali, V.K. and Bhushan, B. 2015. Influence of ethrel on ripening and quality of persimmon (Diospyros kaki). Indian Journal of Agricultural Sciences, 85(9): 1181-1184.
- Bakshi, P., Wali, V.K., Jasrotia, A., Sharma, A. and Iqbal, M. 2015. Evaluation of different aonla (Emblica officinalis Gaertn.) cultivars under rainfed conditions of lower shivalik foothills of Himalayas. Indian Journal of Agricultural Sciences, 85 (8): 1012-1016.
- Bakshi, P.; Wali, V.K.; Jasrotia, A.; Iqbal, M.; Kour, K.; Ahmed, R. and Bakshi, M. 2015. Sustainable fruit production by soil moisture conservation with different mulches: A review. African Journal of Agricultural Research, 10(52): 4718-4729.

- Bali R.K, 2015. Estimates of gene interaction in four bivoltine hybrids of Bombyx mori L, Global Journal of Bioscience and Biotechnology, 4(1) :12-16.
- Bali, G., Hussain, K., Razzaque, W.A.A., Sharma, U. and Beigh, S.A. 2016 Clinico-biochemical studies of ketosis in buffalo (bubalus bubalis). Buffalo Bulletin 35(1): 27-32.
- Bali, G., Hussain, K., Razzaque, W.A.A., Sharma, U., and Beigh, S.A. 2015. Clinico-Chemical studies of Ketosis in Buffalo. Buffalo Bulletin, 35(1):27-33.
- Banarsi Lal, V.Tandon and Shahid Ahamad 2016. Constraints identified in rearing of the live stock in hilly areas. Research in Environment and life science.: 561-562.
- Bano F, Peshin R, Wali V K and Sharma L K 2016, How Policy Intervention Impacted Adoption of Mango (Mangifera indica) Cultivation in Subtropics of Jammu, Indian Journal of Ecology 552-556
- Bhardwaj, D., Kumar, A., Kumar, S., Kaur, M., Ganie, L.A. and Hakeem, H.R. 2015. Standardization and optimization of formulation and processing conditions for the preparation of low-sodium chevon and chicken nuggets. Indian Veterinary Journal 92(4): 40-42.
- Bhardwaj, R.K., Singh, R., Himalini and Singh, V. 2015. Trypanosomiasis in a Bakerwali dog- A case report. Indian Journal of Canine Practice, 7(2): 113-114.
- Bhat Anil, Kachroo Jyoti, Sharma Manish and Peshin Rajinder. 2015. Constraints in Production and Marketing of Citrus Fruit in Jammu Region of J&K State. Economic Affairs. 60(2):331-337.
- Bhat Anil, Kachroo Jyoti, Singh S. P. & Sharma Rakesh. 2015. Marketing costs and price spread analysis for citrus in Samba district of Jammu region. Agro-Economist: An International Journal. 2(1): 41-46.
- Bhat, A., Kachroo, J., and Sharma, R. 2016. Financial Profitability, marketing Analysis and Technical Efficiency of Cabbage/Cauliflower in Jammu Region of J&K State. Indian Journal of Ecology. 43(Special Issue-1): 558-563.
- Bhat, D.J., Sharma, C.L., Wali, V.K. and Jasrotia, A. Studies on the effect of orchard flour management practices on quality parameters and leaf nutrient status in apricot (Prunus armeniaca L.) cv. New Castle. Progressive Horticulture, 47 (1): 70-73.
- Bhat, Z.F. and Kumar, S. and Kumar, L. 2015. Effect of ocimum sanctum Linn (Tulsi) on the oxidative stability and storage quality of chicken sausages. Nutrition and Food Science 45(4): 510-523.
- Bhatt, S.N., Das, A. K., Chakraborty, D. Kumar, D. Mehdi Khan, K., Kumar, N. and Taggar. R. K. 2015. Genetic characterization of regional sheep (Purky) of Kargil district by RAPD markers. Indian Veterinary Journal, 92 (6): 26-28.
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- Borkataki, S., Katoch, R., Goswami, P., Godara, R., Khajuria, J.K., Yadav, A., Kour, R. and Mir, Irfan 2015. Incidence of Haemoproteus columbae in pigeons of Jammu district. Journal of Parasitic diseases. 39(3): 426-428.
- Brij Nandan, Reena, Anil Kumar, M. C. Dwivedi and S. K. Singh. 2014. Effect of seed priming and foliar nutrition on seed yield and insect pest attack in desi chickpea. Journal of Food Legumes 27(4): 342-343.
- Bushan, Bharat, Sudan, R.S., Sethi, Santosh. 2015. Analysis of Socio –economic Characteristic of SHG (Self-Help Group) of Women Associated With Dairy Farming. Journal of Animal Research, 5 (4): 839-842.
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- Choudhary, P., Sharma, R., Tandon, V., Khar, S. and Mahajan, V. 2015. Medicinal and Aromatic Plants as futuristic Systems of Medicine Necessitating Intellectual Property Conservation. Agriculture for Sustainable Development. 3(1): 77-82.
- Choudhary, P., Singh, N. B. and Verma, A. 2015. Genetic analysis in intra- and inter-specific crosses of tree willows *Indian J. Genet*., 75(3): 372-378.
- Cress, B.F., Toparlak, O.D., Guleria, S., Lebovich, M., Stieglitz, J.T., Jones, J.A., Linchardt, R.J. and Koffas, M.A.G. 2015. CRIS PathBrick: Modular Combinatirial Assembly of Type II-A CRISPR Arrays for dCas9-Mediated Multiplex Transcriptional Repression in E. coli. ACS Synth. Biol., DOI: 10.1021/acssynbio.5booo12.
- Chauhan D. K., J. A. Bhat, A. K. Thakur, Z. Husain S. Kumari and C. Tatra Satyavathi. 2015. Molecular characterization and genetic diversity assessment in soybean [Glycine max (L.) Merr.] Varieties using SSR marker. Indian Journal of Biotechnology, 14 (4) 504-510.
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# Linkages and Collaboration

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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.

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# Statutory Meetings

**i) University Council Meetings**

a) 13th University Council Meeting of SKUAST-J held on 15.04.2015.

b) 14th University Coucil Meeting of SKUAST-J held on 14.12.2015.

**ii) Board of Management**

a) 24th Board of Management Meeting of SKUASt-J held on 10.04.2015.

b) 25th Board of Management Meeting of SKUAST-J held on 31.10.2015.

**iii) Research Council Meeting**

15th Research Council held on 27-28th November, 2015

**iv) Extension Council**

7th meeting of Extension Council held on 18th of May, 2015

**v) Academic Council**

16th Academic Council held on 28th March, 2016


Glimpses of 7th Extension Council Meeting

# 13 Visits of Important Dignitaries

1. Sh. N. N. Vohra, Hon'ble Governor, J&K & Chancellor, SKUAST-Jammu
2. Dr. Jatinder Singh, Hon'ble Union Minister of state with independent charge, Govt. of India
3. Sh. Daljit Singh, Vice-Chairman Kisan Advisory Board, J&K
4. Sh. Surinder Choudhary MLC, J&K
5. Sh. M.A. Bukhari Commissioner/ Secretary to Govt. Agriculture Production Department, J&K

Sh. N.N. Vohra, Hon'ble Governor, J&K & Chancellor, SKUAST-Jammu inaugurated "Anola Day" on 31st of December, 2015


Dr. Jatinder Singh, Hon'ble Union Minister of state with independent charge, Govt. of India

Sh. N.N. Vohra, Hon'ble Governor, J&K and Chancellor, SKUAST-Jammu inauguared two days Kissan Mela on 18th & 19th March, 2016

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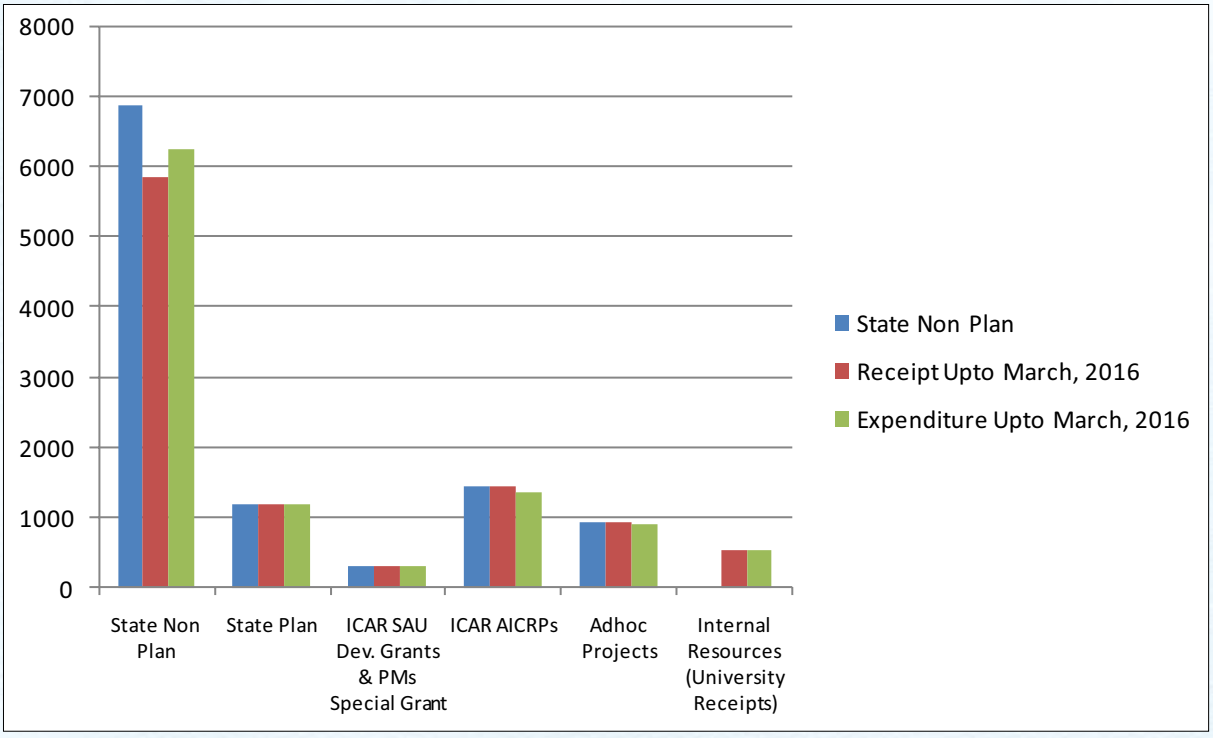
# Resources and Financial Estimates (2015-16)

(Rs. In Lakhs)

| S. No | Particulars | Allotment for 2015-16 | Receipts up to March 2016 | Expenditure upto March 2016 |
|---|---|---|---|---|
| 1 | State Non Plan | 6900.06 | 5875.00 | 6270.97 |
| 2 | State Plan | 1200.00 | 1200.00 | 1200.00 |
| 3 | ICAR SAU Dev.Grants & PM's Special Grant | 300.00 | 300.00 | 300.00 |
| 4 | ICAR All India Co-ord. Research Schemes | 1440.96 | 1440.96 | 1366.20 |
| 5 | Adhoc Projects | 950.00 | 950.00 | 898.00 |
| 6 | University Revenue Receipt | -- | 550.00 | 550.00 |
| | **Total** | **10791.02** | **10315.96** | **10585.17** |



# Staff Position

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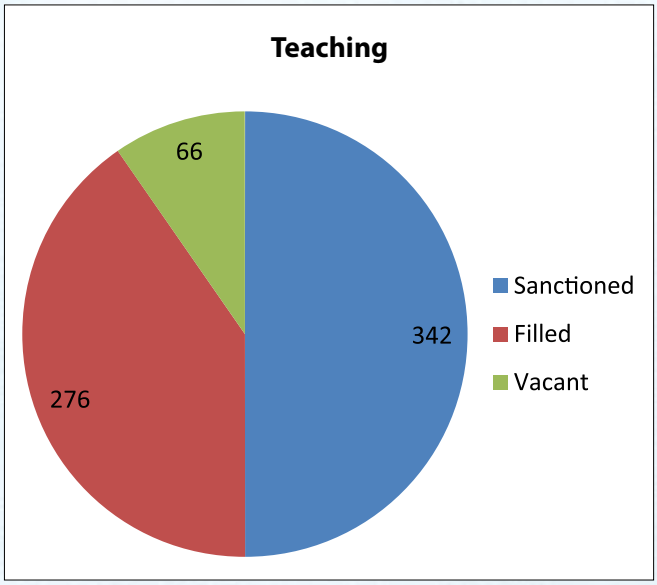
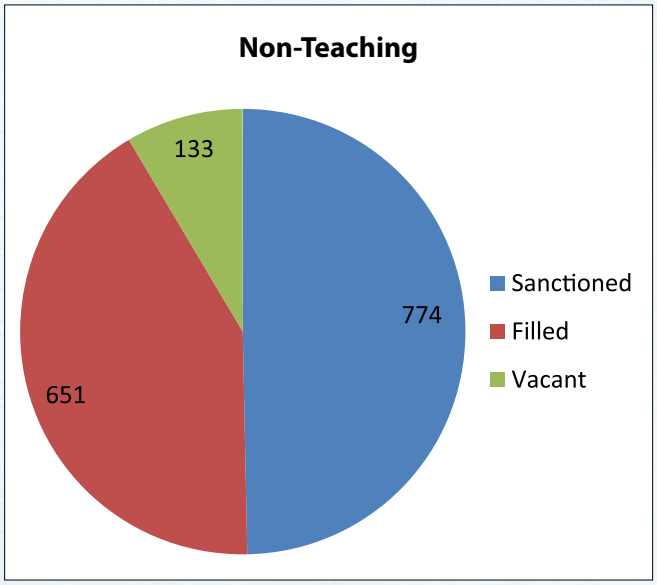
## Staff Position (As on March 31, 2016)

| Category | Sanctioned | Filled | Vacant |
|---|---|---|---|
| Teaching | | | |
| Dean | 02 | 01 | 01 |
| Associate Dean | 02 | 01 | 01 |
| Professor / Equivalent | 34 | 15 | 19 |
| Assoc . Professor / Equivalent | 86 | 66 | 20 |
| Asstt .Professor / Equivalent | 218 | 193 | 25 |
| Total | 342 | 276 | 66 |
| Non-Teaching | | | |
| Administrative Officers | 9 | 8 | 1 |
| Administrative staff | 232 | 186 | 46 |
| Technical staff | 36 | 29 | 7 |
| Auxiliary / supporting staff | 507 | 428 | 79 |
| **Total** | **774** | **651** | **133** |
| **Total A+B** | | | |



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# Appointments, Promotions and Superannuation

## Appointments:

| S. No. | Name | Appointed As | Discipline |
|---|---|---|---|
| **Teaching** | | | |
| 1. | M. Iqbal Jeelani Bhat | Asstt. Professor | Agricultural Statstics |
| 2. | Raj Kumar | Asstt. Professor | Fisheries |
| 3. | Ghanshyam Nath Jha | Subject Matter Specialist | Fisheries |
| 4. | Suja Nabi Qureshi | Subject Matter Specialist | Horticulture (Fruit Science) |
| 5. | Arvind Parkash Singh | Assoc. Professor/Sr. Scientist | Agronomy |
| 6. | Akhil Gupta | Assoc. Professor/Sr. Scientist | Fisheries |

## Promotions (Teaching)

| S. No | Name with Discipline (Dr./Mr./Ms.) |
|---|---|
| **Placement of Associate Professors in the pay band-IV of Rs. 37400-67000 + AGP of Rs. 9000/- under Career Advancement Scheme** | |
| 1. | Sandeep Sehgal, Associate Professor/Sr. Scientist (Agroforestry) |
| 2. | Moni Gupta, Associate Professor/Sr. Scientist (Biochemistry) |
| 3. | J.P. Singh, Associate Professor/Sr. Scientist (Agril. Engineering) |
| 4. | SaharMasud, Associate Professor/Sr. Scientist (LPM) |
| **Placement of Asstt. Professors/Junior Scientists as Asstt. Professor/Junior Scientist (Senior Scale) under Career Advancement Scheme (CAS)** | |
| 1. | Susheel Sharma, Asstt. Professor (Horticulture), School of Biotechnology, Chatha |
| 2. | Manpreet Kour, Jr. Scientist (Agronomy), Division of ILF, F.V. Sc. & AH, R.S. Pura |
| 3. | Dibeyendu Chakraborty, Asstt. Professor, Division of Animal Genetics and Breeding, FVSc. & AH, SKUAST-J, R.S. Pura |
| 4. | Dhirendra Kumar, Asstt. Professor, Division of Animal Genetics and Breeding, FVSc. & AH, SKUAST-J, R.S. Pura |
| 5. | Shafiqur Rahman, Asstt. Professor, Division of Vety. Pathology, FVSc. & AH, SKUAST-J, R.S. Pura |
| 6. | Aditi Lal Koul, Asstt. Professor, Division of Vety. Physiology and Biochemistry, FVSc. & AH, SKUAST-J, R.S. Pura |
| 7. | Anand Kumar Pathak, Asstt. Professor, Division of Animal Nutirition, FVSc. & AH, SKUAST-J, R.S. Pura |
| 8. | Nrip Kishore Pankaj, Asstt. Professor, Division of Pharmacology and Toxicology, FVSc. & AH, SKUAST-J, R.S. Pura |
| 9. | Sanjay Aggarwal, Asstt. Professor, Division of ARGO, FVSc. & AH, SKUAST-J, R.S. Pura |
| 10 | Sanku Borkataki, Asstt. Professor, Division of Vety. Parasitology, FVSc. & AH, SKUAST-J, R.S. Pura |
| 11. | Harsh Kumar Sharma, Asstt. Professor, Division of VPH&E, FVSc. & AH, SKUAST-J, R.S. Pura |
| 12. | Ashok Kumar, Asstt. Professor, Division of Teaching Vety. Clinical Complex, FVSc. & AH, SKUAST-J, R.S. Pura |
| 13. | Anil Kumar Pandey, Asstt. Professor, Division of Vety. Gynecology and Obstetrics, FVSc. & AH, SKUAST-J, R.S. Pura |
| 14. | Abha Tikoo, Asstt. Professor, Division of Vety. Medicine, FVSc. & AH, SKUAST-J, R.S. Pura |
| 15. | Sharad Kumar, Division of Teaching Vety. Clinical Complex, FVSc. & AH, SKUAST-J, R.S. Pura |
| **Placement of Subject Matter Specialist in the Senior Scale of Rs. 15600-39100 + AGP of Rs. 7000/- under Career Advancement Scheme (CAS)** | |
| 01. | Arvind Prakash Singh, Subject Matter Specialist (Agronomy), KVK, Kathua |

## Promotions:

### Non-Teaching

1. Promotions of 02 Nos. of ACTs as Stenographer
2. Promotion of 03 numbers of Cleaners as Drivers
3. Promotion of 01 number of Helper as ACT
4. Selection Scale to 18 Nos. of employees
5. CAS to 31 Nos. of employees

### Superannuation:

| S. No. | Name | Designation | Date of Superannuation |
|---|---|---|---|
| **Teaching** | | | |
| | Dr. D.K. Koul | Sr. Scientist | 11.09.2015 (VR) |

## Non-Teaching

| S. No. | Name | Designation | Date of Superannuation |
|---|---|---|---|
| **Teaching** | | | |
| 1. | Sh. Vinod Kumer | FCLA | 31.05.2015 |
| 2. | Sh. Surinder Singh | Head Assistant | 31.05.2015 |
| 3. | Sh. Pritam Singh Jamwal | FCLA | 31.05.2015 |
| 4. | Sh. Abdul Karim | FCLA | 31.12.2015 |
| 5. | Sh.Balwant Raj | Gardener | 31.01.2016 |
| 6. | Sh. Rash Pal Raina | Driver | 31.01.2016 |
| 7. | Sh. Muneer Hussain | FCLA | 31.03.2016 |

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# Personnel (As On 31.03.2016)

## * Assistant Professor / Equivalent and above

## Governance:

### Vice – Chancellor's Office

| S.No | Name | Designation |
|---|---|---|
| 1 | Dr. Pradeep K. Sharma | Vice-Chancellor |
| 2 | Sh. Ajay Sharma | Secretary to Vice Chancellor |

### Registrar Office

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. Dileep Kachroo | Registrar |
| 2. | Sh. Jatinder Raina | Dy. Registrar (Secy.) |
| 3. | Dr. Bharat Bhushan | Dy. Registrar (Acad.) |
| 4. | Sh. Keemti Lal | Asstt. Registrar |
| 5. | Sh. Devinder Sharma | Asstt. Registrar |
| 6. | Sh. Manohar Lal | Asstt. Registrar (Acad.) |
| 7. | Sh. Atul Mahajan | Asstt. Registrar (Legal) |

### Project Planning & Monitoring Office

| S.No | Name | Designation |
|---|---|---|
| 1. | Dr. Deepak Kher | PPMO |

### Comptroller Office

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. S.K. Sen | Comptroller |
| 2. | Sh. Sohan Lal Sharma | Dy. Comptroller |
| 3. | Ms. Poonam Makhnotra | Dy. Comptroller |
| 4. | Sh. Devinder Samnotra | Asstt. Comptroller |
| 5. | Sh. Manmohan Singh | Asstt. Comptroller |
| 6. | Smt. Veena Gupta | Asstt. Comptroller |
| 7. | Sh. Raman Sharma | Asstt. Comptroller |

### Estates Division Office

| S.No | Name | Designation |
|---|---|---|
| 1. | Sh. T.R. Bhagat | Estates Officer |
| 2. | S. Iqbal Singh Sudan | Executive Engineer |
| 3. | Sh. Kewal Kumar Raina | Asstt. Executive Engineer |
| 4. | Sh. R.K. Kapoor | Asstt. Comptroller |

### Directorate of Education

| S.No | Name | Designation |
|---|---|---|
| 1 | Dr. T.A.S. Ganai | Director Education |
| 2 | Dr. S.B.Bakshi | Dy. Director, Student Welfare |
| 3 | Dr. A.K.Gupta | Medical Officer |
| 4 | Dr. (Mrs.) Sushma Gupta | Medical Officer |

### Directorate of Extension

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. K. S Risam | Director Extension |
| 2. | Dr. R.R. Jat | Assoc. Director Extension |
| 3. | Dr. R.K. Arora | Assoc. Director Extension |

### Directorate of Research

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. J.P. Sharma | Director Research |
| 2. | Dr. Parmod Baru | Assoc. Director Research |
| 3. | Dr. Pradeep Wali | Deputy Director Research |
| 4. | Dr. M. C. Dwivedi | Farm Manager/ Jr. Scientist |
| 5. | Dr. Satish Sharma | Farm Manager/ Jr. Scientist |

### Library

| S.No | Name | Designation |
|---|---|---|
| 1. | Dr. V.K. Razdan | University Librarian |
| 2. | Smt. Shashi Prabha Raina | Assistant Librarian |
| 3. | Sh. Leela Dhar Mengi | Assistant Librarian |

### Faculty of Agriculture, Chatha

### Dean's Office

| S.No | Name | Designation |
|---|---|---|
| 1. | Dr. R.M. Bhagat | Dean |
| 2. | Smt. Hancy Koul | Administrative Officer |
| 3. | Sh. Vijay Sharma | Accounts Officer |

### Division of Agricultural Extension Education

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. S. K. Kher | Professor |
| 2. | Dr. Rakesh Nanda | Professor |
| 3. | Dr. Rajinder Peshin | Associate Professor |

| S.No. | Name | Designation |
|---|---|---|
| 4. | Dr. R. S. Slathia | Assistant Professor |
| 5. | Dr. Poonam Parihar | Assistant Professor |
| 6. | Dr. Jasbir Singh Manhas | Assistant Professor |
| 7. | Dr. Laxmi Kant Sharma | Assistant Professor |

### Division of Agriculture Engineering

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. Sushil Sharma | Prof. & Head |
| 2. | Dr. J. P. Singh | Assoc. Prof. |
| 3. | Dr. R.K. Srivastava | Assoc. Prof. |
| 4. | Dr. Sushmita M. Dadhich | Asstt. Prof. |

### Division of Agronomy

| S.No | Name | Designation |
|---|---|---|
| 1. | Dr. B.C.Sharma | Professor & Head |
| 2. | Dr. Anil Kumar | Professor |
| 3. | Dr. Neetu Sharma | Asstt. Prof. |
| 4. | Dr. N.P. Thakhur | Sr. Scientist |
| 5. | Dr. Ashok Kumar | Sr. Scientist |
| 6. | Dr. Vijay Khajuria | Jr. Scientist |
| 7. | Dr. Meenakshi Gupta | Sr. Scientist |
| 8. | Dr. Veena Sharma | Technical Officer |

### Division Agricultural Economics & ABM

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. Jyoti Kachroo | Professor and Head |
| 2. | Dr. Sudhakar Dwivedi | Assoc. Professsor |
| 3. | Dr. S. P. Singh | Asstt.Professor |
| 4. | Dr. Anil Bhat | Asstt.Professor |

### Division of Agroforestry

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. K. K. Sood | Professor & Head |
| 2. | Dr. S. K. Gupta | Professor |
| 3. | Dr. N.S. Raina | Assoc. Prof. |
| 4. | Dr. L. M. Gupta | Assoc. Prof. |
| 5. | Dr. Sandeep Sehgal | Assoc. Prof. |
| 6. | Ms. Meenakshi Gupta | Asstt. Prof. |

### Division of Entomology

| S. No. | Name | Designation |
|---|---|---|
| 1. | Dr. V. Kaul | Professor and Head |
| 2. | Dr. R. M. Bhagat | Professor |
| 3. | Dr. D. P. Abrol | Professor |
| 4. | Dr. Hafeez Ahmad | Professor |
| 5. | Dr. R. K. Gupta | Assoc. Professor |
| 6. | Dr. Uma Shankar | Asstt. Professor |
| 7. | Dr. Amit Kumar Singh | Asstt. Professor |
| 8. | Dr. Devinder Sharma | Asstt. Professor |

### Division of Vegetable Science & Floriculture

| S. No. | Name | Designation |
|---|---|---|
| 1. | Dr. R.K.Samnotra | Professor & Head |
| 2. | Dr. R.K. Gupta | Professor |
| 3. | Dr. R.K. Pandey | Assoc. Prof. |
| 4. | Dr. Sandeep Chopra | Assoc. Prof. |
| 5. | Dr. Manoj Kumar | Asstt. Prof. |
| 6. | Dr. Satesh Kumar | Asstt. Prof. |
| 7. | Dr. Sanjeev Kumar | Asstt. Prof. |
| 8. | Dr. Sheetal Dogra | Asstt. Prof. |
| 9. | Dr. Arvinder Singh | Asstt. Prof. |
| 10 | Dr. Nomita Laishram | Asstt. Prof. |

### Division of Plant Breeding & Genetics

| S.No | Name | Designation |
|---|---|---|
| 1. | Dr. A.K.Razdan | Professor & Head |
| 2. | Dr. S.K. Gupta | Professor |
| 3. | Dr. B.B. Gupta | Professor |
| 4. | Dr. Bikram Singh | Professor |
| 5. | Dr. S.K. Mondal | Professor |
| 6. | Dr. S.K. Sudan | Assoc. Prof. |
| 7. | Dr. Sanjeev Kumar | Asstt. Prof. |
| 8. | Dr. Reyazul Rouf Mir | Asstt. Prof. |
| 9. | Dr. Bupesh Kumar | Jr. Scientist |
| 10. | Dr. Anuradha Saha | Jr. Scientist |
| 11. | Dr. Rajan Salalia | Jr. Scientist |
| 12. | Dr. Tuhina Dey | Sr. Scientist |
| 12. | Dr. M.K. Pandey | Jr. Scientist |
| 13. | Dr. S.K. Rai | Jr. Scientist |
| 14. | Dr. Rajeev Sangra | Jr. Scientist |

### Division of Plant Pathology

| S. No. | Name | Designation |
|---|---|---|
| 1. | Dr. Anil Gupta | Professor & Head |
| 2. | Dr. V.K. Razdan | Professor |

| S. No. | Name | Designation |
|---|---|---|
| 3. | Dr. S.K. Singh | Assoc. Prof. |
| 4. | Dr. Sachin Gupta | Asstt. Prof. |
| 5. | Dr. Ranbir Singh | Asstt. Prof. |
| 6. | Dr. Vishal Gupta | Asstt. Prof. |
| 7. | Dr. A.K. Singh | Asstt. Prof. |
| 8. | Dr. Prachi Sharma | Asstt. Prof. |

### Division of Fruit Science

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. V.K. Wali | Professor & Head |
| 2. | Dr. Parshant Bakshi | Assoc.Professor |
| 3. | Dr. Amit Jasrotia | Asstt. Professor |
| 4. | Dr. Arti Sharma | Asstt. Professor |
| 5. | Dr. Kiran Kour | Asstt. Professor |
| 6. | Dr. Rajesh Kumar | Asstt. Professor |
| 7. | Dr. Deep ji Bhat | Asstt. Professor |
| 8. | Dr. Akash Sharma | Asstt. Professor |
| 9. | Dr. Nirmal Sharma | Asstt. Professor |

### Division of Food Science & Technology

| S.No | Name | Designation |
|---|---|---|
| 1. | Dr. Rajkumari Kaul | Professor |
| 2. | Dr. Anju Bhat | Assoc.professor |
| 3. | Dr. Julie D. Bandral | Asstt. professor |
| 4. | Dr. Monika Sood | Asstt. professor |
| 5. | Dr. Neeraj Gupta | Asstt. professor |

### Division of Sericulture

| S. No. | Name | Designation |
|---|---|---|
| 1. | Dr. V. Kaul | Professor & Head |
| 2. | Dr. R.K. Bali | Assoc. Professor |
| 3. | Sh. Darshan Singh | Asstt. Professor |
| 4. | Dr. Kamlesh Bali | Asstt. Professor |

### Division of Soil Science and Agricultural Chemistry

| S. No | Name | Designation |
|---|---|---|
| 1. | Dr. K.R.Sharma | Professor & Head |
| 2. | Dr. A. K. Raina | Chief Scientist |
| 3. | Dr. A.K Bhat | Professor |
| 4. | Dr. M.P.Sharma | Professor |
| 5. | Dr. A.K.Mondal | Professor |
| 6. | Dr. Vikas Sharma | Assoc. Prof. |
| 7. | Dr. Peeyush Sharma | Assoc. Prof. |

| S. No | Name | Designation |
|---|---|---|
| 8. | Er. N. K. Gupta | Sr. Scientist |
| 9. | Dr. Abhijit Samanta | Sr. Scientist, (Soils) |
| 10. | Dr. Vijay Bharti | Sr. Scientist, (Agronomy) |
| 11. | Dr. B.R. Bazaya | Senior Scientist (Agronomy) |
| 12. | Dr. Ajai Partap Rai | Asstt. Prof. |
| 13. | Dr. Renu Gupta | Asstt. Prof. |
| 14. | Dr. Sarabdeep Kour | Asstt. Prof. |
| 15. | Dr. Vivak Manohar Arya | Asstt. Prof. |

### School of Biotechnology

| S. No | Name | Designation |
|---|---|---|
| 1. | Dr. R.K.Salgotra | Coordinator |
| 2. | Dr. A K Singh | Asstt. Professor |
| 3. | Dr. G K Rai | Asstt. Professor |
| 4. | Dr. Sumita Kumari | Asstt. Professor |
| 5. | Dr. Ravinder Singh | Asstt. Professor |
| 6. | Dr. Manmohan Sharma | Asstt. Professor |
| 7. | Dr. Susheel Sharma | Asstt. Professor |

### Faculty of Basic Sciences

### Dean's Office

| S.No | Name | Designation |
|---|---|---|
| 1. | Dr. R.K. Gupta | Dean |

### Division of Biochemistry

| S. No | Name | Designation |
|---|---|---|
| 1. | Dr. S.A. Mallick | Professor & Head |
| 2. | Dr. Sanjay Guleria | Assoc. Professor |
| 3. | Dr. Moni Gupta | Assoc. Professor |
| 4. | Dr. Vikas Sharma | Asstt.Professor |

### Division of Plant Physiology

| S. No | Name | Designation |
|---|---|---|
| 1. | Dr. Gurdev Chand | Asstt. Professor |
| 2. | Dr. Bhav Kumar Sinha | Asstt. Professor |

### Division of Statistics & Computer Science

| S. No | Name | Designation |
|---|---|---|
| 1. | Dr. S.E.H. Rizvi | Professor & Head |
| 2. | Dr. Manish Kumar Sharma | Assoc. Professor |
| 3. | Dr. Iqbal Jeelani Bhat | Asstt. Professor |

## Division of Microbiology

| S. No | Name | Designation |
|---|---|---|
| 1. | Dr. Brajeshwar Singh | Asstt. Professor |
| 2. | Dr. Upma Dutta | Asstt. Professor |

## FACULTY OF VETERINARY SCIENCES AND ANIMAL HUSBANDRY R.S.PURA

| Administration | | |
|---|---|---|
| **S.No** | **Name** | **Designation** |
| 1. | Dr. M.M.S. Zama | Dean |
| 2. | Dr. M.S. Bhadwal | Associate Dean |
| **Division of Animal Genetics and Breeding** | | |
| **S.No** | **Name** | **Designation** |
| 1. | Dr. R. K. Taggar | Professor & Head |
| 2. | Dr. Nishant Kumar | Asstt. Professor |
| 3. | Dr. Dhirendra Kumar | Asstt. Professor |
| 4. | Dr. Dibyendu Chakraborty | Asstt. Professor |
| **Division of Instructional Livestock Farm Complex** | | |
| **S.No** | **Name** | **Designation** |
| 1. | Dr. Manpreet Kour | Asstt.Professor |
| 2. | Dr. Vikas Mahajan | Asstt.Professor |
| 3. | Dr. Nazam Khan | Asstt.Professor |
| 4. | Dr. Suraj Ashok Rao Amrutkar | Asstt. Professor |
| **Division of Livestock Production & Management** | | |
| **S.No** | **Name** | **Designation** |
| 1. | Dr. Asma Khan | Assoc. Professor |
| 2. | Dr. Sahar Masud | Asstt.Professor |
| 3. | Dr. Depanjali Konwar | Asstt. Professor |
| **Division of Livestock Products Technology** | | |
| **S.No** | **Name** | **Designation** |
| 1. | Dr. Sunil Kumar | Assoc. Professor & Head |
| 2. | Dr. Arvind Kumar | Asstt. Professor |
| 3. | Dr. Z. F. Bhat | Asstt. Professor |
| **Division of Veterinary & Animal Husbandry Extension Education** | | |
| **S.No** | **Name** | **Designation** |
| 1. | Dr. S. A. Khandi | Asstt. Professor |
| 2. | Dr. Pranav Kumar | Asstt. Professor |
| **Division of Animal Nutrition** | | |
| **S.No** | **Name** | **Designation** |
| 1. | Dr. R.K. Sharma | Professor & Head |
| 2. | Dr. Ankur Rastogi | Asstt.Professor |
| 3. | Dr. A.K. Pathak | Asstt.Professor |
| **Division of Veterinary Anatomy** | | |
| **S.No** | **Name** | **Designation** |
| 1. | Dr. Shalini Suri | Professor & Head |
| 2. | Dr. Kamal Sarma | Assoc.Professor |
| 3. | Dr. Jasvinder Singh Sasan | Asstt. Professor |
| **Division of Veterinary Gynaecology and Obstetrics** | | |
| **S.No** | **Name** | **Designation** |
| 1. | Dr. Utsav Sharma | Assoc.Professor & Head |
| 2. | Dr. Sanjay Agarwal | Asstt. Professor |
| 3. | Dr. Nishi Pande | Asstt.Professor |
| 4. | Dr. A.K. Pandey | Asstt.Professor |
| 5. | Dr. Sudhir Kumar | Asstt.Professor |
| **Division of Veterinary Medicine** | | |
| **S.No** | **Name** | **Designation** |
| 1. | Dr. Rajiv Singh | Professor & Head |
| 2. | Dr. S.K. Gupta | Professor |
| 3. | Dr. V.S. Wazir | Assoc. Professor |
| 4. | Dr. Kafil Hussain | Assoc. Professor |
| 5. | Dr. Rajesh Agarwal | Assoc. Professor |
| 6. | Dr. Neelesh Sharma | Asstt. Professor |
| 7. | Dr. R.K. Bhardwaj | Asstt. Professor |
| 8. | Dr. Abha Tikoo | Asstt. Professor |
| **Division of Veterinary Microbiology & Immunology** | | |
| **S.No** | **Name** | **Designation** |
| 1. | Dr. Anil Kumar Taku | Professor & Head |
| 2. | Dr. Mohd. Altaf Bhat | Professor |
| 3. | Dr. Sabahat Gazal | Asstt. Professor |
| **Division of Veterinary Pathology** | | |
| **S.No** | **Name** | **Designation** |
| 1. | Dr. Shagufta Azmi | Professor & Head |
| 2 | Dr. Nawab Nasiruddullah | Assoc. Professor |
| 3. | Dr. Shilpa Sood | Asstt. Professor |
| 4. | Dr. Shafiqur Rehman | Asstt. Professor |
| **Division of Veterinary Physiology & Biochemistry** | | |
| **S.No** | **Name** | **Designation** |
| 1. | Dr. P.S. Mahapatra | Associate Professor & Head |
| 2. | Dr. Jonali Devi | Assoc. Professor |
| 3. | Dr. Jafrin Ara Ahmed | Asstt. Professor |

| | | |
|---|---|---|
| 4. | Dr. Pratiksha Raghuwanshi | Asstt. Professor |
| 5. | Dr. Aditi Lal Koul | Asstt. Professor |
| 6. | Dr. Kawardeep Kour | Asstt. Professor |

**Division of Veterinary Pharmacology & Toxicology**

| S.No | Name | Designation |
|---|---|---|
| 1. | Dr. Mudasir Sultana | Professor & Head |
| 2. | Dr. Rajinder Raina | Professor |
| 3. | Dr. Nrip K. Pankaj | Asstt. Professor |
| 4. | Dr. Pawan Kumar Verma | Asstt.Professor |

**Division of Veterinary Parasitology**

| S.No | Name | Designation |
|---|---|---|
| 1. | Dr. Rajesh Katoch | Professor & Head |
| 2. | Dr. Anish Yadav | Assoc. Professor |
| 3. | Dr. Rajesh Godara | Asstt. Professor |
| 4. | Dr. Sanku Borkataki | Asstt. Professor |

**Division of veterinary Public Health & Epidemiology**

| S.No | Name | Designation |
|---|---|---|
| 1. | Dr. S.K. Kotwal | Professor |
| 2. | Dr. M.A. Malik | Assoc. Professor |
| 3. | Dr. M. Rashid | Assoc. Professor |
| 4. | Dr. H.K. Sharma | Asstt. Professor |
| 5. | Dr. Maninder Singh | Asstt. Professor |

**Division of Veterinary Surgery & Radiology**

| S.No | Name | Designation |
|---|---|---|
| 1. | Dr. A.K. Gupta | Assoc. Professor |
| 2. | Dr. D.K. Diwedi | Asstt. Professor |
| 3. | Dr. Ankur Sharma | Asstt. Professor |
| 4. | Dr. Pankaj Gupta | Asstt. Professor |

**Division of Teaching Veterinary Clinical Complex**

| S.No | Name | Designation |
|---|---|---|
| 1. | Dr. J.S. Soodan | Professor & Head |
| 2. | Dr. Hans Raj Bhardwaj | Assoc. Professor |
| 3. | Dr. Ashok Kumar | Asstt. Professor |
| 4. | Dr. Ram Bilas Khushwaha | Asstt. Professor |
| 5. | Dr. Sharad Kumar | Asstt. Professor |

## Regional/Sub-Stations/Centres/Schemes

### Regional Agricultural Research Station, Rajouri

| S. No | Name of the Scientist | Designation |
|---|---|---|
| 1. | Dr. A.K.Sharma | Associate Director Research |
| 2. | Dr. Vikas Sharma | Jr. Scientist, Agronomy |
| 3. | Dr. Deepak Kumar | Jr. Scientist, Plant Pathology |
| 4. | Dr. Narinder Panotra | Jr. Scientist, (Agronomy) |
| 5. | Dr. Saurav Gupta | Jr. Scientist (Entomology) |
| 6. | Sh. Anil Bhushan | Jr. Scientist, (Vegetable Science) |
| 7. | Sh. S.K. Mishra | Jr. Scientist (Plant Pathology) |
| 8. | Dr. Rajesh Kumar | Jr. Scientist (Fruit Science) |
| 9. | Dr. Rohit Sharma | Technical Officers |

### Maize Breeding Research Sub Station, Poonch

| S.No. | Name | Designation |
|---|---|---|
| 1. | Sh. Magdeshwar Sharma | Jr. Scientist, (Entomology) |
| 2. | Dr. Praveen Singh | Jr. Scientist, (Plant Breeding & Genetics) |

### Regional Horticulture Research Sub-station, Bhaderwah

| S No | Name | Designation |
|---|---|---|
| 1. | Dr. Mahital Jamwal | Incharge Scientist |
| 2. | Dr. Neeraj Kotwal | Jr. Scientist (Entomology) |
| 3. | Dr. Sanjeev Kumar | Jr. Scientist (Soil Science) |
| 4. | Dr. D.K. Chauhan | Jr. Scientist (Seed Science & Technology) |
| 5. | Dr. Rohit Sharma | Jr. Scientist (Agronomy) |
| 6. | Sh. Manoj Kumar | Jr. Scientist (Soil Science) |

### Rainfed Research Sub-station for sub-tropical fruits, Raya

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. Vijay Bahadur Singh | Jr. Scientist (Plant Pathology) |
| 2. | Sh. Vijay Kumar | Jr. Scientist (Soil Science) |
| 3. | Dr. Jagmohan Singh | Jr. Scientist (Chemistry) |
| 4. | Dr. Rakesh Kumar | Jr. Scientist (Fruit Scence) |

### Advanced Centre for Rainfed Agriculture, Dhiansar

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. Mahender Singh | Sr. Scientist (Agronomy) |
| 2. | Dr. Reena | Jr. Scientist ( Entomology) |
| 3. | Dr. P.K.Rai | Jr. Scientist (Soil-Science) |
| 4. | Dr. Sonika Jamwal | Jr. Scientist ( Plant Pathology) |
| 5. | Dr. Jai Kumar | Jr. Scientist ( Agronomy) |
| 6. | Dr. Brinder Singh | Jr. Scientist ( Soil Science) |
| 7. | Sh. Vikas Gupta | Jr. Scientist (Agronomy) |

### Pulse Research Sub-Station Samba

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. B.S. Jamwal | Chief Scientist (PBG) |
| 2. | Sh. B.N.Singh | Sr. Scientist (Agronomy) |
| 3. | Dr. Sudhir Kumar | Jr. Scientist (Plant Pathology) |

### All Indian Coordinated Research Project on Maize (ICAR), Udhampur

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. R.S.Sudan | Sr. Scientist, (PBG) & I/C |
| 2. | Sh. Akhil Verma | Jr. Scientist, (Agronomy) |

### Krishi Vigyan Kendras

### KVK Jammu

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. Sanjay Khar | Sr. Scientist & Head |
| 2. | Dr. Rakesh Sharma | Sr. Scientist (Agriculture Extension) |
| 3. | Dr. S. P. Gupta | SMS (Horticulture) |
| 4. | Dr. Punit Choudhary | SMS (Agro forestry) |
| 5. | Dr. Sheetal Badyal | SMS (Home Science) |
| 6. | Dr. Prem Kumar | SMS (Fisheries) |

### KVK Rajouri

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. Vikas Tandon | Sr. Scientist & Head |
| 2. | Dr. Rakesh Sharma | Sr. Scientist (Agriculture Extension) |
| 3. | Dr. S. P. Gupta | SMS (Horticulture) |
| 4. | Dr. Punit Choudhary | SMS (Agro forestry) |
| 5. | Dr. Sheetal Badyal | SMS (Home Science) |
| 6. | Dr. Prem Kumar | SMS (Fisheries) |

### KVK Doda

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. R.S.Bandral | Sr. Scientist& Head |
| 2. | Dr. B. Brahma | SMS (LPM) |
| 3. | Mrs. Ravneet Kour | SMS (Horticulture) |
| 4. | Sh. Sanjay Khajuria | SMS (Agro forestry) |
| 5. | Dr. Amit Singh Charak | SMS (Agronomy) |
| 6. | Dr. Amitesh Sharma | SMS (Plant Breeding) |
| 7. | Dr. Narinder Paul | SMS (Extension Education) |
| 8. | Dr. G. N. Jha | SMS (Fisheries) |

### KVK Reasi

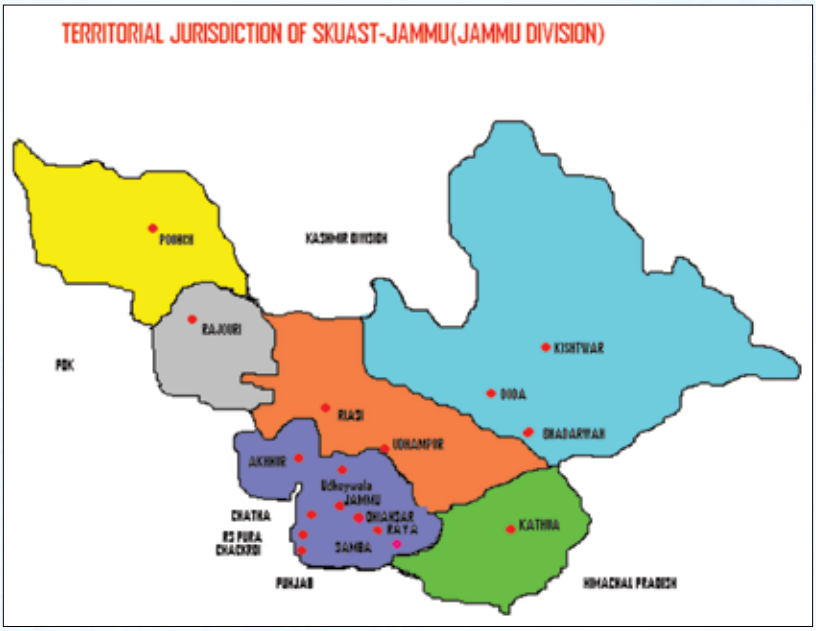
| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. Shahid Ahamad | Sr. Scientist cum Head |
| 2. | Dr. Banarsi Lal | SMS (Agricultural Extension) |
| 3. | Sh. Lalit Upadhyay | SMS (Agro-Forestry) |
| 4. | Dr. Mandeep Singh Azad | SMS (Animal Sciences) |
| 5. | Dr. Sanjay Koushal | SMS (Agronomy) |
| 6. | Dr. Suja Nabi Qureshi | SMS (Horticulture) |

### KVK Poonch

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. Sanjay Swami | Sr. Scientist & Head |
| 2. | Dr. Ajay Gupta | SMS (Agronomy) |
| 3. | Dr. Muzaffar Mir | SMS (Fruit Science) |
| 4. | Dr. Muneeshwar Sharma | SMS (Plant Protection) |

### KVK Kathua

| S.No. | Name | Designation |
|---|---|---|
| 1. | Dr. AmrishVaid | Sr. Scientist & Head |
| 2. | Dr. Neerja Sharma | SMS (Horticulture) |
| 3. | Dr. Anamika Jamwal | SMS (Plant Protection) |
| 4. | Dr. Berjesh Ajrawat | SMS (Agril. Extension) |
| 5. | Mr. Vishal Mahajan | SMS (Agro Forestry) |
| 6. | Mr. Pawan Kumar Sharma | SMS (Agril. Economics) |
| 7. | Dr. Vijay Sharma | 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

**School:**
School of Biotechnology

**Krishi Vigyan Kendras:**
R.S.Pura (Jammu)
Bhaderwah (Doda)
Tandwal (Rajouri)
Reasi (Udhampur)
Poonch (Poonch)
Kathua (Kathua)

**Research 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
- Seed Production Farm, Chakroi, RS Pura
- Maize Research Centre, Udhampur