13th

ANNUAL REPORT

SKUAST-J

2012-13

SHER E KASHMIR
UNIVERSITY OF AGRICULTURAL
SCIENCES & TECHNOLOGY OF JAMMU (J&K)

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

PREFACE

It is my proud privilege to present Annual Report of the Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu (SKUAST-J) for the year 2012-13 reflecting salient achievements made by the University. The University is mandated to address the basic, strategic and applied issues related to Agriculture Production and livestock wealth in addition to the human resource development and collaborative linkages with government, national and international organizations and overall improvement in the socio-economic status of the farmers. The University has been able to provide perfect scientific and technologic support to farmers through its different faculties, research stations, sub-stations/ centre and Krishi Vigyan Kendras located in different parts of the Jammu region.

The period under report gives the details of the activities carried out by the University to achieve the cherished goals of the University. The University has made sincere efforts in developing technologies and making scientific interventions for achieving higher levels of productions and productivity to realize at least 4 per cent growth in State Agriculture. Innovative technologies have been developed for improving production and quality of fruit crops as well as livestock products., The University is also devoted to generate cutting edge technology for boasting crop production, vegetable production, fruit production, processing of agriculture produce and Veterinary & Animal Husbandry Sciences which are economically viable, socially acceptable, technologically feasible and are area specific and have direct relevance to marginal and small resource poor farmers. The period under report remained abuzz with activities to achieve the overall goals of providing boast to the Agriculture.

The University is contributing significantly towards the seed replacement in the State by producing quality seed of crop and supplying planting material for fruit crops. It is worthwhile to mention that University produced 1572 quintal seeds of different crops during 2012-13, which helped farmers of state in a greater way for seed replacement which is a key factor to achieve the productivity of crops.

To achieve these goals, SKUAST Jammu is involved in generating Human Resources in the field of Agricultural and alive science through quality education at UG & PG level. The University Council in its 8th Meeting accorded approval for starting school of Agri Business Management (SABM) with an objective to initiate Master Degree in ABM for creating / generating Professional competent, socially responsible with core management competent, in Agri business. Accordingly Agri-business Management School (ABMS) came into existence on 19th November 2012.

The University has succeeded in its endeavor and attained new heights because of patronage and guidance received from the Chancellor of SKUAST-J, His Excellency, The Governor of Jammu and Kashmir, Padam Vibhushan Sh. N.N.Vohra, Pro-

Chancellor Jenabl Omar Abdullah, The Hon'ble Chief Minister of Jammu & Kashmir State and Dr. S.Ayyapan, Hon'ble Secretary, DARE & DG, ICAR during the year under report. The contribution of the University Council, Board of Management, Academic Council, Research and Extension Councils etc. in the smooth running of the entire business of the University has been highly important. My thanks are due to the Statutory Officers and staff members for their cooperation and sincere efforts made in the progress of SKUAST-J. I am confident that faculty, staff and students of this University will contribute their best to transform our dreams into the reality.

The information / material present in this Annual Report will be useful to the scientists, extension workers and progressive farmers. We welcome any suggestion for improvement of this important publication.

The contributions of all the officers of the University, Head of the Divisions/ Stations, Sub-stations, Schemes, KVKs are praise worthy. The efforts made by Prof. Deepak Kher, PPMO in brining out this report is worth appreciable and I congratulate him.

D.K. Arora

(Dilip K.Arora)
Vice-Chancellor

Jammu

CONTENTS

SKUAST-J: AN INTRODUCTION

Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu (SKUAST-J) was established on 20th September, 1999 following the amendment in Sher-e-Kashmir University of Agricultural Sciences and Technology Act, 1982 through the State Legislature as an instrument for augmenting opurtunities for education, training and research in the field of Agriculture, Veterinary Sciences and other allied sciences. The entire entir educational infrastructure like colleges of Agriculture, Veterinary, Forestry and major infrastructure for research and extension came up only in Kashmir province. A demand for the establishment of a separate Agricultural University was raised subsequently as; the Jammu region is agro-climatically and topographically different from the Kashmir division having diversity among its livestock, type and cropping pattern and socio-economic/geographic linkages.

The problems of farming community in jammu province in agriculture are location specific in research on field crops, pulses, fruits, oilseeds and vegetables, whereas in veterinary scinces, these are related to species of livestock and poultry. Keeping these parameters in view, the then Prime Minister of India, Sh. H. D. Deve Gowda, on his visit to Jammu in 1996, announced the establishment of a separate Agricultural University for Jammu region. His successor-in-office, Sh I. K. Gujral, subsequently reiterated the same commitment.

Following these announcements, the Indian Council of Agricultural Research (ICAR) constructed a high-powered committee popularly known as Madan Committee to look into the matter. Late on the Committee submitted its recommendation and agreed in principle for the establishment of separate Agricultural University for Jammu. Accordingly, the Sher-e-Kashmir University of Agricultural Sciences & Technology Act of 1982 was amended by the State Legislative Assembly for establishment of a separate Agricultural University in the same name (SKUAST of Jammu).

Hence the birth of Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu was held on 20th September, 1999 following the amendment of Sher-e-Kashmir University of Agricultural Sciences & Technology Act 1982 through the state legislature.

The University has three faculties viz. Faculty of Agriculture, Faculty of Veterinary Sciences & Animal Husbandry and Faculty of Post Graduate Studies and have different Research Stations/Sub-Stations/Centres spread over the entire Jammu province comprising of ten districts viz., Jammu, Samba, Kathua, Reasi, Udhampur, Rajouri, Poonch, Kishtwar, Ramban and Doda. These stations are actively engaged in research activities in the areas of agriculture, horticulture, livestock, dairy, fisheries and home science, besides having six Krishi Vigyan Kendras (KVKs) spread over the different parts of the Jammu region are engagedin the transfer of technology, training, etc. Jammu province of J&K state lies between $32^{0}20^{/}$ N to $33^{0}10^{/}$ N latitude and $74^{0}45^{/}$ E to $74^{0}55^{/}$ E Longitude with its characteristics climate zones including sub-tropical, dry temperate, wet temperate and intermediate. The total area of Jammu division is about 1800 thousand hectares and only 22 per cent of this area is available for agriculture and this account for 70 per cent of total crop production in the satte. The major crops produced are rice, wheat and maize. Since, 75 per cent of the cultivated area is under

rainfed agriculture, emphasis is laid upon the cultivation of less water requiring crop/tree varieties including oilseeds, pulses, sub-tropical fruits such as guava, ber, guava, pomegranate, lemons, etc. In the typical temperate zone partly falling under districts of Doda, Kishtwar, Udhampur, Kathua and Poonch, efforts have been made to expoit the potential for the cultivation of saffron (Kishtwar), apples, pears, apricots and various nuts.

OUR MISSION

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

MANDATE

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

UNIVERSITY AUTHORITIES

University Council

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

Board of Management

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

Academic Council

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

Research Council

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

Extension Education Council

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

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

Faculties and Schools

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

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

Schools

i) School of Biotechnology
ii) School of Agri Business Management

Planning Committee

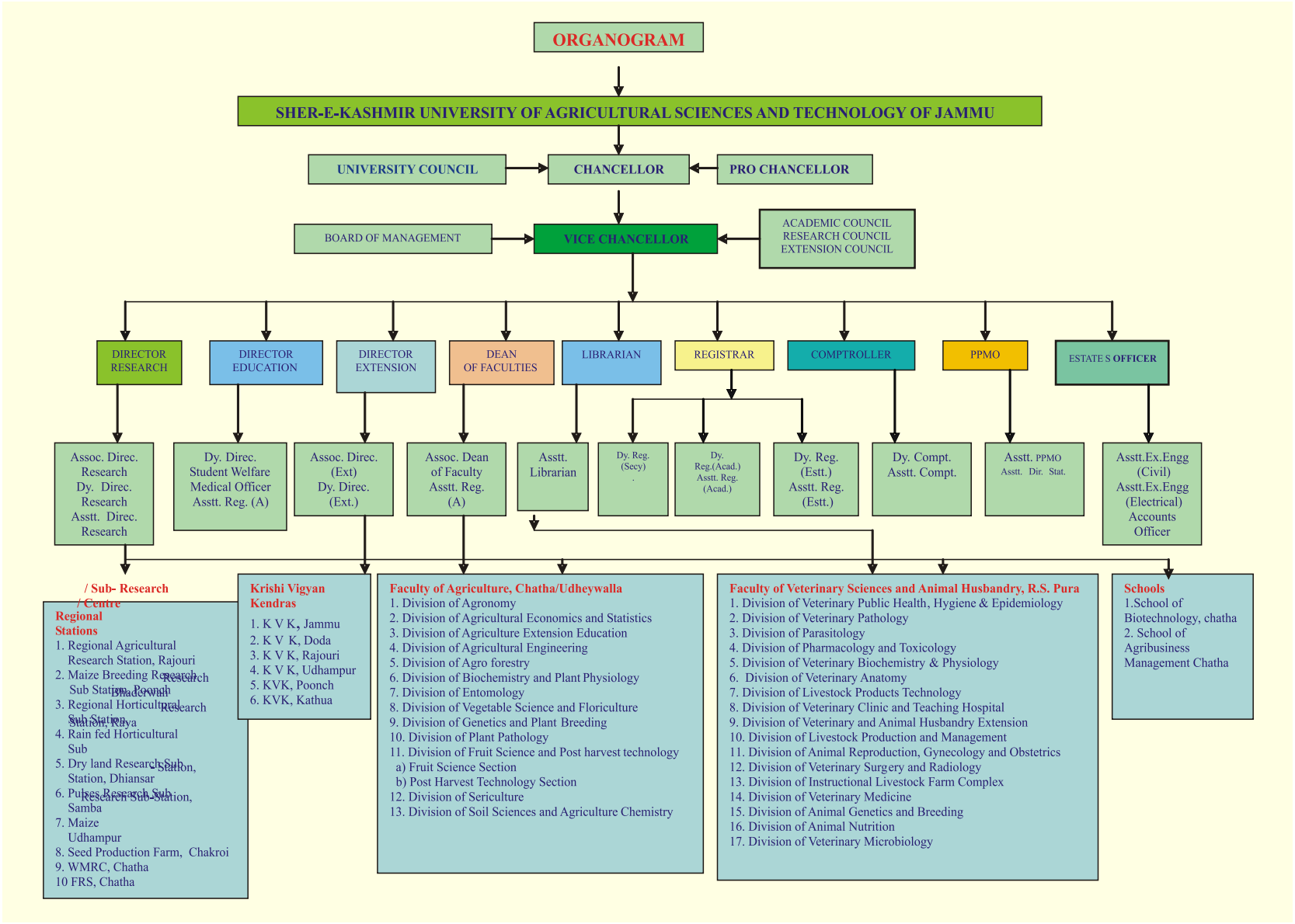
The Planning Committee advises the Board of Management in matters relating to Planning and Development of the University. It is also responsible for programme planning, monitoring and implementation of major projects of the University.

Finance Committee

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

UNIVERSITY ADMINISTRATION

The Vice-Chancellor is the chief executive of the University. He is supported by the Registrar in the administration, Comptroller in financial management, Project Planning & Monitoring Officer in planning of budget, 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
DIRECTOR RESEARCH
DIRECTOR EDUCATION
DIRECTOR EXTENSION
DEAN OF FACULTIES
LIBRARIAN
REGISTRAR
COMPTROLLER
PPMO
ESTATE S OFFICER
Assoc. Direc. Research
Dy. Direc. Research
Asstt. Direc. Research
Dy. Direc. Student Welfare
Medical Officer
Asstt. Reg. (A)
Assoc. Direc. (Ext)
Dy. Direc. (Ext.)
Assoc. Dean of Faculty
Asstt. Reg. (A)
Asstt. Librarian
Dy. Reg. (Secy)
Dy. Reg.(Acad.)
Asstt. Reg. (Acad.)
Dy. Reg. (Estt.)
Asstt. Reg. (Estt.)
Dy. Compt.
Asstt. Compt.
Asstt. PPMO
Asstt. Dir. Stat.
Asstt.Ex.Engg (Civil)
Asstt.Ex.Engg (Electrical)
Accounts Officer
/ Sub- Research / Centre
Regional Stations
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 Station, Kalya
5. Dry land Research Sub Station, Dhiansar
6. Pulses Research Sub Station, Samba
7. Maize Research Sub-Station, Udhampur
8. Seed Production Farm, Chakroi
9. WMRC, Chatha
10 FRS, Chatha
Krishi Vigyan Kendras
1. K V K, Jammu
2. K V K, Doda
3. K V K, Rajouri
4. K V K, Udhampur
5. KVK, Poonch
6. KVK, Kathua
Faculty of Agriculture, Chatha/Udheywalla
1. Division of Agronomy
2. Division of Agricultural Economics and Statistics
3. Division of Agriculture Extension Education
4. Division of Agricultural Engineering
5. Division of Agro forestry
6. Division of Biochemistry and Plant Physiology
7. Division of Entomology
8. Division of Vegetable Science and Floriculture
9. Division of Genetics and Plant Breeding
10. Division of Plant Pathology
11. Division of Fruit Science and Post harvest technology
a) Fruit Science Section
b) Post Harvest Technology Section
12. Division of Sericulture
13. Division of Soil Sciences and Agriculture Chemistry
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
Schools
1.School of Biotechnology, chatha
2. School of Agribusiness Management Chatha

UNIVERSITY COUNCIL
As on 31-03- 2013

Sh. N.N. Vohra, Hon'ble Governor J&K State (Hon'ble Chancellor, SKUAST-J)	Chairman
Jenab Omar Abdullah Hon'ble Chief Minister, J&K State (Hon'ble Pro-Chancellor, SKUAST- J)	Member
Jenab G.H. Mir Hon'ble Minister for Agriculture Production, J&K State	Member
Sh. Raman Bhalla Hon'ble Minister for Housing, Horticulture & Culture, J&K State	Member (Co-opted)
Jenab Mian Altaf Ahmed Hon'ble Minister for Forest, Environment and Ecology, J&K State	Member (Co-opted)
Sh. Nazir Ahmad Khan (Gurezi) Hon'ble Minister of State Animal & Sheep Husbandry (Independent Charge) Minister of State for PHE, Irrigartion & Flood Control, Horciulture, Agriculture & Floriculture, J&K Govt.	Member (Co-opted)
Dr. Dilip K.Arora Hon'ble Vice Chancellor, SKUAST-J	Member
Dr. Tej Pratap Hon'ble Vice Chancellor, SKUAST-K	Member
Dr. A. R. Trag Hon'ble Vice-Chancellor, Islamic University of Science & Technology Avantipura, Kashmir	Member
Sh. B.R.Sharma, IAS Principal Secretary to J&K Govt., Planning and Development Department, Govt. of J&K	Member (Co-opted)
Sh. B.B.Vyas, IAS Principal Secretary to Govt (Financial Advisor-SKUAST-Jammu) J&K Govt., Jammu	Member
Dr. Asgar Hassan Samoon, IAS Commissioner/Secretary to J&K Govt., Agriculture Production Department, Govt. of J&K	Member
Dr. M. S. Kang Former Vice Chancellor, PAU, Ludhiana	Member
Dr. B.B. Gupta Registrar, SKUAST-J	Non-Member Secretary

BOARD OF MANAGEMENT
As on 31.03.2013

Dr. Dilip K. Arora Hon'ble Vice Chancellor, SKUAST-J	Chairman
Dr. Tej Pratap, Hon'ble Vice-Chancellor, SKUAST-K	Member
Sh. B.R.Sharma, IAS Principal Secretary to Govt., Planning and Development Department, Govt. of J&K	Member
Sh. B.B.Vyas, IAS Principal Secretary to Govt., Finance Department, Govt. of J&K,	Member
Dr. Asgar Hassan Samoon, IAS Commissioner/Secretary to J&K Govt., Agriculture Production Department, Govt. of J&K	Member
Dr. KML Pathak, DDG (Animal Science), ICAR, New Delhi	Member
Dr. H.S.Gupta, Director, Indian Agricultural Research Institute, New Delhi	Member
Dr. B.K.Joshi, Director, National Bureau of Animal Genetic Resources, Karnal, Haryana	Member
Krishi Pandit Bakshi Ganesh Dass Progressive farmer, R/o Saranoo, Rajouri	Member
Sh. S. C. Dutta, Agro Industrialisit, Jammu	Member
Dr. K. S. Risam Director Extension, SKUAST-J	Member
Dr. R. M. Bhagat Director Education, SKUAST-J	Member
Dr. B.B. Gupta Registrar, SKUAST-J	Non- Member Secretary

OFFICERS OF THE UNIVERSITY
As on 31-03-2013

Prof. Dilip K. Arora	**Hon'ble Vice Chancellor**
Dr. K. S. Risam	Director Extension
Prof. R. M. Bhagat	Director Education
Prof. B. B. Gupta	Registrar
Prof. Deepak Kher	Project Planning & Monitoring Officer
Sh. S. C. Bhandari	Comptroller
Dr. J. P. Sharma	Dean, Faculty of Agriculture
Prof. Ajay Koul	Director Research (Officiating)
Prof. S. K. Gupta	Dean, Faculty of Veterinary Sciences & AH (Officiating)
Prof. V. K. Razdan	Librarian (Officiating)
Sh. P. B. Gandhi	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 2012-13 under the stewardship of Prof. Dilip K. Arora, 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 and Veterinary 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:

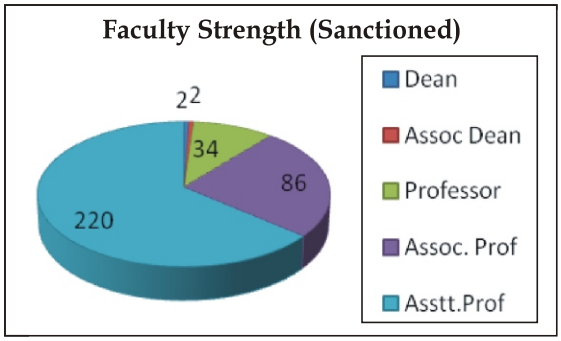
EDUCATION

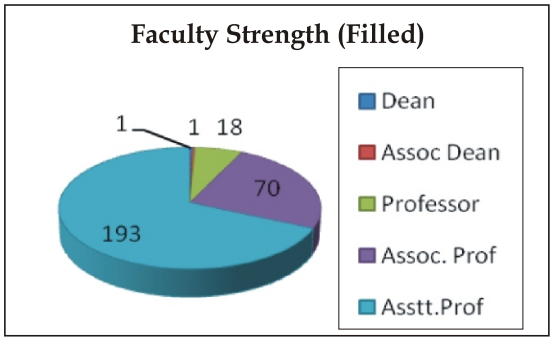
- The University has total sanctioned strength of 344 faculty position with 229, 71 and 44 in Teaching, Research and Extension Education, respectively. The University has 31 Professors, 71 Associate Professors and 124 Assistant Professor level positions in teaching besides 2 Deans and 2 Associate Deans. Out of 230 faculty members, 108 are in faculty of Veterinary Sciences and Animal Husbandry and 122 are in Agriculture. The academic and the gender wise spectrum of the faculty reveal that more than two-third of the faculty holds Doctoral degrees and the female strength in the faculty is just about 15 per cent.

- The admissions to the bachelor's degree programmes were made through Board of Professional Entrance Examinations of Jammu and Kashmir Government whereas for Master's and Doctoral degree programme, the university itself selected the candidates on the basis of merit. As many as 110 and 82 students were admitted to UG and PG programmes, respectively. The number of students who completed their B.Sc (Ag), B.V.Sc & AH, M.Sc (Ag), M.V.Sc., Ph.D. (Ag) and Ph.D (Vety) degrees were 32, 54, 28, 47, 8 and 3 respectively. The total number of students on roll remained 437, out of which 261 were in Veterinary Sciences and 176 in Agriculture.

- 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. 3412 OPDs were attended and 64.26 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 22192 text and reference books. The library has adopted electronic cataloging using SOUL software. It annually subscribes 98 Indian journals and 92 foreign journals. Recently the University subscribed more than 2700 e-journals through CeRa consortium and CAB CD online. LAN and CD-ROM workstation on CABCD, VETCED and FST, Internet services are also provided to the scholars and faculty. Solar power plant has been installed with 30KwA and 20KwA for the libraries at Chatha and R.S.Pura, respectively.The online examination centre funded by Agricultural Services Recruitment Board (ASRB) has been established in the University.





- A multi-location testing at Poonch, Chatha and Udhampur of 13 newly developed composites/hybrids were conducted during kharif 2012. Yellow grain hybrid PHM-12 (6618 kg/ha) displayed yield increase of 25.2 per cent over check Kanchan-517 (5286 kg/ha) followed by UDMH-101 (6585 kg/ha) and UDMH-108 (6521 kg/ha).
- White grain composite PMSY-4 (6587 kg/ha) exhibited yield increase of 25.4 per cent over check Kanchan-612 (5175 kg/ha) followed by hybrid PHM-11 (6447 kg/ha) and PHM-34 (5943 kg/ha).
- Eight Cultivars of potato namely K. Chandermukhi, Gulmarg Special, K. Jyoti, PP-2500, K. Giriraj, K. Himalini, PP-48 and K. Sailza were evaluated during spring 2012 for growth and yield attributes. Maximum plant height (45.3 cm) and tuber yield (182 q/ha) was recorded in cultivar in K. Himalini. All the varieties showed non-significant response towards no. of tubers/ plant (recorded 90 DAP) and weight of tubers by grade (g).
- Out of 35 cultivars of Chrysanthemum evaluated for flower production; Gulmohar, Thai Ching Queen and Kanchil in Standard cultivars are more promising than othersand among Spray Cultivars; Maghi white were found to the best.
- Standardized an effective low cost high volume propagation technique for Graind Naine cultivar of banana upto the extent of its commercialization. A protocol has been developed using shoot tips from sword suckers as explants and sterilization with $HgCl_2$ (0.1 %) for 6 minutes has given minimum culture contamination. Murashige and Skoog (MS) medium supplemented with BAP 4 mg/l and IAA 2 mg/l resulted in maximum establishment of cultures in lesser time and maximum multiple shoots. Maximum rooting was obtained on MS medium (half strength) supplemented with IBA 1 mg /l and 200 mg/l activated charcoal.
- Four cultivars of aonla fruit, viz Banarasi, Chakaiya, NA-7 and Desi were assessed for developing value added products like aonla supari and sauce.
- On the basis of organoleptic parameters, i.e colour, chewiness, taste and overall acceptability, and retention of ascorbic acid content (42.8 %), the cultivar Banarasi was found the best for developing supari followed by Chakaiya. The desi aonla was best suited for the development of sauce.
- Studies on honeybee diseases revealed the presence dreaded European foul brood disease. The disease was more severe (25-30 %) in *A. Cerana* colonies compared with A.mellifera (10-15 %). The predatory

wasps identified included *Vespa velutina, V. orientalis , V. cincta, V. basali and V. mandarinia.* The *V. velutina and V. basalis* were recorded as major enemies of A. mellifera. The maximum wasp attack was observed from July-September. The maximum wasp incidence was in morning (9.00-11.00 am). The presence of ectoparasitic mites, *V. destructor, T. clareae; T. koenigerum* and stored product mites, *Tyrophagus longior, Caloglyphus indica, Hypopus* and phoretic mites Neocypholaelaps indica were observed in debris as well as on the bodies of honeybees.

- In-vitro propagation studies on Harad *(Terminalia chebula)* revealed that maximum shoot multiplication was achieved at 1.2 mg/l BAP and 0.05 mg/l NAA whereas, a concentration of 0.5 mg/l GA_3 on MS media was suitable for obtaining seed germination.
- Studies on standardization of agro-techniques of Ocimum sanctum revealed that application of Nitrogen @ 60 kg/ha along with vermi-compost @ 3 t/ha at a plant spacing of 40 x 40 cm resulted in maximum fresh herbage yield. Application of irrigation of 40 mm depth given at IW:CPE ratio of 0.8 was significantly beneficial to increase the leaf and gel yield of Aloe barbadensis.
- Application of herbicides either with Penoxulam (@ 22.5 g/ha 10 days DAT) or Bispyrebac (@ 30 g/ha 30 DAT) produced the highest rice yields of 49.5 and 48.7 q/ha, respectively and were observed to be at par with rice yield recorded under weed free treatment.
- Penoxulam and Bispyrebac also registered their superiority in controlling all the categories of weeds (grasses, sedges and broad leaved weeds) conforming their wide spectrum herbicidal action with their mean weed control efficiency values of 89 and 86 per cent, respectively.
- Highest wheat grain yield (37.9 q/ha) was recorded under herbicide treatment of metribuzin @ 200 g/ha which was found at par with two hand weedings at 30 and 60 DAS. Wheat grain yield with metribuzin @ 200 g/ha recorded 85.6 per cent increase over the un-weeded control plots. However in maize crop, significantly highest grain yields to the tune of 40.9 q/ha was recorded with two hand weedings which was followed by application of Atrazine @ 1 kg/ha.
- Significantly highest wheat grain yield of 37.8 q/ha was recorded in the treatment with Isoproturon @ 1 kg/ha, which was at par with the treatments where 0.75 kg Isoproturon + 1 % tank mix urea applied. However, highest rice grain yield to the tune of 33.9 q/ha was observed with herbicidal application of Butachlor @ 1.5 kg/ha followed by two mechanical weeding.
- One irrigation at CRI and two irrigations at CRI and tillering stage remained statistically at par to each other but significantly superior over no irrigation. Among the varieties, PBW 550 recorded significantly superior yield over all other varieties under study followed by PBW 175 and WH 1080.
- Cu, Zn, Mn and Fe content in Basamti growing areas varied from 0.05-3.67, 0.02-1.18, 1.14-11.13 and 2.40-40.76 with mean values of 0.86, 0.27, 4.47 and 21.58 mg/kg respectively. Considering the critical limit of 0.6 mg/kg, about 94 % samples were deficient in available Zinc, whereas about 9 per cent soils were deficient in available

copper (critical limit being 0.2 mg/kg). However, DTPA-extractable Mn and Fe in these samples were sufficient. The available (DTPA-extractable) micronutrient Cu has significant and negative correlation with pH (-0.294*) and organic carbon (-0.327*) but positive with EC (0.395**). The available (DTPA-extractable) micronutrient Zn related significantly and negatively with EC (-0.323*) and positively with organic carbon (0.318*). The available (DTPA-extractable) micronutrient Mn correlated significantly and negatively with silt (-0.367*).

- Twenty seven years long term application of 50 % NPK through fertilizer + 50 % N through FYM/GM/CR to rice and 100 % NPK through fertilizer to wheat crop gave stable and sustainable yield in rice-wheat system. Moreover, integrated nutrient management based on soil test value would be the most practically viable technique and eco-friendly technology which holds the key to maintain crop yield and system productivity without affecting the environment adversely.

- In nutrient management under maize-wheat rotation, the treatments of organic manures and green manuring in combination with different nitrogen doses exhibited significant effect on grain yield of maize. The highest grain yield of 26.7 q/ha was recorded with the application of FYM 10 t + 40 kg N/ha which was statistically superior to other treatments. Grain yield the treatment receving Leucaena leaves @ 5 t + 40 kg N /ha was statistically at par with FYM 10 t + 30 kg N/ha. The lowest grain yield of 11.3 q/ha was obtained in control.

- Seedling treatment with carbendazim @ 0.1 % + soil drenching with carbendazim @ 0.1 % three times was the most effective in which the intensity of wilt disease 10.33 % which gave disease control of wilt 70.47 % over the control 34.99 % and there by resulting in 87.9 per cent increase in tomato yield as compared to control.

- A field experiment was conducted for two years under temperate conditions of Bhaderwah by taking four cropping system; viz., sole maize, sole rajmash , maize + rajmash (1:1) where one row of maize was followed by one row of rajmash and maize + rajmash (2:1) where, two rows of maize was followed by one row of rajmash and four nutrient management techniques; viz. control (no fertilizer), 100 % recommended dose of fertilizers (RDF), 75% RDF + 25 % N as FYM and 50 % RDF + 50 % N as FYM. During the year 2012 it was observed that highest maize equivalent yield (MEY) of 74.66 q/ha was observed under maize + rajmash (1:1) cropping system. Among nutrient management the best results in terms of MEY (74.35 q/ha) was recorded where 75 % RDF and 25 % N through FYM was applied.

- During kharif 2012-13, laser leveled plots recorded water use efficiency (WUE) 1.85 kg/ha-mm registering 25.9 % saving in water over traditionally leveled plot in rice crop. The experiment is under progress during rabi 2012-13.

- 556 faecal samples of cattle and buffaloes (Cattle 390, buffaloes 166) were examined and the positivity observed was 57.9 and 60.2 per cent, respectively. Among sheep (160) and goats (100) examined, 81.3 and 60 per cent animals were found positive, respectively. The predominant parasites observed were strongyles (46.1 %), amphistomes (15.6 %), Strongyloides (2.9 %), Fasciola (1.7 %) and anoplocephalids (2.8 %).

- Study was conducted on 28 dogs suffering from various urinary tract disorders. Clinical, haemato-biochemical and urine parameters were studied in the affected dogs. The prevalence of urinary tract disorders (UTDs) was found to be 3.2 % (28/867). Intrinsic-renal (35.7 %) was most encountered disorder followed by pre-renal and post-renal. Upper UTDs was most encountered (67.9 %) than lower UTDs. Urine examination revealed change in colour (yellow brown to colourless), proteinuria, presence of leucocytes and bilirubin. Ultrasonography with haemato-biochemical and urine observations were found to be significant diagnostic tool in UTDs. Diuretic mannitol with supportive therapy found to be more effective in improving GFR.

- Study was undertaken to determine the occurrence of brucellosis in large ruminants of Jammu. A total of 320 serum samples (160 from cattle and buffalo each) were analyzed, and 10 (3.1 %) and 17 (5.3 %) samples were positive to Rose Bengal Plate Test (RBPT) and Standard Tube Agglutination Test (STAT), respectively. On screening 30 milk samples from serological positive and doubtful animals by milkring test, 7 samples were found positive. On isolation from milk samples, 2 (6.7 %) samples, one from cattle and buffalo each, yielded Brucella abortus. The presence of brucellosis in large ruminants poses a significant economic loss to the farmer and a public health hazard to the general population

- Bacteria were isolated from 17 wound sample of equines and a total of 6 (35.3 %) isolates of Staphylococcus aureus were obtained .These were further processed for Methicillin resistance. Out of 6 isolates only 3 were found to be MRSA positive. These cultures are being investigated for mecA and vanA/vanB/vanX genes that may renders these cultures highly drug resistant.

- The resistance status of deltamethrin (at 12.5, 25, 50, 100 and 200 ppm) was evaluated against R. (B.) microplus using adult immersion test. The mortality of female ticks was increased with increasing concentrations of deltamethrin. The maximum mortality of 40.0% was observed at 200 ppm concentrations. The regression graph of probit mortality of ticks plotted against log values of progressively increasing concentrations of deltamethrin was utilised for the determination of slope of mortality which was 0.8663 ± 0.06329. The lethal concentration (LC_{50}) was calculated as 376.4 ppm and the resistance factor (RF) was 28.08 which indicated level III resistance status. The dose response curves for egg masses, reproductive index and inhibition of oviposition were -22.06 ± 1.432, -0.1560 ± 0.01876 and 25.00 ± 3.010, respectively. In larval packet test, the slope of mortality was 0.8132 ± 3.0789. The LC_{50} value was calculated as 230.35 ppm and the RF was 19.52 which indicated level II resistance status.

- The prevalence of hydatidosis was carried out in slaughtered goats (n = 177) by liver and lung examination at Jammu. The prevalence rate of hydatidosis was 19.8 per cent. A total of 14.1% goats had cysts in both the livers and lungs while 2.3 and 3.4 % goats had cysts in the livers or lungs, respectively. A total of 9.1 % goats had fertile cysts. The adult goats (above 4 years) had a significantly higher (p = 0.01) prevalence rate as compared to the young goats (below 2 years). The histo-pathological section of the affected lungs

revealed a thick coat of granulation tissue causing fibrosis. The cysts caused progressive focal pressure atrophic lesions at the sites of predilection, resulting in atelectasis, desquamation of bronchial epithelium and interalveolar haemorrhages. It may be concluded that the slaughter of food animals at an early age would help to reduce the infection prevalence in dogs and subsequently in the food animals.

- The prevalence of cysticercosis due to Cysticercus tenuicollis in sheep and goats in Jammu was recorded during January 2011 to June 2012. A total of 520 animals (260 sheep and 260 goats) were randomly examined in different meat shops/slaughter houses for the presence of cysts. Different visceral organs were examined using standard meat inspection technique. Out of 520 animals examined, 265 animals were found to be positive. The overall percent prevalence of cysticercosis in small ruminants was recorded as 50.96 per cent. Cysticercus tenuicollis was found in 51.92 % sheep (n = 135) and in 50 % (n = 130) goats. Organ-wise distribution showed C. tenuicollis was more frequently attached to the omentum of sheep and goats than any other visceral organ. In both sheep and goats, the reproductive organs were the least affected.

- The scientists of the University produced Nucleus seed (9.88 q), Breeder seed (124.98 q), Foundation seed (471.82 q) and certified seed/Truthfully labelled (965.40 q) during 2012-13.

EXTENSION

- 5410 farmers/farm women and rural youth were imparted training through 224 different short courses. 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 110 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

NEW INITIATIVES

Education

- Prospectus of University for the admission to various courses has been prepared for the guidance of admission seekers.

- Examination guidelines on external pattern have been prepared.

- University examination cell has been established for Centralized Examination of all the faculties.

- University Council in its 8th Meeting held on 28.09.2012 has approved the establishment of School of Agri Business Management. The fist batch of MBA in ABM has been started from January, 2013.

Administration

- Two time career advancement scheme for non-teaching employees replacing the erstwhile one-time career advancement scheme has been notified. In addition to this, 32 promotions in teaching and six in non-teaching cadre have been made.

- The RTI cell has been constituted to bring transparency in the functioning of the University.
- University has constituted a Grievance Cell which is taking care of the grievances projected by the employees / students / public.
- A Proctor Cell has also been constituted by the University

Publications

- Among publications, the university brought out Vision Document 2030 of SKUAST-Jammu, SKUAST-Jammu at a Glance, University Newsletter, various technical bulletins, Brochures and folders for dissemination to farmers, stakeholders and resource personnel. As many as 820 publications including book chapters/bulletins/ manuals/ research papers etc. were published by the scientists in various journals of repute.

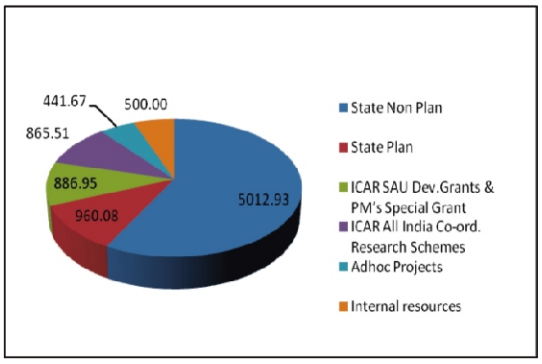
Other Important University Activities

- 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, Research Council, Academic Council were held accordingly.

Sh. N. N. Vohra, Hon'ble Chancellor SKUAST-J and Governor J&K state addressing 7th University Council Meeting

Prof. Dilip K. Arora, Hon'ble Vice Chancellor addressing 20th Board of Management Meeting

Prof. Dilip K. Arora, Hon'ble Vice Chancellor addressing the Members of 13th Research Council Meeting



University operated the total budget of Rs 8667.14 lakhs during the year 2012-13.

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.

The University council in its 8th meeting accorded approval for starting School of Agri-Business Management (SABM) with an objective to initiate Masters Degree in ABM for creating/generating professionally competent, socially responsible and technically qualified human capital with core management competencies in agribusiness. Accordingly, Agri Business Management School (ABMS) came into existence on 19th November, 2012. The courses have been designed in such a way so as to provide ideal learning opportunities for youths to become agribusiness professionals in order to meet the needs of Agri Business Industry. The structure of the course mainly focuses on core courses like general elective and industrial elective courses, which include Farm Engineering, Food Industry, hitch Agriculture, Horticulture Industry, Input Supply, Vet. Pharmaceutical and Livestock Industry, besides summer internship/industrial attachments for improving the managerial capacity through practical approach having exposure to application of knowledge with the output of preparing the report.

2.1 Academic programmes :

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 :

S.No.	M.Sc.(Ag)	Ph.D.(Ag)	M.V.Sc.	Ph.D.(Vet)
1	Soil Science & Agriculture Chemistry	Soil Science & Agriculture Chemistry	Veterinary Animal Breeding & Genetics	Veterinary Animal Breeding & Genetics
2	Genetics & Plant Breeding	Genetics & Plant Breeding	Veterinary Animal Nutrition	Veterinary Animal Nutrition
3	Entomology	Entomology	Veterinary Animal Reproduction, Gynecology & Obstetrics	Animal Reproduction, Gynecology & Obstetrics

4	Agriculture Extension Education	Agriculture Extension Education	Clinical Veterinary Medicine including Ethics & Jurisprudence	Clinical Veterinary Medicine Ethics & Jurisprudence
5	Vegetable Science	Vegetable Science	Veterinary Microbiology & Immunology	Veterinary Microbiology & Immunology
6	Agriculture Economics	Agriculture Economics	Veterinary Parasitology	Veterinary Parasitology
7	Agronomy	Agronomy	Veterinary Pharmacology & Toxicology	Veterinary Pharmacology & Toxicology
8	Fruit Science	Fruit Science	Veterinary Public Health & Hygiene	Veterinary Public Health & Hygiene
9	Post Harvest Technology	Post Harvest Technology	Veterinary Surgery & Radiology	Veterinary Surgery & Radiology
10	Plant Pathology	Plant Pathology	Veterinary Livestock Product Technology	-
11	Statistics	Biotechnology	Veterinary Biochemistry	-
12	Bio Chemistry	-	Veterinary Livestock Production & Management	-
13	Forestry	-	Veterinary Epidemiology & Preventive Medicine	-
14	Sericulture	-	Veterinary Anatomy & Histology	-
15	Biotechnology	-	Veterinary Pathology	-
16	Floriculture	-	Veterinary Animal Husbandry Extension	-
17	-	-	Veterinary Physiology	-

2.3 Faculty Spectrum

The classified information pertaining to the faculty strength cadre wise are given in the table as evident there are 230 faculty positions as sanctioned strength for both the faculties viz Faculty of Agriculture and Faculty of Veterinary Sciences & Animal Husbandry

Posts	Sanctioned
Dean	2
Associate Dean	2
Professor	31
Associate Professor	71
Asstt. Professor	124
Total	230

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 2012-13 were 50, 19 and 60, respectively. The number of students admitted to M.Sc (Ag.) and Ph.D (Ag.) programme were 44 and 22 respectively in different divisions. In Veterinary faculty 40 MVSc and 11 Ph.D students were admitted during the academic session of 2012-13, besides 06 students each in M.Sc Biotechnology and Ph.D Biotechnology programme. The total strength of the students on roll in Post Graduate and undergraduate Degree programme were 266 and 448, 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 2012		II year 2011		III year 2010		IV year 2009		V year 2008			
			M	F	M	F	M	F	M	F	M	F	M	F
1	Faculty of Agriculture	B.Sc. (Hons.) Agriculture	25	25	20	18	11	08	26	19	-	-	82	70
		B.Sc. (Hons.) Biotechnology	–	19	–	19	–	19	–	–	–	–	–	57
2.	Faculty of Veterinary Sciences & Animal Husbandry	B.V.Sc. & A.H.	28	32	31	17	22	24	30	22	33	10	144	105

2.6 Post Graduate Programme

S.No.	Name of Faculty	Master's Programme						Sub Total		Ph.D. Programme						Sub Total		
		I Year		II Year						I Year		II Year		III Year				
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
1.	Faculty of Agriculture	15	29	19	20	44	39	16	06	10	09	05	07	31	22	75	61	
2.	Faculty of Veterinary Sciences & Animal Husbandry	23	17	38	12	61	29	09	02	03	-	06	02	18	04	79	33	
3.	School of Biotechnology	02	04	01	04	03	08	-	06	-	01	-	-	-	07	03	15	

2.7 Faculty wise Admission (2012-13)

S.No.	Divisions	Master's Degree	Doctoral Degree
Faculty of Agriculture			
1	Agronomy	04	03
2	Entomology	03	03
3	Agril. Extension Education	02	01
4	Agricultural Economics	--	01
5	Vegetable Science	02	02
6	Forestry	01	
7	PHT/Food Science & Technology	04	02
8	Fruit Science	05	02

9	Soil Science & Agricultural Chemistry	03	02
10	Biochemistry and Plant Physiology	06	-
11	Genetics and Plant Breeding	04	03
12	Plant Pathology	05	03
13	Floriculture & Landscape Architecture	01	-
14	Sericulture	04	-
15	Statistics	-	-
16	Biotechnology	06	06
Faculty of Veterinary Sciences & Animal Husbandry			
1	Animal Nutrition	02	01
2	Veterinary Public Health & Epidemiology	03	01
3	Veterinary Pharmacology & Toxicology	01	02
4	Veterinary Medicine	02	01
5	Veterinary Pathology	02	01
6	Animal Genetics & Breeding	02	01
7	Veterinary Gynaecology and Obstetrics	06	02
8	Veterinary Surgery & Radiology	04	-
9	Veterinary Parasitology	05	02
10	Veterinary Microbiology	02	01
11	Veterinary Anatomy	03	-
12	Veterinary physiology and Biochemistry	-	-
13	Live stock Production and Management	-	-
14	Livestock Products Technology	06	-
15	Animal Husbandry Extension	04	-

2.8 Number of Students who completed degree programmes (2012-13)

S.No.	Degree	No. of Students	
		Male	Female
	Post Graduate		
1	Ph.D. (Agriculture)	04	02
2	Ph.D. (Veterinary)	01	-
3	M.Sc. (Agriculture)	19	06
4	M.V.Sc.	34	08
	Under Graduate		
1	B.Sc. (Agriculture)	25	20
2	B.V.Sc. & A.H.	45	19

2.9 Thesis accepted (01-04-2012 to 31-03-2013):

S.No.	Name of student	Regd. No.	Discipline	Name of the major Advisor	Title of the thesis
M.Sc. (Ag.) and Allied Sciences					
1	Shivani Sharma	J-08-M-140	Genetics	Dr. A.K. Razdan	Stability analysis of single cross hybrids in maize (Zea mays L.)
2	Shabber Hussain	J-09-M-166	Fruit Science	Dr. Mahital Jamwal	Studies on seed germination and rootstock raising in ber (Zizyphus mauritiana Lam.)
3	Mushtaq Ahmad Guroo	J-08-M-132	Entomology	Dr.Kuldeep Srivastava	Functional response and prey reference of Coccincla septumpunctata L.on Lipaphis Erysimi Kalt.and Brevicoryne Brassicae L.
4	Mansoor Ali	J-09-M-157	Soil Science	Dr. A.K. Bhat	Assessment of heavy metals toxicity areas around industrial belts of Jammu
5	M. Nayeen Sofi	J-08-M-130	Soil Science	Dr. Sanjay Swami	Establishment of critical limits of available phosphorus for some mustard (*Brassica Juncea*) growing soils of Jammu region
6	Mir Awsaf Ahmad	J-09-M-176	Forestry	Dr. L.M. Gupta	Studies on Agro-techniques of Aloe (Aloe barbadensis Mill.)
7	Phuntsog Tundop	J-09-M-183	Soil Science	Dr. A.P. Rai	Nutrient status of saffron growing soils in the district Kishtwar
8	Manoj Kumar	J-08-M-126	Vegetable Science	Dr. J.P. Sharma	Genetic analysis in Okra for yield and yield components
9	Gulshan Kumar	J-10-M-188	Plant Pathology	Dr. V.S. Verma	Studies on post harvest diseases of sweet cherry (Prunus avium L.)
10	Junaid Wahid	J-09-M-177	Forestry	Dr. Sandeep Seghal	Effect of container types and potting media on the growth of *Melia composite* Willd. Seedlings
11	Lakshmi	J-10-M-192	Floriculture & Landscapping Architecture	Dr. R.K. Pandey	Studies on planting dates and spacing in African Marigold (*Targetes erecta* L.)

12	Amit Kumar	J-10-M-187	Entomology	Dr. Uma Shankar	Seasonal incidence and management of major insect pests of cucumber (*Cucumis sativus* L.)
13	Malvika Sharma	J-10-M-194	Agronomy	Dr. Meenakshi Gupta	Effect of sowing schedules and varieties on growth yield and quality of baby corn (*Zea mays*)
14	Shabir Hussain	J-10-M-191	Biochemistry	Dr. Vikas Sharma	In vitro anticancer potential of some traditional medicinal plants
15	Aradhana Bali	J-10-M-193	Agronomy	Dr. B.R. Bazaya	Integrated weed management in Soyabean (*Glycine max* L.)
16	Rafiq Ahmad Shah	J-09-M-174	Fruit Science	Dr. Arti Sharma	Propagation studies of important stone fruits of Jammu sub-tropics
17	Vidya Sain	J-09-M-164	Forestry	Dr. N.S. Raina	Documentation of Medicinal and Aromatic Plants in Ramban Forest Division of Jammu & Kashmir State
18	Nimit Kumar	J-10-M-190	Agril. Economics	Dr. S.P. Singh	Economic Analysis of Production and marketing of Basmati rice in Jammu district of J&K State
19	Naveed Shamas	J-09-M-182	Plant Pathology	Dr. Vishal Gupta	Studies on brown spot of rice caused by *Drechslera oryzae* in Jammu sub-tropics
20	Disket Dolkar	J-10-M-200	Fruit Science	Dr. Parshant Bakshi	Studies on growth, yield and quality of different commercial cultivars of guava (*Psidium guajava* L.) under Jammu sub-
21	Shah Nawaz Ahmed	J-10-M-195	Fruit Science	Dr. Akash Sharma	In vitro Multiplication of Banana (Musa Spp.) cv. Grand Naine
22	Ngawang Dorjay	J-09-M-184	Entomology	Dr. D.P. Abrol	Impact of insect pollinators on cucumber and bittergourd fruit production
23	Abdul Rashid Dev	J-10-M-189	Forestry	Dr. Mohd. Saleem	In Vitro propogation of harad (*terminalia chebula* retz)

24	Manjit Singh	J-10-M-202	Fruit Science	Dr.Mahital Jamwal	Effect of foliar application of iron and zinc on growth a nd quality of strawberry (*Fragaria x ananassa* Duch.) cv. Chandler
M.V.Sc.					
1	Tanveer Ah. Dar	J-09-MV-153	Veterinary Pathology	Dr. Shagufta Azmi	Clinico-Pathomorpholigical studies on lead toxicity in Broilers and its amelioration with Vitamin C
2	Sourabh Sharma	J-09-MV-154	Veterinary Pathology	Dr. Shagufta Azmi	Prevalence and pathomorphological alterations of chicken coccidiosis in Jammu
3	Sertaj Ahmed	J-09-MV-150	Veterinary Parasitology	Dr.J.K.Khajuria	Epidemiological studies on parasites and their impact on production traits in backyard poultry in Jammu District
4	Ravleen Kour	J-09-MV-148	Animal Nutrition	Dr. Ankur Rastogi	Utilization of kinnow mandarin (*Citrus nobilis* lour X *Citrus deliciosa* Tenora) fruit waste in the ration of goats
5	Ajaz Ahmad Zargar	J-09-MV-156	Veterinary Pathology	Dr. Shagufta Azmi	Clinico-Pathological Alterations in Experimentally Induces Lead Toxicity in Wister Rats
6	Vineeta Thusoo	J-09-MV-147	Veterinary Microbiology	Dr. Anil Taku	Molecular detection of *Mycobacterium avium* subsp. Paratuberculosis from clinical cases of Johnes disease affected cattle
7	Shazia Shafiq	J-10-MV-185	Veterinary & Animal Husbandry Ext. Edu.	Dr.M.S.Bhadwal	Training needs of dairy farmers of Jammu District
8	Gazi Jameel Ah.	J-09-MV-141	Veterinary Surgery & Radiology	Dr.R.B.Kushwaha	Myelographic studies using two concentrations of Iohexol for diagnosis of spinal cord injuries in canine

9	Sajad Hussain Wani	J-10-MV-196	Veterinary Gynaecology & Obstetrics	Dr. Sudershan Kumar	Studies on Physico-morphology and leakage of sperm enzymes during cryopreservation of buffalo semen
10	Mahrukh Ahmad	J-10-MV-190	Veterinary Pharmacology & Toxicology	Dr. Shahid Prawez	*Screening of sida cordifolia* for its anti diabetic activity
11	Waseem Hussain Raja	J-10-MV-183	Livestock Products Technology	Dr.Sunil Kumar	Effect of different flours on the quality attributes of fish snacks
12	Ishfaq Faried	J-09-MV-159	Animal Genetics and Breeding	Dr. Nishant Kumar	Genetic variation of TLR-4 gene and its Association with Mastitis in Crossbred Cattle
13	Varun Sharma	J-10-MV-186	Veterinary & Animal Husbandry Ext. Edu.	Dr.M.S.Bhadwal	A study on indigenous poultry rearing in Rajouri district of Jammu & Kashmir
14	Tasneef Yaqoob	J-08-MV-68	Vety. Pharmacology and Toxicology	Dr.Rajinder Raina	Screening of *ipomoea carnea* for its anti-diabetic activity and its toxicity evluation
15	Summer Preet Singh Bali	J-09-MV-139	Veterinary Surgery and Radiology	Dr.M.S.Bhadwal	Evaluation of butorphanol-xylazine ketamine anaesthesia min mules
16	Aditya Sharma	J-08-MV-103	Veterinary Surgery & Radiology	Dr.H.R.Bhardwaj	Studies on repairmen of skin defects in dogs with acellular pericardium xenograft of caprine origin
17	Javeed Ah. Sheikh	J-10-MV-180	Veterinary Public Health & Epidemiology	Dr.Mohd Rashid	Studies on Shiga toxin-producing *Escherichia coli* in milk and milk products
18	Matup Angomo	J-10-MV-174	Veterinary Pathology	Dr. Shagufta Azmi	Pathomorphological Alterations in Experimentally induced Cadmium Chloride Toxicity in Wistar Rats
19	Majueeb Ur.Rehman	J-10-MV-178	VPH & E	Dr. Mohd. Rashid	Studies on Shiga toxin-producing *Escherichia coli* from bovine and their handlers

20	Khadim Hussain Dar	J-10-MV-177	Veterinary Surgery and Radiology	Dr.A.K.Gupta	Studies on physiological, haemato-biochemical, and blood gas alterations in diazepam ketamine anesthesia in mules premedicated with xylazine
21	Inder pal Singh	J-10-MV-176	Veterinary Surgery and Radiology	Dr.A.K.Gupta	Balanced anesthesia using butorphanol and xylazine as premedicants to diazepam-ketamine anaesthesia in mules
22	Ankush Proch	J-10-MV-171	Livestock Production & management	Dr. Asma Khan	A study on heat stress amelioration in dairy cattle by showering
23	Amit Khajuria	J-10-MV-173	Veterinary Pathology	Dr. Shagufta Azmi	Haemato-biochemical and Patho-morphological changes in liver diseases of sheep and goat
24	Zubair Sultan	J-10-MV-172	Veterinary Pathology	Dr. Shagufta Azmi	Clinico-Pathomorphological Studies of Cadmium Toxicity in Broilers
25	Rajan Sharma	J-10-MV-197	Animal Genetics Breeding	Dr. Nishant Kumar	DNA Polymorphism of Lactoferrin Gene in Jersey Crossbred Cattle
26	Surinder Singh	J-10-MV-168	Animal Nutrition	Dr. A.K.Pathak	Effect of Tanniferous Leaf Meal Mixture Based Multi Nutrient Block Supplementation on Performance of *Haemonchus contortus* Infected Goats
27	Ashiq Hussain Bhat	J-10-MV-204	Veterinary Gynaecology and Obstetrics	Dr. Sudershan Kumar	Studies on total antioxidants status, Nitric Oxide and biochemical profiles in cyclic and acyclic goat (*Aapra hircus*)
28	Mohd. Iqbal Rather	J-10-MV-175	Veterinary Pathology	Dr. R.B.Kushwaha	Comparative evaluation of Iohexol and Iopamidol for Myelographic studies in dogs
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	Bhanu Kiriti Khajuria	J-10-MV-194	Veterinary Epidemiology & Preventive Medicine	Dr. Mohd. Ashraf Malik	Seroprevalence of Brucellosis in Large Ruminants of Jammu
31	Tania Saleem	J-09-MV-119	Veterinary Parasitology	Dr. Rajesh Katoch	Epidemiology of *Oestrus ovis* in sheep and goats
32	Imtiyaz Ahmed	J-09-MV-145	Veterinary Pharmacology and Toxicology	Dr.Rajinder Raina	Protective Effect of Curcumin on Blood-biochemical and Oxidative Changes induced by Co-administration of Fluoride and Cyhalothrin in Rats
33	Imtiyaz Ah.Reshi	J-10-MV-199	Vety. Clinical Medicine & Jurisprudence	Dr. Rajiv Singh	Clinico-therapeutic studies on bovine fasciolosis
34	Manoj Kumar	J-10-MV-200	Veterinary Clinical Medicine & Jurisprudence	Dr. Kafil Hussain	Studies on urinary tract disorders in dogs in Jammu
35	Parveez Ahmad Para	J-10-MV-181	Livestock Products Technology	Dr.Sunil Kumar	Effect of enrobing and clove oil on the quality attributes of papaya pulp enriched chicken
36	Fayaz Ahmed Zargar	J-10-MV-182	Livestock Products Technology	Dr.Sunil Kumar	Effect of different vegetable fibre sources on the quality characteristics of chicken sausages
37	Nitasha Sambyal	J-10-MV-179	Veterinary Public Health & Epidemiology	Dr. Mohd Rashid	Studies on the occurrence of Listeria species in milk, milk products, fish and environment
38	Nuzhat Kounsar	J-10-MV-218	Vety. Epidemiology & Preventive Medicine	Dr.V.S.Wazir	Evaluation of humoral immune response of serogroup-B specific whole cell vaccine of *Dichelobacter nodosus*
39	Reyas Ahmad Mala	J-09-MV-144	Vety. Pharmacology & Toxicology	Dr.Rajinder Raina	Pharmacokinetics and dosage regimen of Pazufloxacin in healthy and fever induced goats
40	Qwais Qadir Jan	J-09-MV-120	Animal Nutrition	Dr.R.K.sharma	Influence of leaf meal mixture on Haemonchus contortus infection, nutrient utilization and performance of goats
41	Mahadeep Singh	J-10MV-207	Veterinary Anatomy	Dr.Kamal Sarma	Anatomical studies on the prenatal liver of goats (*Capra hircus*)

42	Raheeqa Razvi	J-10-MV-206	Veterinary Anatomy	Dr.Shalini Suri	Anatomical studies on the skin of Bakerwali Goat
43	Hilal Ahmad Tazntary	J-09-MV-132	Veterinary Clinical Medicine and Jurisprudence	Dr.J.S.Soodan	Diagnostic and Therapeutic Studies on Heptatic Disorders in Dogs.

Ph.D. (Agri.)

1	Deepshikha Sharma	J-06-D-65A	Post Harvest Technology	Dr. Raj Kumari Kaul	Processing of Jamun (*Syzygium cumini Linn*) into value added products
2	Amit Jasrotia	J-07-D-83A	Fruit Science	Dr.V.K.Wali	Role of girdling, micro-nutrients, growth retardants and pruning in production of olive (*Olea europea* L.) cv. Frontoio
3	Quadri Javeed Ahmad Peer	J-07-D-82A	Agriculture Extension Education	Dr.S.K.Kher	Adoption of recommended crop production technologies by the potato growers in the sub-tropical zone of Jammu division
4	Bandana Bhau	J-08-D-97A	Entomology	Dr.D.P.Abrol	Seasonal incidence and integrated management of mango mealy bug, *Drosicha mangiferae* (Green)
5	Inderjeet Sharma	J-06-D-57A	Vegetable Science & Floriculture	Dr.R.K.Samnotra	Effect of integrated nutrient management on growth and seed yield of Okra [Abelmoschus esculentus(L.) Moench]
6	Paramjeet Kour	J-08-D-96A	Agronomy	Dr.Anil Kumar	Effect of weed management practices on growth, yield and weed dynamics of winter maize (Zea MaysL.) + Potato (Solanum tuberosum L.) intercropping system in sub tropical region of Jammu
7	Ranjeet Kour	J-08-D-107A	Agronomy	Dr.B.C.Sharma	Influence of weed management practices on the productivity of intercropping under sub-tropical conditions of Jammu & Kashmir

Ph.D (Vety.)

1	Harsh Kumar Sharma	J-08-D-11V	Veterinary Public Health & Epidemiology	Dr.S.K.Gupta	Sero-prevalence of Brucellosis in Sheep, Goats and Humans

2.10 Students Welfare

Facilities available for sports/cultural activities

FoA, Chatha:

- Students Centre having facilities for indoor games like Table Tennis, Carrom, Ludo, Chess etc. , reading room and a cafeteria.
- Sports Ground identified and under development.
- Mini Conference Hall available for cultural activities.
- **Establishment of Gymnasium**: For the physical fitness of the students/faculty members and staff of the University a well equipped Gymnasium has been made functional under the technical supervision of the trained physical instructor.

- Establishment of Yoga-cum-Meditation Centre at Students Centre: To provide the stress free and congenial atmosphere for the staff of the University, the Meditation-cum-Yoga centre has been established at Chatha Campus.
- **Annapurna Cafetaria:** The quality, hygienic and nutritional food at no profit no loss basis is being provided to the students/staff members in congenial and comfortable atmosphere in the University campus.

- **Open tuck Shop:** To meet the day to day requirements of students/staff members a small tuck shop providing the routine eatables/snacks is functional during all working days.

FVSc & AH, RS Pura:

- Sports play field for cricket, football, volleyball and athletics available and under use. Two Badminton Courts have been developed in the Girls Hostel, RS Pura campus. Table Tennis Tables, Carrom Board have been installed in the Girls hostels, Students hostels and bats and TT balls are being provided to the students.
- A small Gymnasium for hostel boarders is being maintained in the hostel.
- A covered stage and open air space for seating of audience is available at RS Pura.
- A conference hall with capacity of 400 plus and mini halls with capacity of 60 persons is available at RS Pura campus for literary activities, cultural events/ conferences etc
- Students Canteen**:** To cater the needs of the hostellers and day boaders a student canteen has been started at R. S. Pura campus of the University.

Students Activities

14th Foundation Day was commemorated by the SKUAST-J on 20th September, 2012 Fresher's day was celebrated on 12th October, 2012.

14th Foundation day, SKUAST-J

- Intra Faculty Sports meet was held from 5 to 9th November, 2012 at R.S.Pura and Chatha campuses of the University.
- Intra Faculty cultural meetsdisplay your talent was organized on 5th & 6th November, 2012.
- Symposium and Rally on World AIDS Day by the students of the University was organized on 1st & 7th December, 2012.

Intra Faculty meets -Display your talent *Rally on World AIDS Day*

2.11 Participation in Inter-University competitions:

- A team of the students of the University participated in Inter University Cricket tournament organized by Aligarh Muslim University, Aligarh (U.P.) from 15th November to 3rd December, 2012.
- Employees Cricket team of the University participated in Vice Chancellor T20 Cricket tournament 2012 at University of Jammu w.e.f. 19th November to 3rd of December, 2012.
- Students of the SKUAST-J participated in North Zone Inter University Elocution Contest organized by Punjab Agricultural University, Ludhiana on Ist December, 2012.
- Students of SKUAST-J participated in REVERIE -2013 at NDRI, Karnal w.e.f. 21 to 23rd of March, 2013 & excelled in all the team and individual events. Best performer of Reverie 2013 was won by Mr. Avinesh Student of F.V.Sc.& AH. The participating team won overall championship of the programme.

2.12 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.

2.13 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.

2.14 Health Care Facilities

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

S.No.	Type of case	No.
1	Total OPD	3870
2	Students Treated	1951
3	Staff Treated	1919
4	Hostlers	1308
5	Non-Hostellers	643
6	Medical Cases	3336
7	Surgical Cases	534
8	Male Patients	3014
9	Female Patients	856
10	Patient Referred	47
11	Emergencies Handled	272
12	Indoors	117
13	Lab Tests	328
14	Physiotherapy (Sessions)	269
15	Total patients treated in different campus	400

Health Centre Activities

- Free health check up camp was organized by SKUAST-Jammu, health centre in collaboration with R.G. Stone & super specialty hospital, Delhi on 18th & 19th July, 2012.
- Voluntary blood donation camp was organized on 20th of September, 2012 in collaboration with Deptt. of Blood transfusion & Immunnohepatology, Govt. Medical College, Jammu in which 36 persons donated the blood.
- Dental care unit was established at Health Centre, Chatha during the month of September, 2012.
- A medical camp was organized by Health Centre, SKUAST-J at Regional Horticulture Research Station, Sartangal Bhaderwah on 17th November,2012 in which Blood Sugar & haemologobin was estimated & medicines were distributed to approximately fifty patient free of cost,
- A lecture on the topic "Epidemic of heart diseases" was organized at SKUAST-J Chatha Campus on 12th December,2012. Lecture was delivered by Senior Interventional Cardiologist Dr. Dinesh Sudan of Sudan Heart Care Centre, Jammu.

Student donating blood during Blood Donation Camp

- Free health check-up camp was organized for the residents of village Chatha on 14th of February,2013 in which 200 patients were treated by the medical officer's of the university and were given immediate medicines free of cost. On spot Blood Sugar estimation and other Lab. Tests were done free of cost.

2.15 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.

2.16 Educational Tour

- Educational tour was conducted by B.Sc. (Ag)/Biotechnology students of batch 2010 w.e.f 16th to 31st July, 2012 in which 29 students visited Leh & Kargil districts of J&K state.
- Educational tour was conducted by 4th year (2nd semester) batch2008 students of B.V.Sc. & A.H w.e.f 5th to 14th September, 2012 in which 43 students visited Kashmir & Ladakh areas of J&K State.
- Educational tour was conducted outside the state viz; Palampur, Shimla, Chandigarh, Pantnagar, Karnal, Delhi, Hissar and Ludhiana by B.Sc. (Ag)/ Biotechnology by students of batch 2010 w.e.f 15th January to 3rd February, 2013.
- Educational tour was conducted outside the state viz; NDRI, Karnal and IVRI, Izatnagar, Bareilly by 4th year B.V.Sc &AH students w.e.f 16th to 23rd March, 2013 in which 52 students accompanied by two Faculty scientists. During the tour the student visited national institutes like IVRI, NDRI and State Agricultural universities such as GADSVASU, G.B. Pant University, Pantnagar. Besides also visited places of historical importance in North India.

Final year students of BVSc & AH on their visit to NDRI Karnal

B.Sc.(Ag)/Biotechnology students during their visit to Agromet Centre, PAU, Ludhiana

B.Sc.(Ag)/Biotechnology students during their visit to University of Horticulture and Forestry, Solan

2.17 RAWE PROGRAMME

The last Rural Agriculture Work Experience (RAWE) programme was offered in the first semester of 2012-13 to the final year students of B.Sc Agriculture, batch 2009 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 20 students registered for RAWE 2012-13. The students were paid a stipend of Rs. 1500 each per month for 6 months amounting to Rs. 1,80,000.

2.18 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 2012-13, 46 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/- & total expenditure was Rs. 4,96,800/-.


Students of B.V.Sc & A.H. during internship programme

2.19 LIBRARY

Usage

Campus	Books Borrowed (Issued / Returned)		Literature referred in the Library Books/Journals/Back Volumes/Current Issues	
	Per day	Total	Per day	Total
Central Library, Chatha	19	4249	25	5650
University Library, R.S.Pura	15	4006	12	3025
Total	**34**	**8255**	**37**	**8675**

Book Collection

Campus	Books
Central Library, Chatha	*21476**
University Library, R.S.Pura	*5902**
Total	**27378***

*** Includes Gratis Books, Book Bank Books etc. up to 31.03.2013**

Online Databases/e-Journals/e-books Collection

S.No.	Central Library, Chatha and University Library, R.S. Pura
1	**CeRA* Consortium:** access to about 2900 e-journals through exclusive VSAT facility available in Online Library of Central Library, Chatha
2	**CAB Abstracts:** access to over 9 millions bibliographic and full text articles
3	**CABI e-books:** perpetual access to about 625 CABI e-Books related to agriculture and allied disciplines

***CeRA: Consortium for e-Resources in Agriculture**

New Additions

Campus	Books	Journals (Issues/Number)	Thesis Ph.D/M.Sc/MV. Sc	Reports	News letter	Gratis Books	ST
Central Library, Chatha	624	433	77	70	228	75	NA
University Library, R.S.Pura	210	239	30	-	-	1	NA
Total	834	672	107	70	228	76	NA

Journal Subscription (Print)

Campus	Journals		Total
	Indian	Foreign	
Central Library, Chatha	18	36*	54
University Library, R.S.Pura	4	28*	32
Total	22	64*	86

* 2012 subscription

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		Nil		NA

Reprographic Services

Campus	No of exposures taken		
	Official purpose	On payment	Total
Central Library, Chatha	12570*	83092	95662
University Library, R.S. Pura	7212*	4942	12154
Total	19782*	88034	107816

* includes official print outs/photostat, wastage, serviee check, etc.

Receipts

Campus	Overdue charges	Collection from lost tickets	Cost recovered from lost books	Text book bank	Reprographic Service	Internet	Total (₹)
Central Library, Chatha	7986	160	1799	-	86263	-	96208
University Library, R.S. Pura	15112				4942		20054
Total	**23098**	**160**	**1799**	-	**91205**	-	**116262**

Other Services provided

Campus	News Clippings	Internet	Journals Online	e-Books	CD ROM services	Miscellaneous (Documentation Service)
Central Library, Chatha	Yes	Yes	Yes (2900 e-journals through CeRA)	Yes (625 e-books from CAB International)	Yes	Yes (On-demand)
University Library, R.S. Pura	Yes	Yes			Yes	Yes (On-demand)

Online Library

Central Library, Chatha

With the addition of ten more computers, during the current financial year, presently the library is functioning with twenty computers for accessing about 2900 e-journals through CeRA Consortium, CAB Abstracts Online, CABI e-Books and other web resources available through internet by the students, faculty and staff.

Solar Power Plant

Central Library, Chatha

Solar Power Plant of 30 KwA is installed exclusively for the Library building.

University Library, R.S. Pura

Functioning with ten computers for accessing about 2900 e-journals through CeRA Consortium, CAB Abstracts Online, CABI e-Books and other web resources available through internet by the students, faculty and staff.

University Library, R.S. Pura

Solar Power Plant of 20 KwA is installed exclusively for the Library building.

Training provided to Library Users:

S.No	Title	Participants	Venue
1	Orientation programme pertaining to the use of CeRA and Library resources for the post graduate students (PGS501)	120	Central Library, Chatha
2	User education programme regarding how to use e-resources available through Consortium of e -Resources in Agriculture (CeRA)	118	

Library Membership

Types of Members	Central Library, FOA, Chatha	University Library, FVSc&AH, R S Pura
Faculty & Staff	220	50
Ph.D	66	88
PG	109	28
UG	198	252
Total	**593**	**418**

Subscription to Newspapers and Magazines

Library	Newspapers	Magazines
Central Library, Chatha	12	15
University Library, R.S.Pura	4	11
Total	**16**	**26**

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 facility 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, diary, 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 India Council of Agricultural Research (ICAR), state plan and non plan and various other sponsoring agencies viz HTMM, DBT, DST, MES, NMPB etc. The research outputs accrued from different disciplines are reported as under.

3.1 Faculty of Agriculture

3.1.1 Plant Breeding & Genetics

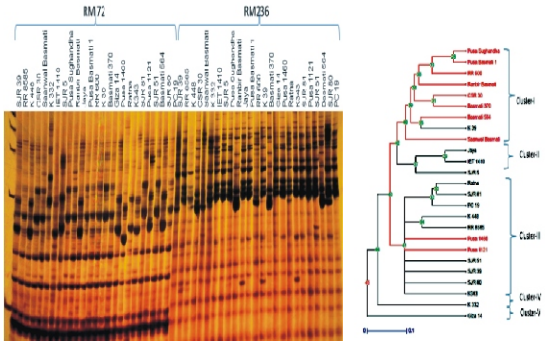
(A) Rice

(i) Varietal development programs:

In rice, SJR 51 (IET 21368) having a yield potential of 50-55 q/ha is under evaluation in the mid hill ecology. The entry was evaluated in IVT-MH in *kharif* 2009 and the same had been evaluated in the form of minikit trials by State Deptt. of Agriculture w.e.f *kharif* 2010-2012 in the different districts of Jammu province. The variety is moderately resistant to blast which is a major disease of hill ecology.

(ii) Molecular Characterization of 25 Rice Genotypes including *Basmati* and Non-*Basmati* lines

A set of 25 rice genotypes were used for characterization using SSR and RAPD markers (see the fig below for a representative gel image showing clear polymorphism and discrimination of almost all the 25 rice genotypes using SSR markers). The cluster analysis of 25 genotypes showed clear cut discrimination of all the basmati lines except Pusa 1460 and Pusa 1121 from the non-basmati lines. The analysis also showed separate clustering of Giza 14 indicating its iverse nature from the other lines.



(B) Wheat

Development of wheat varieties for Jammu region

(I) JAUW 584

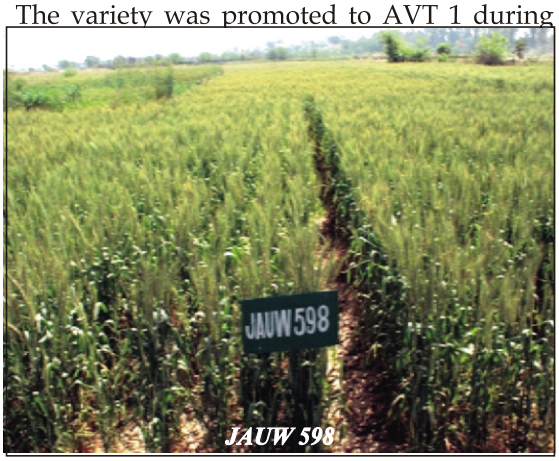
This variety was tested in National initial varietal trial-IA, during *Rabi* 2009-10 and was promoted to Advance varietal trial-1 for timely sown irrigated conditions during *Rabi* 2010-11

in North-west plain zone (NWPZ) of the country. The minikit trials of this entry were conducted in the districts of Jammu, Kathua, Udhampur and Reasi through Department

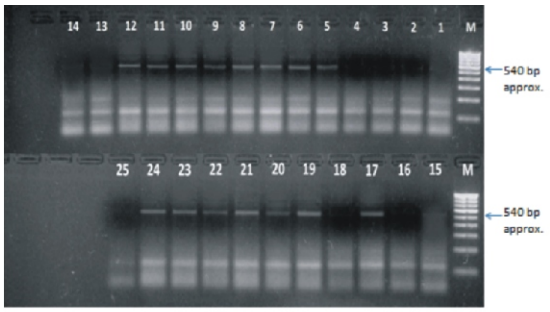
of Agriculture. The proposal for considering the release proposal of this entry has been submitted to University REC for its further submission to State Seed Sub Committee for state release

ii) JAUW 98

This entry is suitable for rainfed areas. It was nominated for testing in NIVT (rainfed) during Rabi 2011-12 in National testing programme. The entry has an average yield of 41.7 q/ha in NWPZ (zone of adaptation). It ranked third out of 36 entries tested at 12 locations throughout the country (NIVT 5A 2011-12). The variety was promoted to AVT 1 during



Rabi 2012-13 (rainfed) trials considering its superior performance in NIVT.



PCR amplification of winter wheat genotypes using *Yr10*F, *Yr10*R primers for *Yr10* gene. In figure M indicates the ladder marker.

Evaluation of winter wheat germplasm and molecular characterization for resistance to stripe rust

A set of 25 winter wheat germplasm lines were evaluated for stripe rust resistance against two prevalent physiologic races of stripe rust i.e., 78S84 and 46S119 and a set of stripe rust resistant/susceptible lines were obtained. The lines were further characterized using SCAR/STS molecular markers linked with Yr10 and Yr36 genes.

(C) Oilseeds (Rapeseed-Mustard)

Development of gobhi sarson (Brassica napus L.) varieties for irrigated as well as rainfed ecologies of Jammu region

(i) RSPN 29: A high yielding strain of gobhi sarson, RSPN 29 (1769.4 kg/ha) developed by the division was evaluated continuously for three years. The performance over years revealed an average increase of 13.0 per cent

over the national check variety GSL-1(1538.9 kg/ha). It is moderately resistant to aphid and alternaria blight. This strain is being nominated for testing in AICRP-R/M trials.

(ii) Development of raya (Brassica juncea L.) varieties for different ecologies of Jammu region

A newly CVRC released high yielding variety of Raya, NRCDR-2 (1753 kg/ha) has been identified on the basis of its superiority over

national check variety Varuna (1543 kg/ha). The data revealed an average increase of 11.9 percent in seed yield over the national check variety. It has high number of primary branches, high pod intensity and lodging resistance.

(D) Maize

(i) Development of single cross maize hybrids of different maturity groups

- Seed of elite inbred lines was increased by hand pollination; these are Being used for

developing single cross hybrids

- A multi-location testing at Poonch, Chatha and Udhampur of 13 newly developed composites/hybrids were conducted during kharif 2012. Yellow grain hybrid PHM-12 (6618 kg/ha) displayed yield increase of 25.2 per cent over check Kanchan-517 (5286 kg/ha) followed by UDMH-101 (6585 kg/ha) and UDMH-108 (6521 kg/ha)

- White grain composite PMSY-4 (6587 kg/ha) exhibited yield increase of 25.4 per cent over check Kanchan-612 (5175 kg/ha) followed by hybrid PHM-11 (6447 kg/ha) and PHM-34 (5943 kg/ha)

(E) Common bean

(i) Collection, evaluation and characterization of common bean (Phaseolus vulgaris L.) landraces grown in Jammu region J&K for disease resistance

- A set of >140 common bean landraces have been collected from different

common bean growing regions of Jammu province

- Collection sites included Bhaderwah, Doda, Udhampur, Rajouri, Kathua, etc

- The seed collection from above sites has been sown at Research farm Chatha and Bhaderwah

- Selection for single plants has been made from the seeds of each location
- The single plant selections will be grown for generation advancement and molecular characterization at Bhaderwah.

(ii) Development of core collection for evaluation and gene discovery for Zn, Fe and protein content

A core of 300 lines representing common bean lines from different parts of J&K, national level and from CIAT Colombia have been developed for the discovery of genes/QTLs for Zn, Fe and protein content under a DST project

3.1.2 Vegetable Science and Floriculture

Refinement/Development of Trench Techniques for Production of Early Vegetables on River banks

North-East orientation was found to be the best in all the cucurbits with less mortality of

the seedlings because of low temperature resulting in more number of female flowers and higher yield than the other two directions under study.

Trench geometry of 35m x1.0m up to ground water availability level out significantly yielded the other two geometries under study in all the cucurbit crops.

Wind breakers at an angle of 60^0 were found to be the best to protect the seedlings from frost and cold waves during intense cold conditions. Minimum mortality of the seedlings was recorded at this orientation as compared to other two angles viz. 45^0 and 30^0 under study. This angle also facilitates inter cultural operations in a better way and was found to be at par with the treatment comprising of two tier protection from frost.

Effect of integrated nutrient management on growth and seed yield of okra

Fruit diameter, marketable yield and microbial biomass were highly influenced and statistically significant with 75 per cent of chemical fertilizers and seed treatment of Azospirillum. The plant height and stem diameter were at par with 50 per cent RDF through inorganic fertilizers and seed treatment with PSB and 75 per cent RDF with seed treatment of Azospirillum. The branches per plant, fruit length, fruit weight and germination percentage were at par with 50 and 100 per cent RDF and seed treatment with Azospirillum. 75 per cent of chemicals fertilizers with soil treatment of Azospirillum was statistically significant in steam diameter, seed vigour index, germination percentage, 100 seed weight, seed yield and nutrient uptake. Moreover 75 per cent of RDF with soil treatment with Azospirillum was at par for marketable yield, dry matter accumulation, lacination index and microbial biomass with 50 per cent and 100 per cent RDF (60:30:30::N:P:K).

Evaluation of spring cultivars of potato for growth and tuber yield

Eight Cultivars of potato namely K. Chandermukhi, Gulmarg Special, K. Jyoti,

PP-2500, K. Giriraj, K. Himalini, PP-48 and K. Sailza were evaluated during spring 2012 for growth and yield attributes. Maximum plant height (45.3 cm) and tuber yield (182 q/ha) was recorded in cultivar in K. Himalini. All the varieties showed non-significant response towards no. of tubers/ plant (recorded 90 DAP) and weight of tubers by grade (g).

Collection, evaluation and introduction of promising cultivars of Ornamental crops

Gladiolus

Out of 45 cultivars of gladiolus evaluated for flower, corm and cormel production, cultivars, viz. Eurovision, White Prosperity, Gunjan, Jyotsana, Novalux and American Beauty were found to be promising. Among these Eurovision was found to be the best in flower production and Gunjan was found to be best in corm and cormel production.

Promising Cultivars of Gladiolus

Chrysanthemum

Out of 35 cultivars of Chrysanthemum evaluated for flower production; Gulmohar, Thai Ching Queen and

Kanchil in Standard cultivars are more promising than others

and among Spray Cultivars; Maghi white were found to the best.

Promising Cultivars of Chrysanthemum

Dahlia

Out of 13 cultivars of Dahlia evaluated for flower production; Kenya Pink Spot, Saheli, Shanti,Kenya Yellow Red cultivars were found to be more promising than others.

Kenya Pink Spot *Saheli*

Shanti *Kenya Yellow Red*

Promising Cultivars of Dahlia

Tuberose (Rajnigandha)

Out of seven varieties (Suvasini, Shringar, Prajwal, Nirantara, Vaibhav, Calcuttia Single and Calcuttia Double) the varieties Prajwal and Nirantara outperformed all other varieties evaluated under sub tropical conditions Jammu.

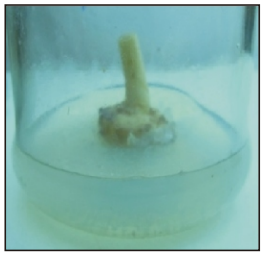
Nirantara

Prajwal

3.1.3 Fruit Science

In-vitro propagation method developed for banana cv. Grand Naine

Standardized an effective low cost high volume propagation technique for Graind Naine cultivar of banana upto the extent of its commercialization. A protocol has been developed using shoot tips from sword suckers as explants and sterilization with $HgCl_2$ (0.1 %) for 6 minutes has given minimum culture contamination. Murashige and Skoog (MS) medium supplemented with BAP 4 mg/l and IAA 2mg/l resulted in maximum establishment of cultures in lesser time and maximum multiple shoots. Maximum rooting was obtained on MS medium (half strength) supplemented with IBA 1 mg /l and 200 mg/l activated charcoal.



CULTURE ESTABLISHMENT

SHOOT MULTIPLICATION

ROOTING

ESTABLISHMENT IN POLYBAGS

Rejuvenation of old/senile orchards of mango

In general, 40-45 years old mango trees exhibit decline in fruit yield because of dense and overcrowded canopy. The trees do not get proper sunlight resulting in decreased production of shoots. New emerging shoots are weak and are unsuitable for flowering and fruiting. The population of insects and pests builds up and the incidence of diseases increase in such orchards. These unproductive trees can be converted into productive ones by pruning with the developed technique.

Fifty year old mango orchard (Dec, 2010)

Headed back plants (Jan, 2011)

Rejuvenated mango plant (Aug, 2012)

Flowering in rejuv enated mango plant (Feb, 2013)

Innovative technique for orchard establishment in waterlogged/high water table areas

Water logged/ Flooded orchard area, Chatha

Water logging in orchard area

Protective Structures

Re-modelling of orchard

Lay out of Re-modelled orchard

Fruit Plantation in Re-modelled orchard

3.1.4 Post Harvest Technology

Mushroom Blended Value Added Products

Mushrooms being rich in protein, non-starchy carbohydrates, dietary fibers, Vitamin B complex and low in fat value but its shelf life is very short. Thus an attempt was made to devise a method for developing mushroom blended biscuits and papads.

For the development of biscuits wheat flour was blended with mushroom powder in the ratios of 100: 0, 95 : 5, 90:10, 85: 15, 80:20, 75:25 and 70:30 and for the development of papads the green gram flour and mushroom powder were blended in the ratios of 100:0, 95:5, 90:10, 85:15, 80:20, 75:25 and 70:30, respectively.

Mushroom powder blended *Papad* and Biscuits

On the basis of sensory score, storage studies and nutrient contents, the best quality biscuits can be developed from the blend of 80:20::wheat flour: mushroom powder and papads from the blend of 90:10::green gram: mushroom powder. The nutrient content of blended biscuits were found to be 2.51, 8.75, 15.83 and 69.82 % moisture, crude protein, crude fat and carbohydrates and that of papads as 10.90, 24.15, 4.23 and 53.28 % moisture, crude protein, crude fat and carbohydrates, respectively. The cost of production for biscuits and papads where as Rs. 153/kg and Rs. 206/kg, respectively.

Standardization and evaluation of protein rich maize based instant porridge mix

A method was standardized for developing the instant porridge mix from germinated maize flour, sprouted soy flour/boiled kidney bean

Yellow Maize

flour blended in various ratios along with addition of mango powder, carrot and lotus rhizome shreds, packed in aluminum pouches and stored at room temperature to assess changes in quality parameters. There was increase in the crude protein and ash and decrease in crude fat, crude fiber and carbohydrates on germination of maize grains and soy beans. The porridge mix prepared from maize flour: soy flour: lotus rhizome:: 65:25:10 was adjudged the best as it provides 17.29, 5.59 and 61.45% protein, fat and carbohydrate, respectively with an energy content of 362.6 kcal and 5.52 mg/100 g of iron content. It was at par with porridge mix prepared from maize flour: kidney bean flour: lotus rhizome shreds :: 55:35:10 having 16.99, 3.15 and 69.67 % protein, fat and carbohydrate, respectively with energy content of 278.7 kcal and 7.77 mg/100 g of iron content. There was significant increase in the â- carotene content (2.57-3.0 mg/100 g) by adding the carrot shreds and mango powder in the instant porridge mix which was acceptable organoleptically by all judges. As the storage period advanced, carbohydrates and free fatty acids increased in all the treatments whereas the crude protein, fat, iron and â-carotene decreased slightly. There was non-significant effect of the storage on the moisture, ash, fibre, colour, taste, appearance and overall acceptability of the porridge and the product was shelf stable up to six months of storage. This study demonstrated successful use of locally available and affordable foods to enhance nutritional quality of instant foods

Kidney Beans

Boiled Kidney Beans

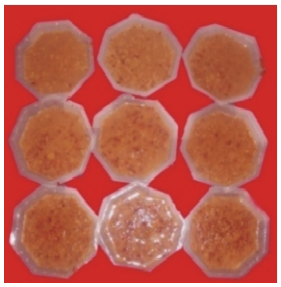
Soybean

Sprouted Soybean

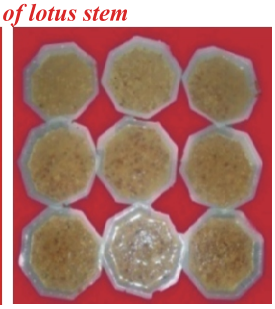
Carrot

Carrot Shreds

Shreds of lotus stem



Maize Kidney bean porridge



Maize-soya bean porridge

Screening of aonla cultivars for processing

Four cultivars of aonla fruit, viz Banarasi, Chakaiya, NA-7 and Desi were assessed for developing value added products like aonla supari and sauce.

On the basis of organoleptic parameters, i.e colour, chewiness, taste, and overall acceptability, and retention of ascorbic acid content (42.8 %), the cultivar Banarasi was found the best for developing supari followed by Chakaiya. The desi aonla was best suited for the development of sauce.

Aonla supari Aonla sauce

3.5 Plant Pathology

♦ Integrated Disease Management for wilt and Botrytis blight in gladiolus crop.

The gladiolus crop, which is fast being adopted by the growers of the region for it high economic returns, is severely attacked by wilt and Botrytis blight. Integrated disease management approach was worked out to manage the diseases, which included corm treatment and foliar application with carbendazim+mancozeb in the solarized (SS) plots, SS+carbendazim or SS+FYM enriched with Trichoderma viride.

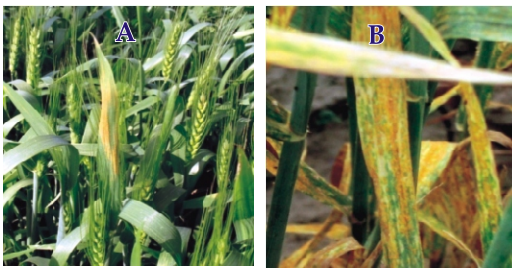
♦ Management of tomato leaf curl

Leaf curl is emerging as a major disease in the solanaceous vegetable crops in the region. On the basis of the reduction in the per cent disease index and reduction in the insect population under field conditions imidacloprid, thiomethoxam, methyl-o-demeton, profenophos and dimethoate were significantly effective in tomato crop.

♦ Variability studies in Bipolaris sorokiniana causing spot blotch of wheat

The variability of, Bipolaris sorokiniana, the causal pathogen of spot blotch of wheat was studied and on the basis of cultural charectrictics, conidial morphology, sporulation and pathogenic nature, the isolates was categorized into 3 groups. Maximum pathogenic virulence was observed in isolate BS-5, inducing susceptible (S) type of infection response (IR) on Agra Local, PBW343 and HD 2733. Isolate BS-10 was the least virulent as all the genotype tested showed R type of IR, except Agra local which showed S type of IR. Isolate BS-4 was the most virulent on resistant genotype RSP-561, which showed S type IRs, while with the remaining isolates it showed R type IRs. DBW 16, DBW 17 and RSP 561 were found resistant against B. sorokiniana, whereas, other cultivars showing susceptible response under field conditions.

♦ Management of yellow rust of wheat in Jammu - A success story:



Initial (A) and heavy (B) infection of yellow rust in wheat crop

Yellow rust of wheat had been appearing in severe form in sub tropics of Jammu posing great economic threat to the livelihood of the farmers of the region. The disease attained severe proportions, particularly in the irrigated belts of Jammu, Samba and Kathua districts, taking heavy toll on all the popular wheat varieties. However, due to timely intervention of the University by way of several trainings/awareness camps for the officers of the line department as well as farmers, regular field visits, surveys and surveillance of wheat crop and the sustained campaign, the disease was managed. For this endeavour a close liaison was maintained with the Department of Agriculture and the officials in the department were kept abreast with the disease progress in the region and the remedial measures were

suggested to them from time to time. The efforts have resulted in the significant reduction in the severity of yellow rust in the area for the last two years.

- Development of consortium of bio-control agents for the IDM approaches:

In order to minimize the dependence on pesticides, the Division is in the process of popularizing the use of fungal and bacterial biological control agents against a number of plant diseases. Talc based formulations of Trichoderma viride, T. harzianum, T. virens and bacterial bio-control agent, Pseudomonas florescence have been developed and are made available to the development departments for evaluation and validation in the farmers' fields, where their performance has been found highly encouraging.

- Exploring the microorganisms from the rhizosphere having biocontrol properties and plant growth promoting traits:

In order to explore the rhizosphere microorganisms for their biological control abilities and plant growth promoting traits, 25 rhizobacteria were isolated from agricultural ecosystem of cultivated tomato soils. Isolates were screened for antagonistic activity against Fusarium oxysporum, Rhizoctonia solani and Alternaria solani adopting agar well diffusion method and measuring zones of inhibition of fungal growth surrounding the well after seven days of incubation at 26±2^{0}C. Based on superior antagonistic capability six isolates (SKJ-07, SKJ-15, SKJ-18, SKJ-23, SKJ-24 and SKJ-25) were selected for further investigations. Selected isolates were also tested for their siderophore production ability to ensure their saprophytic competitiveness against the pathogens in the rhizosphere. These isolates were identified using BIOLOG technique, and the isolates were designated as SKJ-07 (Bacillus sp.), SKJ-15 (Bacillus sp.), SKJ-18 (Bacillus sp.) and SKJ-23 (Pseudomonas sp.).

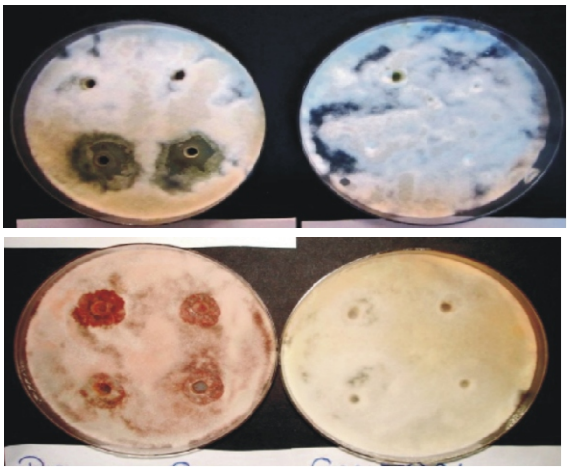
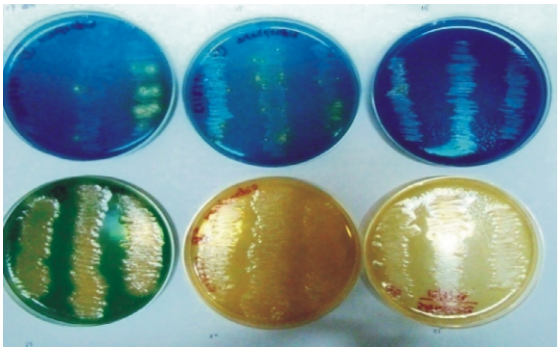
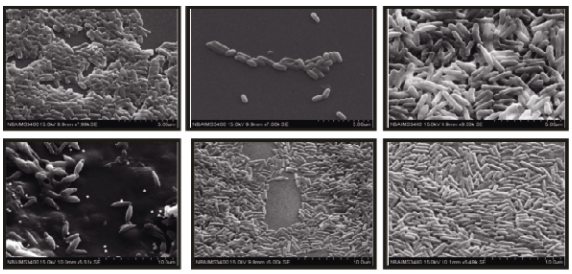


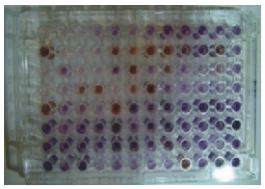
Fig showing inhibition zone formation by different isolates against the test pathogens



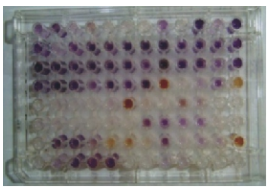
Comparative sidrophore production by (top left bottom right) SKJ-07, SKJ-15, SKJ-18, SKJ-23, SKJ-24 and SKJ-25 isolates



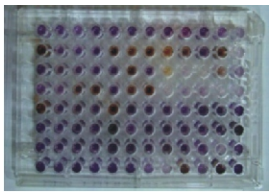
Morphology of (top left-bottom right)
SKJ-25, SKJ-15, SKJ-23, SKJ-24, SKJ-18 and SKJ-07 isolates



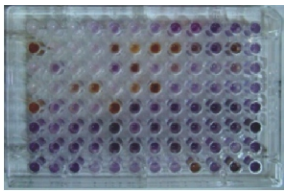
SKJ-07
(*Pseudomonas aeruginosa*)



SKJ-15
(*Bacillus pumilus*)



SKJ-18
(*Breviacillus laterosporus*)



SKJ-23
(*Paenibacillus pabuli*)

Quality Spawn Production:

Quality spawn of various commercially grown mushrooms *viz.*, button mushroom, oyster mushroom and milky mushroom are being

Spawn Laboratory

Training on mushroom cultivation

Made available to the farmers through various externally funded projects, KVKs and demonstration units

3.1.6 Entomology

Entomophage park for conservation of natural enemies

The studies revealed that 61 species of natural enemies were recovered from the entomophage park, as compared to 22 and 20 species in cereal and vegetable fields, respectively. Similarly, the abundance of parasitoids (ichneumonids, braconids, scelionids and chalcidoids) was significantly higher in the park as compared to surveyed agricultural fields. Such parks may play an important role in maintaining the biodiversity of natural enemies and enhancing natural pest control.

Entomophage Park, SKUAST-J, Chatha

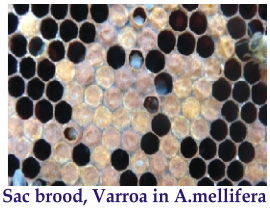
Development of IPM modules in vegetables

More than 1000 pheromone traps have been distributed among the farmers covering over 100 ha of areas in tomato, brinjal and cole crops in Jammu region during 2012-13. IPM modules have resulted in 30-40 per cent increase in yield. The pesticides sprays have come down from twelve to two (need based).

Honeybee diseases

Studies on honeybee diseases revealed the presence dreaded European foul brood

Varroa Mite, EFB in A.mellifera



Sac brood, Varroa in A.mellifera

disease. The disease was more severe (25-30 %) in *A. cerana* colonies compared with *A.mellifera* (10-15%). The predatory wasps identified included *Vespa velutina, V. orientalis , V. cincta, V. basali and V. mandarinia*. The *V. velutina and V. basalis were recorded as major enemies of A. mellifera.* The maximum wasp attack was

observed from July-September. The maximum wasp incidence was in morning (9.00-11.00 am). The presence of ectoparasitic mites, *V. destructor*, *T. clareae*; *T. koenigerum* and stored product mites, *Tyrophagus longior, Caloglyphus indica, Hypopus* and phoretic mites *Neocypholaelaps indica* were observed in debris as well as on the bodies of honeybees.

3.1.7 Agroforestry

- *In-vitro* propagation studies on Harad (*Terminalia chebula*) revealed that maximum shoot multiplication was achieved at 1.2 mg/l BAP and 0.05 mg/l NAA whereas, a concentration of 0.5 mg/l GA_3 on MS media was suitable for obtaining seed germination.

- Studies on standardization of agro-techniques of *Ocimum sanctum* revealed that application of Nitrogen @ 60 kg/ha along with vermin-compost @ 3 t/ha at a plant spacing of 40 cm x 40 cm resulted in maximum fresh herbage yield.

- Application of irrigation of 40 mm depth given at IW:CPE ratio of 0.8 was significantly beneficial to increase the leaf and gel yield of *Aloe Barbadensis*.

Effect of irrigation scheduling in *Aloe barbadensis*

3.1.8 Agronomy

Efficacy of relatively new-pre and post emergence herbicides against complex weed flora in transplanted rice (*Oryza sativa L.*)

- The predominant weed flora observed in the experimental field during the crop growth period included *Echinochloa crusgalli*, *Echinochloa colonum* and *Cynodon dactylon*; *Cyperus iria*, *Cyperus difformis*, *Cyperus rotundus* and *Fimbristylis milliaceae*; and *Caessulia axillaries*, *Eclipta alba*, *Ammania* and *Commelina* species in the group of grasses, sedges and broad leaved weeds, respectively.

- Application of herbicides either with Penoxulam (@ 22.5 g/ha 10 days DAT) or Bispyrebac (@ 30 g/ha 30 DAT) produced the highest rice yields of 49.47 and 48.70 q/ha, respectively and were observed to be at par with rice yield recorded under weed free treatment.

- Penoxulam and Bispyrebac also registered their superiority in controlling all the categories of weeds (grasses, sedges and broad leaved weeds) conforming their wide spectrum herbicidal action with their mean weed control efficiency values of 89 and 86 per cent, respectively.

- Pendimethalin although also categorized as wide spectrum herbicide but has been observed to be less efficient in controlling weeds with a weed control efficiency of 73-75 per cent.

Refinement of agro-techniques for promotion of sugarcane cultivation under diversified crop sequence in assured irrigated conditions of Jammu region

- Brown manuring of berseem helped to add biomass of 203 q/ha, whereas berseem fodder yielded 540 q/ha. Crop sequence involving gobhi sarson gave seed yield of 5.33 q/ha.

- Among the different crop sequences, Berseem (Brown manuring)-Sugarcane-Ratoon produced highest sugarcane yield (996 q/ha.)

- Among the different planting method of sugarcane the highest cane yield (965 q/ha) was recorded in ring (pit) method.

Effect of sowing dates on growth and yield of linseed

- The results of first year study revealed that among the four dates of sowing (20th Oct., 30th Oct., 10th Nov. and 20th Nov.), the crop sown on 20th Oct. and 30th Oct. though significantly at par, recorded higher linseed seed yield as compared to other dates of sowing.

Effect of Fertility levels on the growth and yield of linseed

- With increase in fertility levels, the linseed yield showed significant increase. Among the four fertility levels (control, 37.5:22.5:15, 50:30:20 and 62.5:37.5:25 kg/ha of N:P:K), the crop fertilized with 62.5:37.5:25 kg/ha of N:P:K recorded significantly higher yield over control and fertility level of 37.5:22.5:15 kg/ha of N:P:K, but remained at par with fertility level of 50:30:20 kg/ha of N:P:K.

Impact of micronutrients (Zn and B) application in mustard-maize cropping sequence

- The result of one crop cycle of mustard-maize cropping system revealed that the application of recommended dose of NPK & S combined with either alone application of Zinc (5 kg/ha) or in combination with Boron (1 kg/ha) recorded significantly higher mustard yield over control and other treatment combinations. However, soil applied Zn and B was found significantly superior than foliar applied.

Long term weed control trial on tillage in maize-wheat cropping system

- Highest wheat grain yield (37.98 q/ha) was recorded under herbicide treatment of metribuzin @ 200 g/ha which was found at par with two hand weedings at 30 and 60 DAS. Wheat grain yield with metribuzin @ 200 g/ha recorded 85.6 percent increase over the un-weeded control plots. However in maize crop, significantly highest grain yields to the tune of 40.9 q/ha was recorded with two hand weedings which was followed by application of Atrazine @1kg/ha.

Long term weed control trial on rice-wheat cropping system

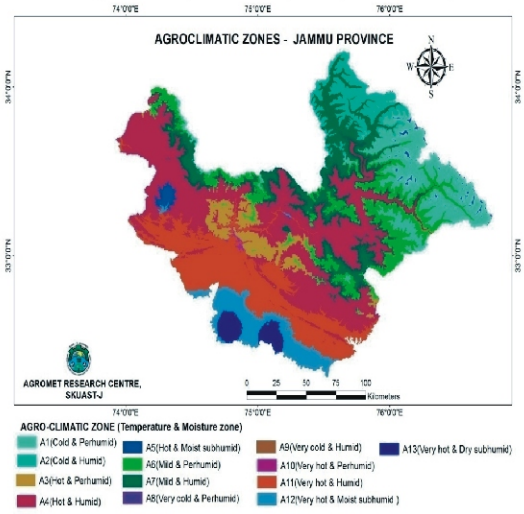
- Significantly highest wheat grain yield of 37.79 q/ha was recorded in the treatment with Isoproturon @1 kg/ha, which was at par with the treatments where 0.75 kg Isoproturon + 1 % tank mix urea applied. However, highest rice grain yield to the tune of 33.90 q/ha was observed with herbicidal application of Butachlor @ 1.5 kg/ha followed by two mechanical weeding.

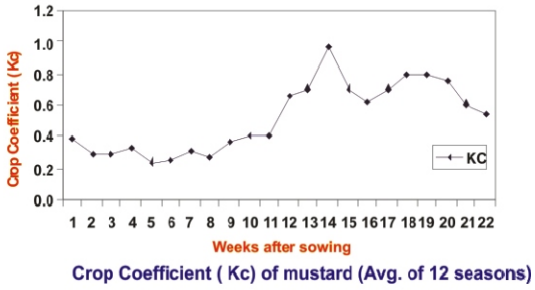
Performance of new timely sown wheat genotypes under restricted irrigation conditions

- One irrigation at CRI and two irrigations at CRI and tillering stage remained statistically at par to each other but significantly superior over no irrigation. Among the varieties, *PBW 550* recorded significantly superior yield over all other varieties under study followed by *PBW 175* and *WH 1080*.

3.1.9 Agrometeorology

- Agro-climatic zones of Jammu region have been identified based on temperature, rainfall and potential evapotranspiration (PET) maps of Jammu region prepared in geographical information system (GIS) using actual meteorological data and remote sensing satellite imagery of terra- ASTER (Advanced Spaceborn Thermal Emission and Reflection Radiometer) Satellite. The identification of these zones is a significant step towards developing location specific research and regionalizing agricultural research in Jammu region.





Crop Coefficient (Kc) of mustard (Avg. of 12 seasons)

- Analysis of seasonal rainfall of five locations, *i.e* Batote, Bhaderwah, Katra, Banihal and Jammu revealed that S-W *Monsoon* season (June-Sept) received the highest rainfall except Banihal. Whereas, in Post- *Monsoon* season (Oct-Dec) all locations received less rainfall.

- Climate change study revealed that warming of the region was noticed and the temperature had gone up 0.3^0C to 0.66^0C per decade, respectively of Jammu region. This may affect the crop adversely.

- Crop Coefficients on weekly basis of mustard under sub-tropical condition of Jammu region were derived from 12 seasons (lysimeter data) of each crop to determine the crop coefficient for use which is being used in Agromet Advisory Services for irrigation purpose.

- The bi-weekly crop weather bulletin are being issued regularly for the farmers of Jammu region as advisory with regards to sowing, irrigation application fertilizer and spraying of pesticide on the basis of weather forecast received from India Meteorological Department, Pune.

The same is being disseminated through press, electronic media and line departments. In addition the same is being uploaded in websites imd.agrimet.gov.in and skuast.org.

3.1.10 Soil Science & Agricultural Chemistry

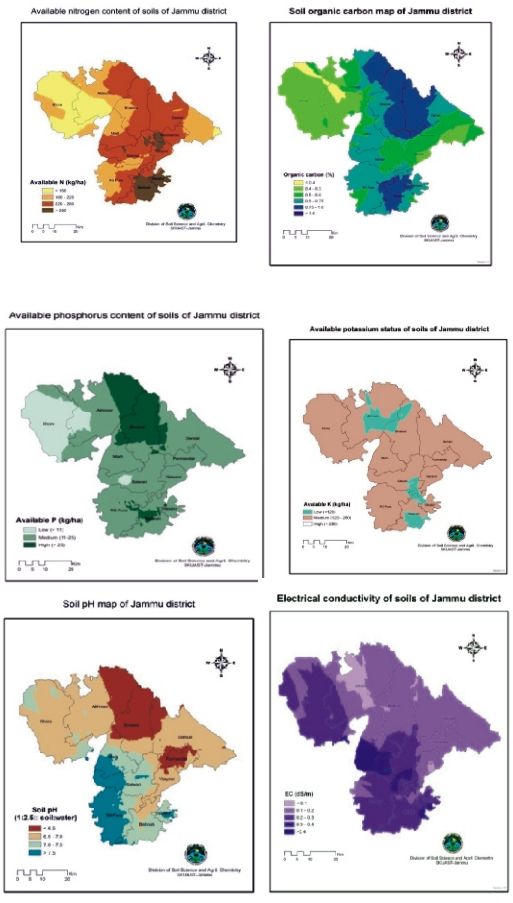
Site specific analysis and management of nutrient in fruit growing areas of Jammu for precision horticulture

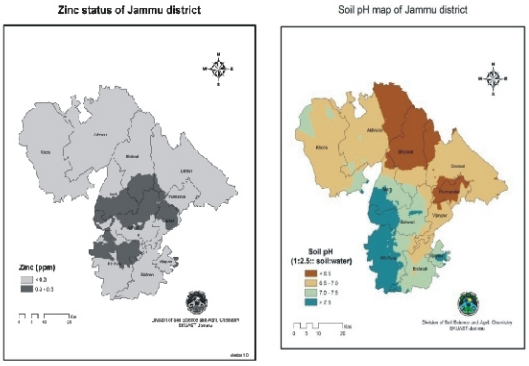
- Microbial investigation revealed that a decrease in bacterial population in the different heavy metal polluted samples was upto 31.19 % (Dhiansar RWS-4) besides fungal population also showed a substantial decrease from 30-74 % in district Samba.
- Amongst different heavy metals detected in soils near industrial belts of district Samba and Kathua, cadmium (Cd) was not detected in soils of district Samba but contrastingly in soils of Kathua district Kathua it was observed in two production systems, *viz*. rice-wheat and vegetable production system varying between 0.78 and 5.11 and 0.0 to 3.8 µg/g, respectively. Soil respiration was also depressed (8.64 CO_2-C/g soil to 5.40 CO_2-C/gsoil) in polluted samples.

Micronutrient status of soils under rice growing areas of Jammu

- Cu, Zn, Mn and Fe content in *Basamti* growing areas varied from 0.05-3.67, 0.02-1.18, 1.14-11.13 and 2.40-40.76 with mean values of 0.86, 0.27, 4.47 and 21.58 mg/kg respectively. Considering the critical limit of 0.6 mg/kg, about 94 % samples were deficient in available Zinc, whereas about 9 % soils were deficient in available copper (critical limit being 0.2 mg/kg). However, DTPA-extractable Mn and Fe in these samples were sufficient. The available (DTPA-extractable) micronutrient Cu has significant and negative correlation with pH (-0.294*) and organic carbon (-0.327*), but positive with EC (0.395**). The available (DTPA-extractable) micronutrient Zn related significantly and negatively with EC (-0.323*), and positively with organic carbon (0.318*). The available (DTPA-extractable) micronutrient Mn correlated significantly and negatively with silt (-0.367*).

Digital Soil Fertility Maps of Jammu District





3.1.11 Biochemistry & Plant Physiology

Biochemical prospecting of medicinal plants for antimicrobial compounds

Protection of field crops from pathogens remains a primary concern of agricultural scientists. Despite serious environmental implications associated with the excessive use, chemical fungicides remain the first line of defense against fungal pathogens. This has necessitated the search for fungicides of biological origin with the germane assumption that bio-products are more specific in their action and mechanisms, do exist in nature for their disposition and are thus less hazardous. Fresh leaves from *Zanthoxylum alatum* were collected locally and subjected to hydro-distillation for extraction of essential oil. Chemical composition of the essential oil was determined using GC/MS analysis and linalool, 2-dodecanone and â-fenchol were the major components. Antifungal and antibacterial components of the essential oil were determined by bioautography using *Alternaria alternata* and *B. subtilis* respectively as test organisms (Fig 1). Furthermore, bioassay guided PTLC was performed to isolate the antifungal/ antibacterial molecules in pure form which were identified as linalool and â-fenchol by GC/MS analysis and Co-GC using authentic standards.

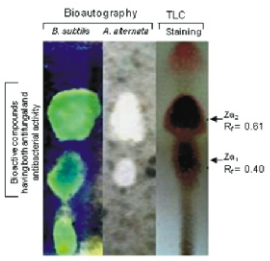


Figure 1. Visualization of antifungal and antibacterial compounds in *Zanthoxylum alatum* leaf essential oil using bioautography.

Apart from this antifungal molecules were also isolated from the essential oils from other medicinal plants namely ã-gurjunene from *V. negundo*; Spathulenol from *M. koenigii* and linalool from *O. Basilicum.*

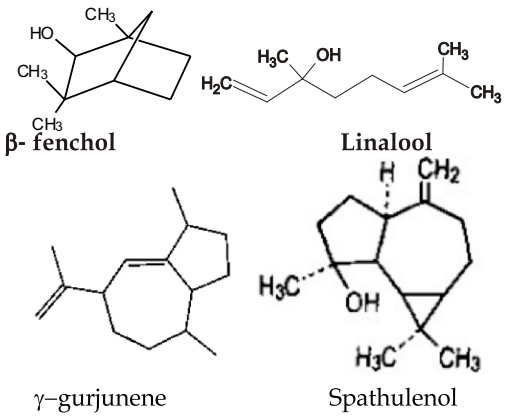


Fig 2. Chemical structures of antifungal compound isolated from *Z. alatum*, *V. negundo*, *O. Basilicum* and *M. koenigii* essential oil

DNA protective activity of *Terminalia chebula*

DNA protective activity of leaf, bark and fruit extracts was studied using Fenton's reagent and pUC18 plasmid DNA (Fig 1). Acetone and methanolic factions of bark; ethyl acetate, acetone and methanolic fractions of fruit showed considerable effect in protecting the native DNA from nicking by the hydroxyl radicals (OH) generated through Fenton's reaction.

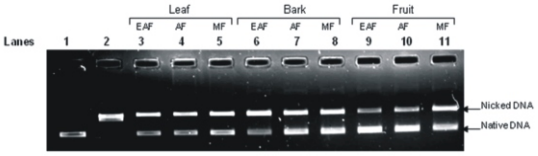


Figure 1. Inhibitory effects of *Terminalia chebula* leaf, bark and fruit fractions on DNA nicking caused by hydroxyl radicals. Lane 1, native pUC18 plasmid DNA, lane 2, Fenton's reagent + DNA, lanes 3 – 11, Fenton's reagent + DNA + (30.0 µg/1.0 ml) of ethyl acetate fraction (EAF), acetone fraction (AF) and methanol fraction (MF).

Isozymic studies in draught tolerant wheat

Peroxidase (POD) and catalase (CAT) isozymic profiles were studied in drought tolerant wheat genotype namely *PBW 175*. For this purpose POD and CAT isozymes were extracted from wheat leaves at 7, 12 and 17 days after anthesis (DAA) and subjected to native polyacrylamide gel electrophoresis (PAGE). The izozymic pattern of POD revealed the presence of two isozymic bands at relative mobility ($R_{m)}$ value of 0.22 and 0.34 (Fig. 1). However, intriguingly at 17 DAA isozymic band with R_m value of 0.22 disappeared in the isozymic profile and two $_{new}$ bands with R_m value of 0.28 and 0.42 were detected. Similarly, in case of CAT two bands with R_m value of 0.25 and 0.34 were observed at 7 DAA (Fig. 2). Furthermore, another isozymic band of CAT at R_m value of 0.49 was detected in the leaves of wheat 12 and 17 DAA as compared to control. The changes in the isozymic pattern of peroxidase and catalase were observed after anthesis which points towards their involvement in imparting drought tolerance in wheat.

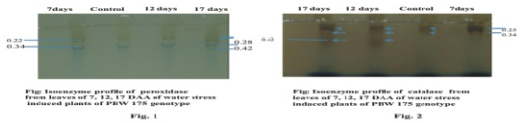


Fig. 1

Fig. 2

Anti-cancer activity of *Momordica charantia*

Methanolic extract from the fruit part of *Momordica charantia* (Karela) from Jammu (Baisth Village, Udhampur) showed *in vitro* anticancer efficiency against seven human cancer cell lines with 99 and 100 % growth inhibition of breast and lung cancer cells respectively.

3.1.12 Sericulture

Mulberry Germplasm Maintenance

Mulberry Germplasm of 52 varieties is under maintenance at Udheywalla. These varieties are being used by the staff and students for conducting the experiments on different aspects of mulberry breeding and cultivation. On evaluation of these varieties under rain fed conditions four mulberry varieties *viz.*, *S-146*, *S-799*, *Chak Majra* and *Chinese white* have been recommended for rainfed conditions with respect to leaf yield potential and cocoon crop production per unit area. The bud wood and hard wood cuttings of these varieties are available at Division of Sericulture on requisition well in time.

Evaluation of nutritional efficiency

Evaluation of nutritional efficiency of six indigenous silkworm hybrids has been worked out and it was found that out of six hybrid combinations, *hybrid Udhey-3x1* and *Udhey-6x3* were found efficient in nutritional and conversion ratio parameters.

Evaluation of introduced Mulberry varieties

Evaluation of six introduced mulberry genotypes for propagation parameters under local conditions was worked out. On the basis of two year data variety *S-1608* and *S-1708* were found better with respect to the survival percentage, shoot length and number of primary roots. Further evaluation is under progress.

Testing of Hybrid *Udhey-3x4* at national level

Submission of evolved high yielding autumn specific hybrid *Udhey-3x4* for consideration in the multilocational trials at nationwide testing centers by National Race Authorization Committee, Central Silk Board, Bangalore for the year -2013-14.

Testing trail of hybrid PO_3 x ND_5 concluded at national level

The multilocational rearing trials of selected spring specific bivoltine silkworm hybrid *PO_3 x ND_5* were completed at 16 nationwide testing centers by the National Race Authorization

Committee of Central Silk Board, Bangalore and the results are still awaited as the data is under compilation.

3.1.13 Agricultural Extension Education

Identification and documentation of successful Agri-Pruners in Jammu District

Survey study was conducted under the project. In the first stage, successful entrepreneurs in the field of apiculture, floriculture and mushroom production in Jammu district have been identified. Data has been collected from successful Marigold farmers in the village Kattal Batal in block Nagrota and the success story has been documented. Data collection and

Scientist Interacting with Entrepreneur

documentation of success story of a mushroom grower Mr. Shyam Gorkha is under process. The data regarding Bee-keeping enterprise is in progress. In this regard, bee keeping entrepreneur Mr. Devraj Goswami is undertaken for the study.

Popularization of Bio-fertilizers in rainfed areas of Jammu division for sustainable agriculture development

Two hundred farmers were trained in use of bio-fertilizer technology from two districts, four blocks and twenty villages. Training programmes including awareness knowledge and skill upgradition were conducted for the farmers in the districts of Udhampur and Kathua. Project has been completed and the progress report of the project has been submitted to the DST.

3.1.14 Agricultural Economics & Statistics

Strengthening Statistical Computing for NARS

SAS and its components have been installed at Computer Lab of Faculty of Agriculture, Chatha for strengthening statistical analysis for research data. Scientists and PG students are being motivated for the use of SAS software for analyzing their research data. Scientists have also been deputed from FoA and F.V.Sc. & A.H. for attending the trainings regarding SAS-software.

3.1.15 Agricultural Engineering

Design & Demonstration of Zero Energy Cool Chambers

Two number of structures of size 4'x3'x3' were constructed. A layer of sand is spread on the ground over the area where the chamber is to be built and a layer of bricks or stones is laid onto the sand. The gap between the two walled chamber was kept 5'. Most of the necessary purchases to start the experimentation were made during last financial year.

Development and evaluation of power tiller operated maize planter

The broader specification of the various components of planter was finalized and given to Govt. Agril. Engineering workshop, Talab Tillo for fabrication.

Evaluation of effect of deep tillage and deep fertilizer application by modified subsoiler on maize-wheat cropping system in SKUAST-Jammu experimental form

Modification in Sub-soiler has been done for deep application of fertilizer. With the help of modified sub-soiler deep tillage (upto 400 mm) and fertilizer application (upto 250 mm) could be done simultaneously. Lab/field testing of the machine will be carried out in forthcoming season.

3.1.16 School of Biotechnology

Assessment of genetic diversity of basmati rice using molecular markers and *in situ* conservation through participatory approach

Basmati grown in R. S. Pura areas of Jammu region is world famous for its quality and pleasant aroma. Moreover, this region is having diverse local landraces and most of the information we have so far is about these landraces of basmati rice is still incomplete. Field to field survey was made during the collection of samples from different basmati growing areas of Jammu region. Many sets of different morphology were collected from each set. Significant differences among genotypes for the most of the characters indicated the presence of considerable amount of variability for the various characters studied.

Erucic acid and Total glucosinolates profiling for rapeseed mustard oil quality

Brassica crops are grown worldwide for edible oil production however; their oil is not fit for human and animal consumption as it contains high levels of erucic acid and sulphur compounds (glucosinolates), especially in *Brassica* oil seed crops, cultivated in India, the erucic acid constitutes 40-50 % and high glucosinolates (80-160 ì/mg) in total fatty acid, thus, restricting their use as an edible oil and animal feed due to toxic effects. The present study was conducted to evaluate and analyze different genotypes of *Brassica* species for glucosinolates contents and erucic acid content.

Twenty different *Brassica* oil seed crops were assayed for Erucic acid and glucosinolates variability. There was significant Variability among the genotypes of *Brassica* species, *i.e. Brassica napus* L., *Brassica rapa* L. and *Brassica juncea* L. for the glucosinolates and erucic acid contents. Data presented in table1 showed that the total glucosinolates content ranged from 57.68 to 84.20 ìmol/g seed. The maximum glucosinolates content was recorded in *Brassica juncea* L. genotype *Varuna* (84.20 ìmol/g seed), followed by *Kranti* (81.80 ìmol/g seed). The minimum glucosinolate content was noted in *Brassica napus* L. *GSC-101* (57.68 ìmol/g seed). The erucic acid content in *Brassica* species ranged from 10.04 to 49.99 per cent. The maximum erucic acid content were estimated in *Brassica rapa* L. genotype *RSPT-3* (49.99 %), followed by *Brassica juncea* L. genotype *Pusa Bold* (49.40 %). The minimum erucic acid content was noted in *Brassica napus* L. genotype *HNS-901* (10.04 %). Such variability information is useful for developing with low erucic acid and low glucosinolates content rapeseed-mustard cultivars.

To study the genetic diversity in rapeseed-mustard using sodium dodecyl sulfate polyacrylamid gel electrophoresis

Seed storage protein analysis can be a practical tool for identification of species, varieties and cultivars. The technique of Sodium Dodecyl Sulphate Polyacrylamide Gel Electrophoresis (SDS-PAGE) is commonly used for separation of seed storage proteins. Analyses of SDS-PAGE are simple and inexpensive, which are added advantages for use in practical plant breeding. The aim of the current study was to evaluate seed protein variability in different *rapeseed mustard* genotypes and grouping them.

Twelve genotypes of *Brassica* species were assayed for diversity in total seed storage proteins. A total of 10 reproducible and easily scorable bands were exposed with the number of bands per accession ranging from 1 to 9 (Fig 1). All but five of the bands were polymorphic. Storage proteins were the most diverse. Similarity matrices were calculated using the Jaccard coefficient, and input into cluster analysis. The phenogram produced by the UPGMA of the Jaccard similarity matrix from the pooled data of total seed storage proteins

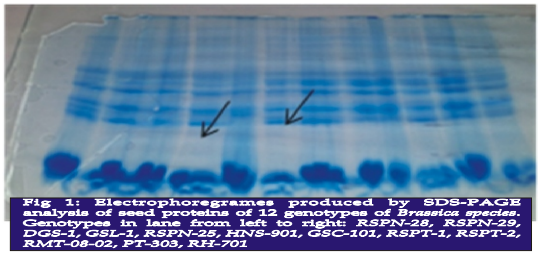
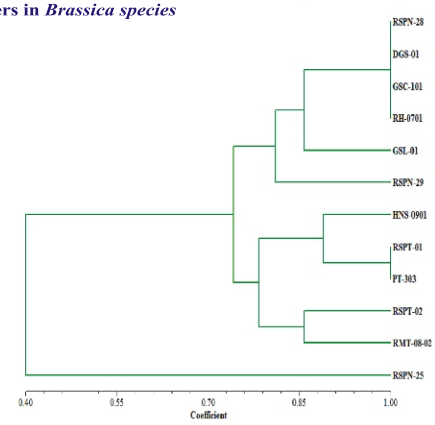


Fig 1: Electrophoregrames produced by SDS-PAGE analysis of seed proteins of 12 genotypes of *Brassica species*. Genotypes in lane from left to right: *RSPN-28, RSPN-29, DGS-1, GSL-1, RSPN-25, HNS-901, GSC-101, RSPT-1, RSPT-2, RMT-08-02, PT-303, RH-701*

Fig 2: Dendrogram and genetic relationship based on protein markers in *Brassica species*



revealed three major clusters on the basis of similarity (Fig 2). *RSPN-25* (*Brassica napus* L.) was relatively distant from the other main clusters and separated at the 40 % level of similarity. The first and second clusters comprised 6 and 5 genotypes, respectively. In cluster 'I' *RSPN-28*, *DGS-1*, *GSC-101* and *RH-701* showed 100 per cent similarity. However, *GSL-1* and *RSPN-29* showed 80 and 86 per cent similarity, respectively. In cluster II; *RSPT-1* and *PT-303* showed 100 per cent similarity. *RSPN-25* has been consisted only one genotype in Cluster III and showed 60 per cent dissimilar to other genotypes. On the basis of dendrogram, most diverse genotypes were identified which should be utilized in crop improvement programs.

Screening of Wheat germplasm for yellow rust Yr18 gene

A molecular screening of 50 Indian Bread Wheat genotypes is currently being undertaken to ascertain presence of Yr18 gene (slow rusting) for yellow rust resistance gene. A STS-based diagnostic marker csLV34 was used for the amplification vof DNA confirming presence (150bp) and absence (229bp) of Yr18 alleles, based on an InDel of 79bp.

3.2 RESEARCH STATIONS/SUB-STATIONS/CENTRES

3.2.1 Regional Agricultural Research Station, Rajouri

Rainwater harvesting and its demonstration for supplemental benefit for horticultural crops in sub-temperate area

The water resources in the Rajouri district is distributed unevenly both spatially and temporary. The farmers in Rajouri have been demonstrated the use of harvested rainwater ponds for providing supplemental irrigation for floricultural (at Village-Ladote), vegetable (At Village- Doongi & Nagrota) and fruit crops (At Village-Dhangri). Dug out ponds were constructed on the selected farmers' fields in these villages and the respective farmers were encouraged to use the harvested rainwater to irrigate their crops. The farmers who harvest rainwater in ponds are recommended to use it for high value crops like vegetables, flowers and fruits.

All India Coordinated Wheat and Barley Improvement Project

Results of the experiments regularly submitted to the concerned Directorate (Directorate of Wheat Research, Karnal) which contributed to the identification of wheat varieties for Northern Hill Zone of India under timely and late sown situations of irrigated and hill ecologies on mean performance basis for yield and yield contributing traits. The varieties tested at RARS, Rajouri and identified for NHZ include HS 240, HS 365, VL 907, VL 804, VL 738, HS 507, VL 832, VL 829, HPW 251, HS 375, HS 490, VL 892, UP 2645, VL 849, HP 249, HBL 704 and VLB 115.

All India Coordinated Rice Improvement Project

Results of the experiments regularly submitted to the concerned Directorate (Directorate of Rice Research, Hyderabad, India) which contributed to the identification of rice varieties for Northern Hill Zone of India on mean performance basis for yield and yield contributing traits. The varieties tested at RARS, Rajouri and identified for NHZ include K 39, K 78, K 343, Vivek Dhan 62, Vivek Dhan 81, Vivek Dhan 82, RP 2421, K-332, HPR 2309 and VL 30916.

Agrometerological Field Unit (AMFU), RARS, Rajouri

Issue biweekly weather based agro-advisory for the districts of Doda, Poonch, Udhampur and Rajouri.

Field level Demonstrations (FLDs)

During rabi 2012-13, 18 FLDs, funded by Directorate of Wheat Research, Karnal and covering an area of 10 ha, have been laid in Rajouri district for popularizing high yielding wheat variety HS-507 in the area. Emphasis has been laid on the implementation of recommended package of practices.

Eco-friendly Management of Turcicum leaf blight of maize

Carbendazim was found most effective (11.45% DI with 45.32q/ha) followed by T. herzianum as foliar spray and seed treatment (16.85 and 17.55 DI with 40.00 and 42.92 q/ha were respectively) followed by Drek seed extract (18.82% DI with 41.88 q/ha).

Management of foliar diseases of pea (Pisum sativum)

Carbendazim as seed treatment and two foliar spray with Manchozeb was found most effective against powdery mildew (2.5% DI with 84.55 q/ha pod yield) and downy mildew (4.63% DI with 82.46q/ha pod yield).

3.2.2 Dryland Research Sub-Station, Dhiansar

Impact of resource conservation techniques for maize based intercropping system and their residual effect on succeeding crop under rainfed conditions of Jammu

Experimentation on impact of resource conservation techniques for maize based intercropping system and their residual effect on succeeding crop under rainfed conditions of Jammu showed the highest maize equivalent yield (27.2 q/ha) with leaf mulching and it was significantly superior over no mulch (23.3 q/ha). Among the intercropping, the highest maize equivalent yield (30.5 q/ha) observed when maize was intercropped with black gram (1:2) and followed by (27.8 q/ha) maize intercropped with black gram (1:1). The lowest grain yield was observed in sole maize. Same trend was found in wheat crop.

Tillage and the nutrient management for resource conservation

The maximum average maize yield of 19.5 q/ha was obtained in treatment T_3 (50 % CT + weedicide + interculture) followed by the treatment T_2 (50 % CT + interculture) and T_1 (Conventional tillage + interculture) and with yield of 17.4 and 15.9 q/ha, respectively. Among fertilizer application the highest grain yield of 18.3 q/ha was recorded in F_3 (100 % N through inorganic fertilizer) followed by F_2 (50 % N through inorganic fertilizer + 50 % N through organic manure) and F_1 (100 % N through inorganic fertilizer) with grain yield of 17.2 and 16.6 q/ha, respectively.

Studies on plant parasitic nematodes and soils borne fungi infesting dry land crops of Jammu

The studies on plant parasitic

nematodes and soil borne fungi infesting dryland crops of Jammu revealed that soil application of organic amendments (FYM @ 15 t/ha, vermicompost @ 10 q/ha and poultry manure @ 4 t/ha) have potential to suppress nematode population significantly. Application of various amendments increased the yield and decreased the host infestation by nematodes over control. Among the all amendments poultry manure was found superior in reducing the nematodes population and yield of maize than vermicompost and farm yard manure.

Diagnostics and integrated management of root- knot nematode and wilt complex in chickpea

- Under diagnostics and integrated management of root-knot nematode, the survey was carried out in ten villages of Jammu and Samba district of J&K to assess the distribution of plant parasitic nematodes in chickpea crop. Among the different plant parasitic nematodes Meloidogyne spp. was more frequently encountered followed by Pratylenchus spp., Xiphinema spp., Longidorus spp. and Helicotylenchus spp. However, maximum populations of plant parasitic nematodes have been recorded from kriwal village and minimum in Badour village.

➢ Surveys were made for chickpea crop in different villages of Jammu and Samba districts and samples were collected from soil pathogenic fungi from farmer's fields. Symptoms of the disease appeared as root rot and wilt on chickpea and pathogens were identified as Fusarium oxysporum f.sp.ciceri, Sclerotinia sclerotiorum and Rhizoctonia spp.

Permanent manorial trial

In permanent manorial trial, the highest grain yield of (23.93 q/ha) was obtained with T_7 (50% recommended NPK + 50% N FYM) and it was statistically at par with T_6 (50% recommended NPK + 50% N crop residue), T_2 (100% recommended NPK) with grain yields of 23.76, 22.93 q/ha, respectively and was found superior to farmer's practice.

Efficient Energy Use Management

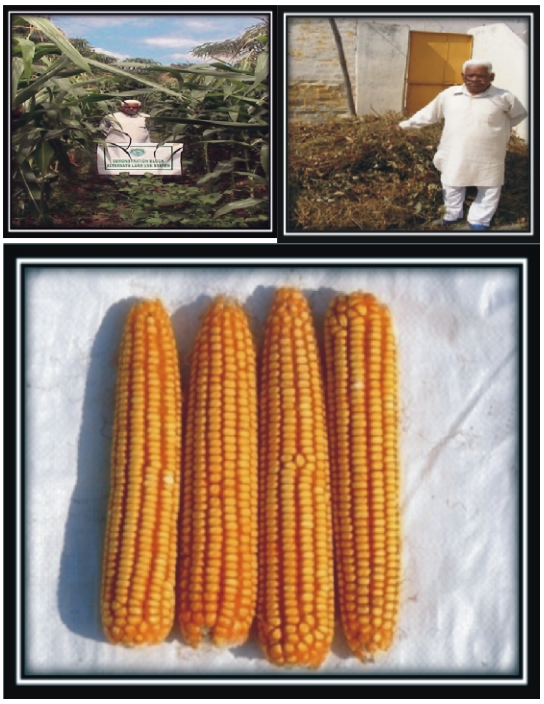
The comparative studies on different methods of maize sowing viz ; broadcasting, sowing with liner and maize planter revealed that the highest grain yield of 20.3 q/ha, total output energy 93278.5 MJ/ha and highest gross retruns of Rs. 34510/ha were obtained with maize planter.

Nutrient management in maize-wheat rotation

In nutrient management under maize-wheat rotation, the treatments of organic manures and green manuring in combination with different nitrogen doses exhibited significant effect on grain yield of maize. The highest grain yield of 26.69 q/ha was recorded with the application of FYM 10 tonnes + 40 kg N/ha (T_4) which was statistically superior to other treatments. Grain yield of Leucaena leaves @ 5 tonnes + 40 kg N /ha (T_{10}) was statistically at par with FYM 10 tonnes + 30 kg N/ha (T_3). The lowest grain yield of 11.27 q/ha was obtained in control.

Alternate Land Use/Farming systems for carbon sequestration and ecosystem services

Under NICRA, the Aonla + (Maize + Mash) treatment was replicated in five farmers field and maize equivalent yield ranged from 22.7 to 29.8 q/ha with an average maize equivalent yield of 26.5 q/ha. The water use efficiency varied from 2.7 to 3.5 with an average water use efficiency of 3.2.



- In Aonla + maize (100 % NPK), the recommended dosage of fertilizer (60:40:20 NPK) was tested in maize crop in three farmers field and maize grain yield ranged from 22.6 to 27.4 q/ha with an average yield of 24.7 q/ha. The water use efficiency varied from 2.7 to 3.3 with an average water use efficiency of 3.0 and it was superior to INM treatment.
- The integration of nutrient management treatment (50 % NPK + 50 % FYM) in maize crop under Aonla + maize (50 % NPK + 50 % FYM) was replicated in six farmers field and maize grain yield ranged from 15.8 to 19.2 q/ha with an average yield of 17.2 q/ha. The water use efficiency varied from 1.9 to 2.4 with an average water use efficiency of 2.1.
- The mixed fodder treatment under (Aonla + mixed fodder) was replicated in eight farmers field and mixed fodder yield ranged from 209 to 268 q/ha with an average yield of 233 q/ha. Crop duration

ranged from minimum of 65 days to maximum crop duration of 78 days with an average 73 days. The water use efficiency varied from 25.7 to 32.1 with an average water use efficiency of 28.4

3.2.3 Maize Breeding Research Sub-Station, Poonch

Crop Improvement (Maize)

- A variety release proposal of station hybrid *PHM 12* has been submitted to research evaluation committee of the university. The hybrid was identified on the basis of their yield performance in different experiment and evaluation trials (Grain yield ranged between 70-90 q/ha).
- Registration of genetic stock under NBPGR, New Delhi:

  Two promising station inbred lines *B1-19* and *B1-11* which are also potential donor parents of station hybrids were submitted to National Bureau of Plant Genetic Resources, New Delhi for registration under unique genetic stock of the Station.
- Distinctness, Uniformity and Stability (DUS) Test:

  DUS test of all the promising station hybrids and their parents was conducted during *kharif* 2012 through national guidelines for conduct of the tests prescribed by Directorate of Maize

Research. Data were recorded on prescribed format for all the 31 morpho-physiological DUS characters and inserted in station hybrid/pedigree register.

- Four station hybrids were evaluated in AICRP (Maize) zonal trial during *kharif* 2012. Two of the hybrids *PHM12* and *PHM 34* were submitted for evaluation in IET 1st year on the basis of their performance in zonal trial and station hybrid evaluation trial.
- The promising station hybrid *PHM 12* was also evaluated at farmers' field under farmer participatory trial during the period, where the hybrid performed 40-45 q/ha grain yield under farmer management practices.
- The station hybrid *PHM 12* was also found to be ranked 1st with 67.29 q/ha grain yield over locations in multilocational public hybrid evaluation trial conducted by division of PBG during the year.
- All the germplasms and inbred lines available with the station were evaluated during the year and selections were made for superior lines on the basis of their phenotypic performance while all the lines were maintained through hand pollination to access their performance in next year.
- 250 single crosses have been attempted in L X T design for identification of best parental lines and their combinations for hybrid development. While 30 new single cross hybrids were produced during the year involving the parents and their combinations identified in combining ability analysis in previous year.
- A total of six trails on hybrid maize evaluation were conducted during the period and the data recorded on different parameters were submitted to the concern quarter well in time.

3.2.4 Regional Horticulture Research Sub-station, Bhaderwah

All India Networking Research Project on Outreach of technologies for temperate fruits

Six trials are going on under this project:

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

High Density apple orchard planted at 2.5 m x 2.5 m spacing

- Medium density orcharding for higher almond productivity
- Plant architectural engineering for higher energy harvest vis-à-vis productivity in apple
- Multi-location testing of elite walnut genotypes under medium density
- Multi-location testing of elite apricot genotypes under medium density
- Survey and mapping of major pest and disease of temperate fruits

Clonal rootstocks of apple Seedling rootstocks of apple

Establishment of additional rootstock and bud-wood banks and virus indexing facilities at Bhaderwah, SKUAST-J and their large scale multiplication

- Bud wood bank of different temperate fruit crops is being established
- The rootstock blocks of apple (clonal and seedling), pear peach, plum have been established.
- The virus indexing laboratory is being established in Division of Fruit Science at Main Campus Chatha of SKUAST-Jammu

Exploitation of natural variability of walnut for exported related traits

- The data of walnut *GL0109* selection on various physical characters of tree were recorded by considering the UPOV and IPGRI descriptors.

Nut and kernel of walnut sample from Chatru

- One more new walnut sample has been procured this year from chattru and studied for their physical and biochemical characters.

Survey of Ambri apple variants in Doda district

- After doing the survey of Kishtwar and Doda Distt, 34 samples of Ambri apple were collected in the last
- week of September and subjected to physio-chemical analysis (color, shape, size, weight, stalk nature, eye basin, locule aperture, no of seeds, flesh firmness, TSS, acidity and ascorbic acid) , shelf life and organoleptic evaluation. On the basis of overall quality analysis and organo-leptic evaluation, 08 samples and 03 new samples were reanalyzed in 2012. Out of total collected sample; 3 samples i.e BM2910, BS0410, BR2312 were found promising and can be recommended for its multiplication.

Introduction, evaluation and selection of stone fruits (Plum, Apricot, Cherry and Peach/Nectarine) for commercial cultivation in Doda District

Following cultivars of different stone fruits are under evaluation

Peach:

Elberta, July Elberta, Red Heaven, Flordasun, Glow Heaven, Scarlet Pearl, Fire Prince and Paradelux.

Elberta peach gave maximum fruit weight, size, and sugar content followed July Elberta and Red Heaven

Plum:

Santa Rosa, Mariposa, Tarrol, Florida 1-2, Ruby Sweet, Frontier, Red Beaut, Satluj Purple and Black Amber

Plum cv. Frontier had maximum fruit weight, size, firmness, total soluble solids (TSS) and total sugars followed by Mariposa plum.

Apricot:

Kaisha, Amba, Harcout, Babcob, Moorpark, Sundrop, Tilton, CITH-1, CITH-2, CITH-3, Italy, St. Ambroise, New Castle and Rakovslik.

Among different Apricot cultivars; New Castle put forth biggest fruits with maximum fruit weight. However maximum T.S.S and total sugars were found in Moorpark apricot.

Cherry: Stella, Mishri, Makhmali, Sam and Double.

Nectarines: Silver King, Snow Queen, Independence, Red Gold, Fantasia and May Fair.

Peach cv. Red Heaven

Peach cv. Elberta

Plum cv. Santa Rosa

Plum cv. Mariposa

Nectarine cv. Snow Queen

Nectarine cv. Silver King

Introduction, evaluation and selection of nut crops (Walnut, Almond and Pecan nut) for commercial cultivation in Doda district

The data regarding kernel size, kernel weight, kernel thickness, % of double kernels, ease of hulling, shriveling of kernel, nut size, nut shape, shell color intensity, marking of outer shell, suture opening of shell, testa taste, kernel pubescent, testa color, kernel shape, shell

hardness has been recorded of three varieties of Almond i.e., Non pareil, Waris and Shalimar.

Introduction and evaluation of apple and pear cultivars for commercial cultivation in Doda District

Following cultivars of apple and pear are being evaluated:

Apple:

Lal Ambri, Golden Delicious, Starkrimson, Akbar, H29, H60, Firdous, Vance Delicious, Royal Delicious, Red Chief, Golden Spur, Oregon Spur, Top Red, Silver Spur, Red Golden, Well Spur, Tydemans Early Worcester, Golden Spur, Shireen, Mollies Delicious, Scarlet Gala, Fuji and Gala Mast.

The maximum plant height (4.80 m), annual shoot extension growth (60 cm), no. of primary branches (6), and no. of secondary branches (28) were registered with Lal Ambri cultivar of apple. Minimum plant height (185 cm) and annual shoot extension growth (25.5 cm), no. of primary branches (3), no. of secondary branches (6) were noticed in Golden Spur cultivar of apple.

- Amongst different cultivars of apple being evaluated, only 15 cultivars viz., Lal Ambri, Starkrimson, Shireen, Silver Spur, Red Chief, Red Delicious, Akbar, Top Red, H29, Well Spur, Oregon Spur, Mollies Delicious, Tydemans Early Worcester and Golden Spur have shown flowering and fruit set.

- Minimum days taken to produce first flower (5th April) and early maturity (139 days) and highest fruit set percentage of 47 % was noticed in Starkrimson cultivar of apple.

- The maximum pH value of 4.6, penetration force of 5.5 lb/kg, fruit size of 6.8 x 7.0 cm, TSS value of 13.2^{0}B, total sugar content of 7.2 % and late maturity of 180 days was observed in Lal Ambri cultivar.

Pear: Bartlett, Flemish Beauty, Kashmir Nakh, Moti Dandi, Manning Elizabeth, Starkrimson, Max Red Bartlett, Red Bartlett, Punjab Soft, Punjab Nectrain, Punjab Golden and Punjab Beauty.

The maximum plant height (360 cm), annual shoot extension growth (30 cm), no. of primary branches (4) and no. of secondary branches (9) were registered in Kashmir Nakh. While the minimum plant height (150 cm) and annual shoot extension growth (25 cm), no. of primary branches (2) and no. of secondary branches (5) were observed in Max Red Bartlett.

Propagation studies on walnut and pecan Nut

- 700 seedlings of walnut were grafted using different methods i.e., cleft grafting, tongue grafting, and veneer grafting at different time intervals i.e., 15th February to 1st March, 2nd March to 16th March and 17th March to 3rd April.

- The rootstock of pecan nut was raised through seeds and will be grafted in next grafting season.

Introduction evaluation and selection of minor fruits for cultivation in Doda district

- 20 plants of pomegranate cv. Kandhari were planted at Gwari farm of RHRSS, Bhaderwah.

25 cuttings each of Kabul, Jyoti, G137, Bedana and Dolka cultivars of pomegranate were raised in poly-bags.

Shireen

Studies on capsicum wilt complex and its integrated disease management

Ridomil was effective in managing capsicum wilt complex and hence can be recommended.

Management of tomato wilt disease caused by *Fusarium sp. lycopersici*

Seedling treatment with carbendazim @ 0.1 % + soil drenching with carbendazim @ 0.1 % three times was most effective in which the intensity of wilt disease 10.33 % which gave disease control of wilt 70.47 % over the control 34.99 % and there by resulting in 87.93 % increase in yield as compared to control.

Integrated management of bean anthracnose caused by *Colletotrichum lindemuthanium*

Survey and Surveillance of bean anthracnose

- Eight different locations of Doda district of J&K state were surveyed and bean anthracnose was encountered in all the bean growing areas.
- Maximum disease incidence of 25.0, 40.5 and 60.9 per cent was observed during seedling, flowering and pod bearing stages at Jathi followed by Assar (15.4, 36.6 and 55.3 % at seedling, flowering and pod bearing stage, respectively) and the minimum disease incidence was found at Chinta (10.0 % at seedling, 20.9 % at flowering and 40.0 % at pod bearing stage).
- In terms of severity maximum disease was found at Jathi (15.0, 23.7 and 39.5 % at seedling, flowering and pod bearing stage, respectively) and minimum disease was found at Chinta (6.9 % at seedling, 13.9 % at flowering and 22.2 % at pod bearing stage).

Management of *Colletotrichum lindemuthianum* by using biological agents and chemical fungicides under field conditions

- Four different chemical fungicides *viz.* carbendazim, thiram, dithane M-45 and carboxin and two bio-control agents *viz.* *Trichoderma viride and Trichoderma harzianum* were tested singly as seed treatment and foliar spray for their efficacy against bean ***anthracnose in field conditions***.

- Among different treatments bavistin is most effective giving the least disease incidence (24.46 % at 30 DAS and 32.81 % at 45 DAS) and disease severity (5.59 % at 30 DAS and 8.30 % at 45 DAS) in both seed treatment as well as foliar spray (28.87 % at 30 DAS and 30.63 % at 45 DAS and 7.81 % at 30 DAS and 9.17 % at 45 DAS) with maximum yield of 114 q/ha followed by carboxin and mancozeb whereas among bio-control agents *T. viride* is more effectve than *T. harzianum*.

Study of the efficacy of different attractant and bait combinations against different species of fruit flies

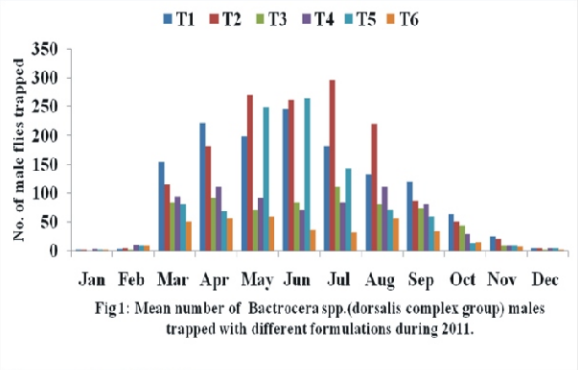


Fig 1: Mean number of Bactrocera spp.(dorsalis complex group) males trapped with different formulations during 2011.

T_1: cue lure +Malathion
T_2: cuelure + Molasses + Malathion
T_3: cue lure + Fruit Juice + Malathion
T_4: Methyl euginol +Malathion
T_5: Methyl euginol +Molasses+ Malathion
T_6: Methyl euginol + Fruit Juice+ Malathion.

- The efficacy of different combination of baits, attractant and insecticide was ascertained and comparative efficacy and attractability of these were evaluated in terms of annihilation of adult male flies from the environment. The number of flies trapped during different months did not exhibit any uniform pattern.

- Maximum number of flies *Bactrocera cucurbitae* and *dorsalis* complex group were trapped in treatment T_2 and T_5 in July and June months respectively. The mean number of fruit flies trapped in T_1-T_6 during the year respectively was 111.81, 124.98, 53.40, 53.43, 80.0, and 28.65. These treatments had differences in bait component only and the results suggests that these baits when mixed with attractant had a profound influence on the trapping of adults males flies.

- The T_1 and T_4 had no baits, T_2 and T_5 has molasses as bait and T_3 and T_6 had fruit juice as bait. The T_1-T_3 had cue lure as attractant and malathion as insecticide. The T_4-T_6 had methyl euginol as attractant and malathion as insecticide.


Maize + Rajmash Intercropping

Effect of nutrient management in maize + Rajmash intercropping in sub-alpine conditions of Bhaderwah

- A field experiment was conducted for two years under temperate conditions of Bhaderwah by taking four cropping system; *viz.*, sole maize, sole rajmash , maize + rajmash (1:1) where one row of maize was followed by one row of rajmash and maize + rajmash (2:1) where, two rows of maize was followed by one row of rajmash and four nutrient management techniques; *viz.* control (no fertilizer), 100 % recommended dose of fertilizers (RDF), 75% RDF + 25 % N as FYM and 50 % RDF + 50 % N as FYM.

- During the year 2012 it was observed that highest maize equivalent yield (MEY) of 74.66 q/ha was observed under maize + rajmash (1:1) cropping system.

- Among nutrient management the best results in terms of MEY (74.35 q/ha) was recorded where 75 % RDF and 25 % N through FYM was applied.

Nutritional survey of apple orchards of Doda district with respect to important micronutrients

- Survey of Bhaderwah, Bhallesa, Thathri, Marmat and Ghat blocks of Doda district was undertaken.
- Soil as well as leaf samples from apple orchards of these areas were collected and processed for further laboratory analysis.

Processing of soil and leaf samples

Deficiency symptoms on apple leaves

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

- Four varieties of bush type Rajmash and two varieties of Pole type rajmash have been selected and were multiplied at Bhaderwah during *kharif* 2012.
- The seed produced has been submitted for multi-locational trials during *kharif* 2013 at other stations of the University.
- Rajmash seed of various accessions has also been submitted for biochemical analysis and DNA extraction.

PRODUCT TESTING:

Evaluation of SILPGR-Pzole 23 % SC (Cultar) for use in Apple for assured flowering and better yield

- Different doses of SILPGR-Pzole 23 % SC were applied through soil as well as through foliar application on apple. Chlormequat 50 % SL @ 500 ppm and Ethephon 39 % SL @ 390 ppm were also tested for comparative study.
- During the first year trial it was found that application of SILPGR-Pzole 23 % SC 2.3 g a.i/tree as soil drench in the month of February resulted in maximum fruit yield and fruit retention closely followed by application of 1.725 g a.i/tree SILPGR-Pzole 23 % SC as soil drench and foliar application of SILPGR-Pzole 23 % SC @ 230 ppm a.i. at full bloom.

Bio efficacy study of Amway APSA-80 on apple crop against wooly apple aphid, apple maggot and apple stem borer

Bio-efficacy of APSA-80 and chlorpyriphos against apple woolly aphid

- Chlorpyriphos (0.04 %), APSA-80 (0.01 %) + Chlorpyriphos (0.04 %), APSA-80 (0.033 %) + Chlorpyriphos (0.04 %) and water spray (control) were tested against apple woolly aphid.
- There was substantial reduction in population of wooly aphid with all the chemical combinations tested as compared to control, however, application of APSA-80 (0.03 %) + Chlorpyriphos (0.04 %) resulted in maximum reduction of aphid population.

Bioefficacy of APSA-80 and chlorpyriphos against apple stem borer

- Chlorpyriphos (0.04 %), APSA-80 (0.01 %) + Chlorpyriphos (0.04 %), APSA-80 (0.033 %) + Chlorpyriphos (0.04 %) and water spray (control) were tested against apple stem borer.

- The wetting agent APSA-80 enhanced the efficiency of chlorpyriphos. No incidence of apple maggot was reported during the year 2012 at Gwari farm.

Studies on bio efficacy of Amway APSA-80 on apple crop against powdery mildew using Thiophanatemethyl and marssonina blotch using Mancozeb Bio efficacy of Amway APSA-80 on apple crop against powdery mildew using Thiophanatemethyl

- The treatments consisting of control (Thiophanatemethyl 0.05 %), APSA-80 (0.01 %) + Thiophanatemethyl (0.05 %) and APSA-80 (0.033 %) + Thiophanatemethyl (0.05 %) were applied.

- It was observed that APSA-80 used in combination with Thiophanatemethyl checked powdery mildew of apple significantly as compare to control (Thiophanatemethyl alone). It was also found that APSA-80 used at different concentrations were at par statistically.

Bio efficacy of Amway APSA-80 on apple crop against marssonina blotch using Mancozeb

- The treatments consisting of control (Mancozeb 0.03 %), APSA-80 (0.01 %) + Mancozeb (0.03 %) and APSA-80 (0.033 %) + Mancozeb (0.03 %) were applied. Mancozeb in combination with APSA-80 gave improved disease control over control (Mancozeb alone). In this trial it was seen that different concentrations were at par and further variation in concentrations of APSA-80 had no impact on Marssonina blotch incidence in apple crop.

Field Bio efficacy cum phytotoxicity evaluation of RUSTOP (chlorothalonil 75% WP), received from Meghmani Industries Ltd. Ahmedabad; against apple scab

- The treatments *viz.*, RUSTOP (Chlorothalonil 75 % WP @ 0.01 %) candidate product, KAVACH (Chlorothalonil 75 % WP @ 0.01 %) Standard marketed product (Syngenta), DITHAN M-45 (Mancozeb 75 % WP@ 0.3 %) Standard marketed product (Dow Agro Sciences) and Control (water spray) were tested against apple scab.

It was observed that the disease incidence was significantly less with RUSTOP in comparison to other treatments. Disease incidence was check with KAVACH and DITHANE M-45 was at par but significantly less than RUSTOP. Hence can be concluded that RUSTOP (Chlorothalonil 75 % WP) checked apple scab more efficiently than KAVACH and Dithan M-45. It is to mention that no phytotoxicity was recorded with any of the chemical used during this trial.

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

Ber: Cv.-*Thar Sevika* ***Thar Bhubraj***

Introduction of two new cultivars of Ber (*Thar Sevika* and *Thar Bhubraj*), Karonda (*CIAH Sel-1*), Phalsa (*CIAH Sel-1*), Lasoora (*CIAH Sel-1*) and

Khejri (*Thar Shobha*) procured from CIAH Bikaner and these cultivars were planted in the field of RRSS, Raya during September, 2012 and one cultivar of Jamun (*Hisar Sel-1*) is also planted in the field during March, 2013. Proper care and management of these new cultivars is being done for their evaluation under rainfed Sub-tropics.

Karonda: *CIAH Sel 1*

Khejri: *Thar Shobha*

Phalsa: *CIAH Sel 1*

Lasoora: *CIAH Sel 1*

Crop Protection:

Status of black leaf spot of ber:

Roving survey was conducted during two consecutive years in Ber growing areas of Jammu for occurrence and incidence of Black leaf spot/sooty mould of ber. The disease ranged to the tune of 0.5.0-42.5per cent. Maximum incidence (33.5 %) was recorded in village Raya.

Epidemiological Studies of Black Leaf Spot of Ber:

Weather parameters, *i.e.* maximum and minimum temperature were negatively correlated with the development of black leaf spot of ber. Relative humidity (morning) had significant positive correlation with disease development and non-significant positive correlation was established with relative humidity evening. However, rainfall, dew point temperature (morning & evening) had weak negative correlations.

Host Resistance:

Different cultivars of ber were screened against sooty mould/black leaf spot under field conditions at RRSS, Raya. Among these cultivars; *Umran*, *Small Apple* and *Seb* were categorized as moderately resistant against black leaf spot of ber.

Management:

Different fungicides and plant extracts were sprayed twice at 15 days intervals commencing from first week of January. The fungicide carbendazim was found the most efficacious in reducing the severity of black leaf spot. However, plant products NSKE and DSKE were less effective in managing the disease.

Aonla

Status of foliar diseases of Aonla:

During the survey of Raya and some villages of rainfed areas in 2010-11 and 2011-12 crop season, anthracnose (*Glomerela cingulata*), fruit rot (*Phoma Spp.*) and blue mould rot (*Penicillum islandicum*) were identified as a major threat in aonla cultivation. The foliar diseases ranged to the tune 8.5-38.5 % (anthracnose), 5.0-23.5 % (fruit rot) and 4.5-26.5 % (blue mould rot). During survey, it was also observed that the anthracnose appeared in the month of September and blue mould rot appeared in the first fortnight of December.

Epidemiological Studies of Foliar Diseases of Aonla:

Among weather parameters, negative correlation was established from maximum and minimum temperature. Relative humidity (morning) played major role in development of foliar diseases and strong positive correlation was established with foliar diseases *i.e.* anthracnose, fruit rot and blue mould rot. Rainfall also influenced significant role in

development of anthracnose and fruit rot with the correlation values of 0.82 and 0.45, respectively. However, dew point temperature (morning & evening) significantly influenced the development of anthracnose.

Host Resistance:

Different cultivars of aonla were screened against foliar diseases (anthracnose, fruit rot and blue mould rot) under field conditions. The cultivar *NA-7* was categorized as a moderately resistant against these diseases and the best suited for rainfed sub-tropics of Jammu.

Management of foliar diseases in Aonla:

Different fungicides and plant extracts were sprays thrice at 20 days intervals commencing from 1st of September. Among them, carbendazim was found to be the most efficacious in reducing the severity of foliar diseases *i.e.* anthracnose, fruit rot and blue mould rot.

3.2.6 Farming System Research Centre

To enhance productivity and crop profitability

beside improving/maintaining natural resource under rice-wheat cropping system in **sub-tropical condition of Jammu region The** following findings have been generated by the centre, during the year 2011-12. The centre is engaged with the following on-station and on-farm experiments.

On-Station

- Diversification and intensification of need based alternative cropping system
- Long term study on integrated plant nutrient management for rice-wheat system
- Development of organic farming package for system based high value crops
- Integrated Farming System Model

On-Farm

- Response of nutrient (N, P&K) in predominant cropping system
- Diversification/Intensification of existing Cropping System

Diversification and intensification of need based alternative cropping system

The diversified cropping system like rice-marigold-French-bean, rice-potato-onion, rice-garlic-cowpea and rice-cabbage-onion are the better choice for obtaining higher net return and B:C ratio as compared to existing rice based system under irrigated condition of Jammu region.

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

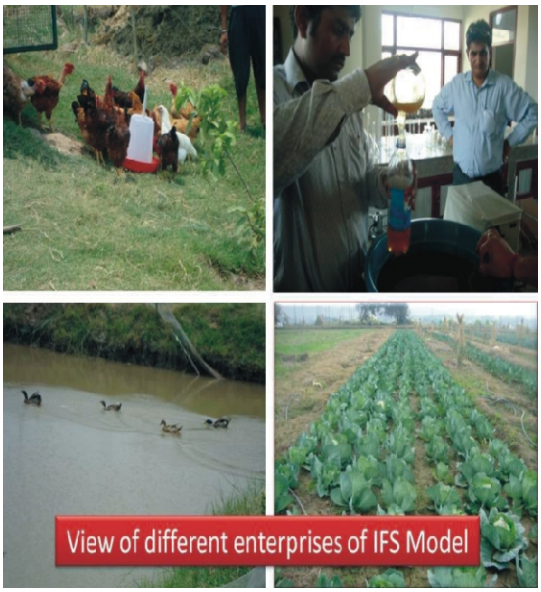
Twenty seven years long term application of 50 % NPK through fertilizer + 50 % N through FYM/GM/CR to rice and 100 % NPK through fertilizer to wheat crop gave stable and sustainable yield in rice-wheat system. Moreover, integrated nutrient management based on soil test value would be the most

practically viable technique and eco-friendly technology which holds the key to maintain crop yield and system productivity without affecting the environment adversely.

Development of organic farming package for system based high value crops

organic farming package for high value cropping sequence like rice-potato French-bean is being developed for the last 3 years and found that the REY under the treatment where 100 % recommended N was applied through different organic sources each equivalent to 1/3 of recommended N through FYM + vermin-compost + non-edible oil cake was recorded at par with the treatment where 100% RDF was applied through fertilizer alone.

Integrated Farming System Model



An Integrated Farming System Model for 1.5 ha area has been developed with the scientific integration of different components like crops + horticulture + animal + backyard poultry + fishery + vermi-compost occupying 40, 14, 3, 7 and 1 % area of the total 1.5 ha, respectively. In overall IFS model of 1.5 ha realized gross return of Rs. 301669/- from all enterprises by investing of Rs. 164780/- with achieving B:C ratio of 1.83 during the year 2011-12. The income of the farmer could be raised from Rs. 132467/- to Rs. 301669/year by adopting IFS Model. Simultaneously this Farming System Model could also generate employment, besides providing neat and clean (air soil and water pollution free) environment to the society as well as sustaining or improving soil physical chemical and biological property.

On-Farm Research at farmer's field at Samba District Response of nutrient (N, P&K) in predominant cropping system

Application of recommended dose of N, P K and $ZnSO_4$ @ 20 kg/ha produced significantly higher grain yield as compared to rest of the nutrient combination treatments (N, NP, NK and NPK). Whereas the higher grain and straw yield were recorded in (NPK + $ZnSO_4$) but at par with (NPK) during *rabi* season. The lowest yield was recorded with No fertilizer applied (Control). Similarly, recommended dose of N, P and K with micronutrient recorded maximum REY, Net return and B.C ratio followed by recommended NPK under rice-wheat system. Similarly under maize-wheat system, recommended NPK + Zn and NPK produced significantly higher grain yield as compare to rest of the treatments.

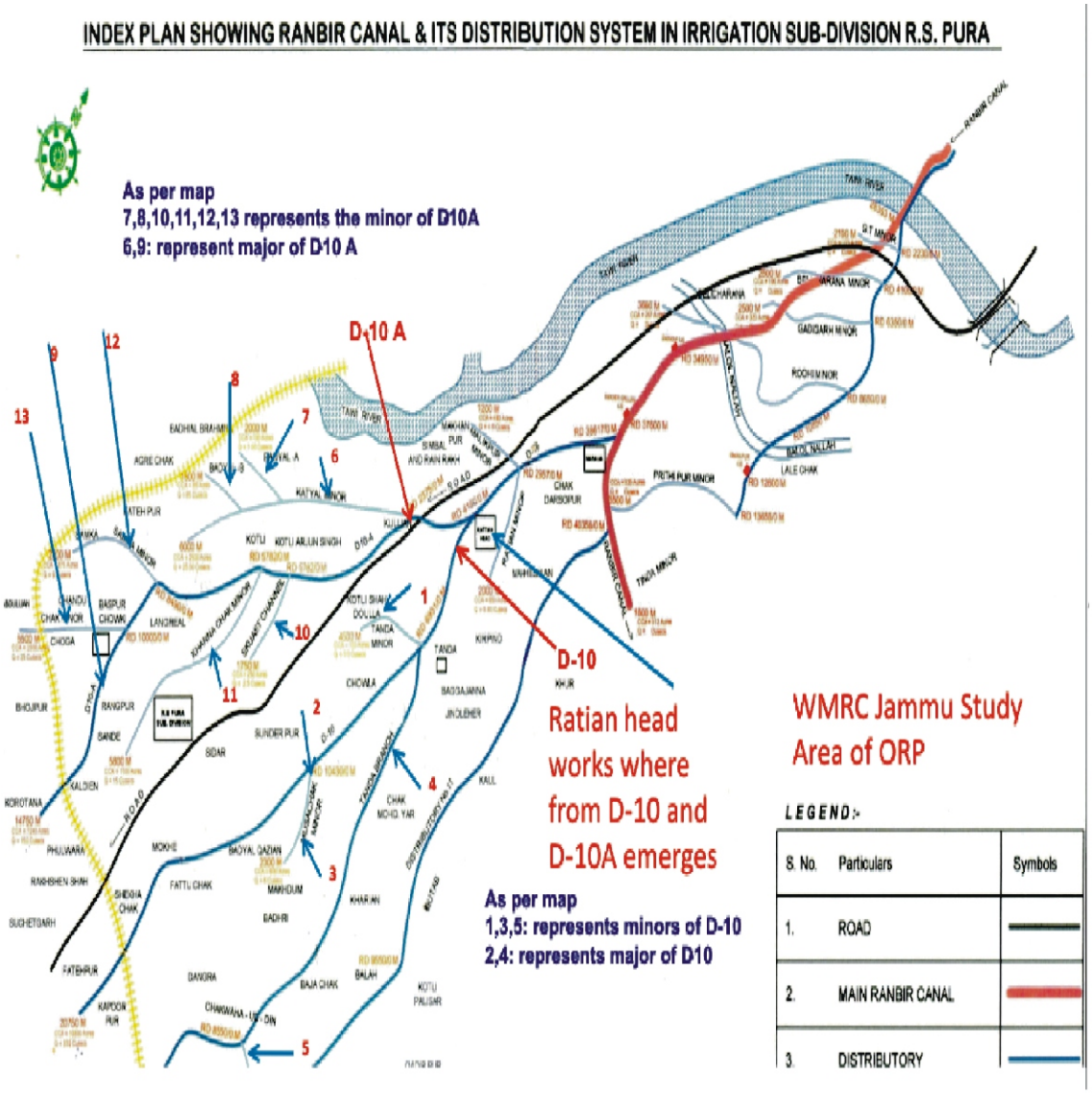
Diversification/Intensification of existing Cropping System

Rice-Potato-Onion was found to be the most promising cropping sequences under Rice-Wheat followed by Rice-Garlic. This sequence gave maximum system rice equivalent yield (REY) and Net return. However under Maize-Wheat system, Maize + Okra-Potato-Onion recorded maximum MEY, Net return and system profitability followed by Maize + Cowpea-Garlic.

3.2.7 Water Management Research Centre

Optimization of land and water resources of R.S.Pura belt of gravity flow Ranbir canal command area of Jammu district

During the year 2012-13 the overall measures at canal system level were determined in relation to conjunctive use of surface and sub-surface water for maximum irrigation deficit period within the Basmati belt of R.S. Pura during 9th to 30th September for 22 days (pinnacle initiation to flowering stage). The quantity of ground water to be tapped is 4568.8 ha-m/45.69 Mm^3.



To study the impact of laser leveling on WUE in rice-wheat system of Ranbir Canal Command Area

During *kharif* 2012-13, laser leveled plots recorded water use efficiency (WUE) 1.85 kg/ha-mm registering 25.9 % saving in water over traditionally leveled plot in rice crop. The experiment is under progress during *rabi* 2012-13.

Evaluation of Sprinkler System in Potato (*Solanum tuberosum*)

During the second year of the experiment *Rabi* 2012-13, irrigation methods for water saving in potato (cv. *Kufri sindhuri*) recorded water savings to the extent of 60.3 and 29.8 % with Sprinkler and Skip-furrow methods of irrigations.

Comparative performance of rice establishment methods under varying moisture regimes following zero and conventionally raised Wheat

- During *kharif* 2012-13 yield of plots where wheat was grown conventionally in *Rabi* 2011-12 yielded more paddy (cv. *Jaya*) 45.1 q/ha which was statistically more than zero tilled wheat grown in *Rabi* 2011-12.

Effect of irrigation and nutrient management practices in basmati rice (cv. *Basmati-370*)

- During *kharif* 2012, experiment was concluded with the following findings. Among the different fertilizer application treatment combinations, the key findings are that there was no difference in between the treatments of 100 % N and (50 % N + 50 % green manure) with regard to yields as recorded 3.17 and 3.19 t/ha, respectively. In light-textured soils within command areas scheduling irrigation at 3 days after disappearance of ponded water is beneficial for *basmati* rice.

Effect of irrigation and nitrogen levels on productivity of wheat (cv. *Ankur Mangesh*) established under different methods

- Under light textured soils, the technique of zero-tillage for wheat (cv. *Ankur Mangesh*) establishment with IW/CPE ratio of 1.0 requiring 3 no. of irrigations each of 40 mm depth resulted in highest yield of 4.85 t/ha. The experiment will be concluded after recording the results of *Rabi* 2012-13.

3.2.8 Pulses Research Sub-Station, Samba

Collection, evaluation and utilization of pulses germplasm

A total of sixty old and new germplasm lines are being screened and maintained as well as used in our chickpea breeding programme.

Breeding pulse crops for sub-tropical region of Jammu province

- A total of 130 lines selected from 20 chickpea crosses were advanced to next generation
- F_4 generations of nine chickpea crosses for *Ascochyta blight* resistance received in 2009 from ICRISAT were advance to F_5 in 2009-10 and F_6 in 2010-11. Eighteen lines each of these crosses were sown during 2011-12 and F_7 generation was produced.
- F_4 generation of three chickpea crosses and F_5 generation of one chickpea cross for drought tolerance were received from ICRISAT in 2010 and were advanced to next generation in 2010-11 and were advanced to F_6 and F_7 during *rabi* 2011-12.
- F_3 generation of four crosses and F_4 generation of four crosses were received for *rabi* 2011-12 from IIPR, Kanpur and were advanced to next higher generation.

- Four crosses were attempted during *rabi* 2011-12 under national chickpea crossing programme
- Seed of two elite chickpea lines *SCS-20* and *SCS-11* was multiplied during 2011-12

Urdbean SVT: Twelve entries were tested including one check entry under station varietal trial. Five entries proved superior to check *Pant U-19* in seed yield by 3.69 to 44.24 per cent. The superior entries were *Pant U-40* (44.24 %), *KUG-150* (27.19 %), *SU-05-10* (5.53 %), *WBU-108* (4.15 %) and *SUS-4* (3.69 %).

Moongbean SVT: Seven entries were tested including four check entries under station varietal trial. Only one entry proved superior in seed yield to best check *ML131*. The superior entry was *PAU-911* (5.52 %).

AICRP Chickpea

- IVT(D): Out of 35 entries tested 8 entries proved superior to local check C-235 (816 kg/ha). These were C-235 (1250), C-217 (1208), C-215 (972), C-254 (955), C-246 (937), C-219 (875), C-240 (861), C-202 (847).
- AVT-1(D): Out of 12 entries tested while no entry could surpass local check SCS-3 (957 kg/ha). Only five entries proved superior to second best check C-235 (641 kg/ha) and these were C-109 (909), C-108 (846), C-111 (826), C-103 (704) and C-115 (701).
- IVT (RF): Out of 24 entries tested, 15 entries performed better than best check SCS-3 (1337). The best three were C-607 (1736), C-608 (1736), C-601 (1632) and C-631 (1615).
- AVT-1(RF) : Out of the ten entries tested two performed better than local check C-235 (736), the better entries were C-504 (794) and C-502 (781).
- ICSN (Desi): 18 new entries were tested under this experiment and along with one common check and one local check. The performance of entries was good.
- ICSN (Kabuli): 18 new entries were tested under this experiment along with one common check and one local check. The performance of entries was good.

AICRP MULLaRP:

MULLaRP-Rabi 2011-12

Lentil IVT (SS): Out of the 21 entries tested, 8 entries performed better than local check L-4147 (679). The best 3 test entries were L11-231 (969), L11-232 (941) and L11-238 (880).

Lentil IVT(LS): Out of the 21 entries tested all the test entries except one, proved superior in seed yield than local check DPL-15 (238),with a yield range of 253-475 kg/ha.

Lentil AVT-1+2 (SS): Out of the six entries tested4 proved better than local check L-4147 (547).The coded entries were L11-216 (750), L11-218 (736), L11-215 (653) and L11-217 (587).

Lentil AVT1+2 (LS): Out of the 9 entries tested, three entries proved better than local check DPL-15 (655) which were L11-256 (823), L11-254 (816) and L11-258 (670).

MULLaRP-Kharif 2012

Kharif 2012: Following four experiments were conducted

(1) IVT Moongbean: Out of the 20 entries tested along with one local check; 11 proved superior to local check SML-668 by 5.64 to 70.47 per cent. These coded entries were KM 12-25 (70.47 %), KM 12-48 (30.99 %), KM 12-32 (28.36 %), KM 12-55 (28.36 %), KM 12-49 (12.67 %), KM 12-43 (12.67 %), KM 12-54 (9.87 %), KM 12-18 (7.06 %), KM 12-56 (7.06 %), KM 12-39

(5.64 %) and KM 12-58 (5.64 %).

(2) IVT Urdbean: Out of the 18 entries tested along with two local checks, four proved superior in seed yield by 2.00 to 23.75 per cent. These coded entries were KU 12-43 (23.75 %), KU 12-36 (13.87 %), KU 12-22 (5.94 %) and KU 12-53 (2.00 %).

Agronomy

Evaluation of AVT 2 genotypes at different plant population levels under rainfed conditions

Among the different kabuli genotypes, the genotype JGK2005-301 recorded significantly higher seed yield of 1329.7 kg/ha which was

Fieldpea var.Rachana Breeder seed.Plot

AICRP chickpea PB trials

found to be statistically at par with the genotype CSJK 6 in recording seed yield of 1269.1 kg/ha. The lowest seed yield was recorded in genotype JKG 2003-304 (783.0 kg/ha) and was found to be at par with Phule G 0027. However, the plant population of 33 plants/sq.m gave higher seed yield of 1178.3 kg/ha in comparison to 22 plants/sq.m (947.9 kg/ha).

Conservation agriculture practices (tillage and nutrients) and weed management for enhancing productivity of chickpea based cropping systems (cereal/oilseed/ pulse-chickpea) in rainfed areas

Conventional tillage supplemented with the application of nutrients of 5 t/ha FYM along with half of the nutrient dose on soil test basis and also when two hand weedings were given to chickpea crop recorded significantly higher seed yield of chickpea than reduced tillage supplemented with same treatments. Conventional tillage recorded higher seed yield of 1018.1 kg/ha, half of the nutrient supplementation on the basis of soil test value when applied through fertilizers and rest with 5 t/ha FYM proved better in recording seed yield of 1022.9 kg/ha . However the weed control through manual weeding registered higher seed yield of chickpea.

Phosphrous and sulphur management in kharif cereal/oilseed-chickpea cropping system

The application of 5 t/ha FYM recorded higher seed yield when supplemented with 60 kg/ha phosphorus and 20 kg/ha sulphur than 0 t/ha FYM along with 30 and 0 kg/ha of P and S. 5 t/ha FYM registered significantly higher seed yield of 976.2 kg/ha whereas 60 kg/ha phosphorus recorded higher seed yield of 998.9 kg/ha whereas the application of 20 kg/ha of sulphur recorded 1014.9 kg/ha of seed yield over application of FYM, phosphrous and sulphur .

Screening of post-emergence herbicides in chickpea

The weed free treatment in chickpea attained significantly higher seed yield of chickpea1766.6 kg/ha followed by two hand weedings at 25-30 DAS and 50-55 DAS (1110.5 kg/ha). However, among the herbicidal treatments the application of Imazethaypr @ 20 g at 30 DAG registered higher seed yield of chickpea (1469.8 kg/ha). It was found to be statistically at par with the application of Imazethaypr @ 20 g at 20 DAG recording 1267.9 kg/ha. The lowest seed yield of chickpea was recorded with weedy check treatment recording 711.1 kg/ha seed yield.

Integrated Weed management in urdbean

Weeds are the serious problems in kharif season under both irrigated and rainfed conditions especially in pulse crops with this

background an experiments entitled Integrated weed management in urdbean was laid out in kharif 2012.The results indicated that among the nine treatments, hand weeding twice at 20 and 40 DAS and herbicidal treatment with Imazethaypr @ 250 ml/ha as

post emergence application after 15-20 DAS recorded maximum seed yield (732.3 kg/ha) and were at par with each other. Weedy check recorded lowest seed yield (481.7 kg/ha).The herbicidal treatment recorded 52.0 % increase over weedy check.

Plant Pathology:

Evaluation of IVT, AVT1 and AVT2 (Desi, bold, late sown, Kabuli, bold seeded and HFT) chickpea entries against wilt (Fusarium oxysporum f. sp. ciceri) disease

One hundred and fifty nine entries consisting of IVT, AVT-1 and AVT-2 were evaluated in wilt sick plot having propagules 10^6-10^7 cfu/g of soil during Rabi 2011-12. Entries GJG0904 of IVT (rainfed) and BG3024 of IVT (Desi) showed wilt resistant reaction with mortality of 5.1 and 6.4 %, respectively. These resistant entries are being sown during current Rabi season in wilt sick plot for seed multiplication.

Chickpea entry GBC6 (AVT-1) of IVT (rainfed) shown resistant reaction during Rabi 2010-11, 2011-12 and 2012-13 and can be a good donor for wilt resistance

Integrated management of wilt disease of chickpea. (Farmer's field at Arazi, Samba)

Out of six treatments, Trichoderma harzianum (Pusa 5 SD) @ 4 g/kg + Carboxin + Thiram (Vitavax Power) have shown an increase in yield of 166 % over control with four replications, whereas treatment Carboxin + Thiram (Vitavax Power) @ 2 g/kg have 26.6 % less wilt incidence in comparison to control as per the result of rabi 2011-12.

Screening Nursery for field pea AVT & IVT entries against Rust disease

Out of 39 entries, FP-1105, FP-1117, FP-1132, FP-1112, FP-1128, FP-1114, FP-1106, FP-1121, FP-1107 and FP-1133 were found resistant against Rust, whereas powdery mildew disease was also noticed in FP-1138.

Kharif 2012-AICRP on MULLaRP crops

Experiment- National nursery of urdbean for evaluation of AVT (2+1) and IVT entries against Yellow Mosaic Virus

Under artificial conditions, Out of 40 Entries, P-64, P-57 and P-46 were found resistant against YM Virus. Rest entries showed moderately resistant to highly susceptible disease reaction.

Management of soil borne disease of black gram (Vigna mungo L. Hepper) through incorporation of Arbuscular mycorrhizae

(i) Isolation, characterization and evaluation of different Bradyrhizobium (Cowpea group) isolates- on the basis of nodulation and dry weight of plant, efficient strains were selected for further study.

(ii) Survey for occurrence, severity of different soil borne diseases and association of blackgram in Jammu sub-Tropics- Isolation and

purification of Rhizoctonia bataticola isolates causing dry root rot disease in urdbean was done. Dry root rot disease was recorded which varied from 10-30 %, whereas Web blight disease varied from 4-25 % in Samba, Kathua and Udhampur districts (Five locations each). Mycorrhizal spores were studied by sieving and decanting and root processing.

AICRP on Chickpea, Plant Breeding Coordinated Trials during Rabi 2011-12

Evaluation of chickpea germplasm and breeding material against wilt disease-

Out of 75 germplasm lines, each in 6 rows,4 meter row length with one replication having mortality ranging from 5.22 to 75.0 per cent. Lines HC-5, IPC-09-55, IPC-09-41, GPF-2, GNG-2047, ICSN(D)-17 and ICSN(D)-122 were found resistant against wilt disease with mortality ranging 5.22, 8.78, 10.00, 7.75, 9.52, 10.0 and 9.09, respectively.

IVT (Desi)

Out of 35 entries including local check C-202, C-208, C-217, C-225, C-229, C-235, C-236, C-240, C-242, C-243, C-243, C-245, C-247, C-249, C-250, C-251, C-254 and C-235 were found resistant against wilt disease. Rest of the entries showed moderately resistant reaction.

AVT-1 (Desi)

Out of 12 entries, only C-101 was found resistant against wilt disease. Rest of the entries showed moderately resistant reaction.

AVT-1 (Rainfed)

Out of 10 entries, C-501, C-502, C-503, C-504, local checks: C-235 and SCS-3 were found resistant against wilt disease. Rest of the entries showed moderately resistant reaction.

IVT (Rainfed)

Out of 23 entries, C-601, C-607, C-608, C-609, C-613, C-627, C-628, SCS-3 and C-235 were found resistant against wilt disease. Rest of the entries showed moderately resistant reaction.

IVT-(Kabuli)

Out of 25 entries, none was found resistant against wilt disease. The experiment was conducted at Research Farm, FOA, SKUAST-J, Main Campus, Chatha.

AVT-1 (Kabuli)

Out of 8 entries, none was found resistant against wilt disease. The experiment was conducted at Research Farm, FOA, SKUAST-J, Main Campus, Chatha.

Station Varietal Trial (S.V.T.) 2012

S.V.T. (Desi) Out of 8 genotypes, only GNG-1999 was found resistant against wilt disease.

S.V.T. (Kabuli) Out of 7 genotypes, none genotype was found resistant against wilt disease.

ICRISAT Nurseries 2012

I.C.S.N.(Desi)

Out of 20 entries, 103(1) in one replication showed wilt resistant reaction and entries 208 (15), 209 (16), 211 (1), 212 (18), 216 (20) and 218 (3) were found resistant in second replication.

I.C.S.N.(Kabuli)

Out of 20 entries, 105 (6) showed wilt resistant reaction in one replication and entries 203 (15), 208 (9), 211 (18), 212 (3), 214 (16) and 218 (2) were found resistant against in second replication.

MULLaRP Plant Breeding Coordinated Trials during kharif 2012

IVT Urdbean

Out of 20 Genotypes including local checks, KU-12-22, KU-12-39, KU-12-42, UG-218, Uttara and KU-12-44 were found resistant against Mungbean YMV disease.

IVT Mungbean

Out of 21 genotypes, including local check SML-668, KM-12-25, KM-12-39, KM-12-37, KM-12-54 and KM-12-48 and SML-668 were found resistant against MYMV disease.

Station Varietal Trial (SVT) 2012

SVT on Urdbean

Out of 12 Genotypes, only SU-05-10 was found moderately resistant against Web blight disease and rest were resistant against Web blight disease and in the same Trial genotypes Pant P-40, SUS-7, KUG-150

Entries showing highly rust susceptible disease reaction

A View of Plant Pathological Sick Plot at PRSS, Samba in artificial condition

And WBU-108 were found moderately resistant against mungbean yellow mosaic Virus (MYMV) disease and rest were found resistant against MYMV disease.

SVT on Mungbean

At one location at the Research Farm PRSS, Samba, out of 7 genotypes ML-131, ML-1165 and PDM-54 were found resistant against Web blight disease, whereas at second location at the same research farm all genotypes were found moderately susceptible to highly susceptible against web blight disease.

QUALITY SEED PRODUCTION DURING 2012-13

SUMMARY

Field Particulars	Crops (in Qts) Achievements
Nucleus seed	9.8
Breeders seed	124.98
Foundation seed	471.82
Certified seed/ Truthfully labelled seed	965.40
Total	1572.09
Planting material (Fruit plants in Nos.)	165135
Vegetable Seed Truthfully Labelled/Certified (in kg)	354.00
Planting material (Medicinal & Aromatic Plants)	9300 + 26.1 kg

DETAILED REPORT (2012-13)

(In Qts)

Particular	Achievement
Field Crops	
A. Paddy	
Nucleus seed	0.45
Breeder seed	25.1
Foundation seed	104.0
Certified/Truthfull Labelled	381.0
Total	555.1
B. Wheat	
Nucleus seed	9.10
Breeder seed	96.00
Foundation seed	357.50
Certified/Truthfull Labelled	576.00
Total	1038.6
C. Maize	
Nucleus seed	0.10
Breeder seed	0.50
Foundation seed	3.00
Certified/Truthfull Labelled	0.00
Total	3.60
D. Oilseeds	
Nucleus seed	0.05
Breeder seed	0.0
Foundation seed	2.25
Certified/Truthfull Labelled	2.50
Total	4.75
E. Pulses (Gram, Fieldpea, Lentil, Mungbean & Urdbean)	
Nucleus seed	0.18
Breeder seed	3.39
Foundation seed	5.07
Certified/Truthfull Labelled	0.90
Total	9.53
F. Forages (Oats)	
Nucleus seed	0.0
Breeder seed	0.0
Foundation seed	0.0
Certified/Truthfull Labelled	5.0
Total	5.0

HORTICULTURE CROPS

Vegetable Seed (q) & Planting material (Nos) Realization

Horticultural Crops Planting material (Numbers)

Fruit Crops	Physical Target for 2012-13	Achievements Budded/Grafted/ Layered/Plants
Pomegranate	2000	2903
Guava	2500	2039
Citrus	4000	3854
Aonla	2500	2120
Litchi	1500	1212
Mango	3000	513
Phalsa	2000	1877
Peach	1500	659
Pear	2000	677
Plum	1000	753
Bael/ Jamun/ Monkey Fruit/ Custard Apple/ Jack fruit /karonda	1000	1775
Grape	2000	03
Strawberry (Farmers Field)	125000	134750
Total	150000	165135

VEGETABLE SEED

Crop (Variety)	Breeder Seed (kg)	Vegetable Seed Truthfully Foundation Seed (kg)	Labelled (q)
Okra (Varsha Uphaar)	27.0		1.0
Seli Special/SJO-0	145.0		
Bottle Gourd (CBG 50/SJBG-01)	1.0		
CBG 51/SJBG-02	1.0		
Bitter Gourd (CBT/SJBT-01)	0.5		
Pumpkin (Local/SJP-01)	0.5		
Knol Khol (G-40/SJKK-01)	60.0		
Broccoli (Early green/ SJBC-01)	5.0		
Spinch beet			

(C-13/SJSB-01)	96.0		
Fenugreek (Kasuri Supreme /SJF 01)	65.0		
Coriander (Khushboo/SJCo-01)	60.0		
Radish (SJRW-01)	20.0		
Total	**354.0**	**27.0**	**1.0**

3.3 VETERINARY SCIENCES & ANIMAL HUSBANDRY

3.3.1 Surgery & Radiology

Studies on extra capsular cataract extraction in dogs

- Prevalence of cataract is upto 3% of all cases of canines
- Extra capsular cataract extraction in absence of specialized equipment for case selection and magnification and lack of owner's compliance did not yield desired results.
- Ophthalmology being highly specialized field, the success rate can be improved with training of surgeon, availability of specialized equipment like operating microscope for magnification and applanation tonometer for evaluation of IOP for proper case selection

3.3.2 Veterinary Physiology & Biochemistry

Haematological and blood biochemical profile in post-partum anoestrous cows of Jammu

Haematological values (Hb, PCV, MCH and MCHC) were significantly higher (P<0.05) in normal cyclic cows compared to anestrus animals. Total protein and albumin concentrations were significantly higher (P<0.05) in normal cyclic cows; total cholesterol and urea levels were significantly higher (P<0.05) in anestrus animals. Activities of enzymes (ALP, AST and ALT) were nearly similar in both groups; being slightly higher (non-significant) in normal cyclic animals. Mineral concentrations were higher in normal cyclic cows. Significantly higher (P<0.01) values of inorganic phosphorus compared to anestrus animals. Mineral mixture induced high estrus (78.57 %) and satisfactory conception rate (81.81 %) observed. Deficits minerals like Ca, P, Cu, Co, Mg and Zn either singly or in combination, could set anestrous.

Profiling of certain physiological, haematological and blood biochemical parameters in cross bred cattle with relation to season in Jammu region

MCHC were significantly higher in calves, whereas, MCV and MCH significantly higher in lactating animals. No significant effect observed in blood biochemical parameters i.e, glucose, total protein, albumin, globulin, urea, uric acid and creatinine. Significant effect for total cholesterol in summer hot-humid was observed. Seasons significantly (P>0.05) affected groups , GPX and SOD values were highest in summer (hot-humid) season.

Studies on Biochemical and Enzymatic Profile of Animals in Disease Conditions

Parameters studied as advised (Refer action taken report). Significant difference observed between diabetes mallitus and healthy dogs. Serum samples analyzed for Fasting Blood Glucose and liver enzymes (SGOT, SGPT). Significantly higher (P<0.001) Fasting blood glucose level (298.1 ± 63.6 mg %) and enzyme activities (SGOT=136.8±9.41 IU/L and SGPT=52.2±10.11 IU/L) detected in diabetic dogs. Owners of diseased animals advised dietary management and in severe cases insulin injections.

3.3.3 Veterinary Parasitology

Socio-economic upliftment of women farmers through backyard poultry farming

During the course of the project 22 trainings (Theory and Practical) were given which

comprised of 440 women farmers of Rangpur Maulana, Rathana, Chakroi (R.S. Pura), Majua, Rakhmagal (Bishnah), Rahya Suchani, Purmandal, Sangrah (Samba), Flora, Marh and Ladore (Jammu) of the Jammu region. Ten birds (40 day old) were provided to each woman farmer and in total 210 poultry units were established in these villages. Training was imparted to 340 women farmers. Health facilities to these 210 units were also rendered by the division.

Bovine Cryptosporidiosis and its Zoonotic Potential in Jammu District

Faecal samples of calves were examined for the presence of *Cryptosporidium* oocysts by acid fast staining, ELISA and PCR. The overall prevalence of *Cryptosporidium* spp. in bovine calves of Jammu district was observed to be 28.1 per cent. It was higher in organized farms (49.34 %) which varied significantly ($p<0.05$, Chi square 22.67, C.I. = 1.53-2.86) as compared to unorganized farms (21.79 %). Prevalence of *Cryptosporidium* spp. in cattle calves was 35.51 % and in buffaloes it was 19.74 per cent. The prevalence varied significantly ($p<0.05$, Chi square 100.982, C.I. = 1.905-2.631). In both types of farms and animal species highest incidence of infection was found in < 1 month age group (39.86 %) and minimum in 6-12 months age group (15.9 %). The prevalence varied significantly in < 1 month age group as compared to other age group animals. Diarrhoeic (39.41 %) and non diarrhoeic animals (20.25 %) varied significantly ($p<0.05$, Chi square 144.88, C.I. = 2.18-2.99). Seasonal prevalence revealed that in organized farms the highest prevalence was recorded during the winter season and lowest in summer season with an overall prevalence of 69.29 and 27.63 %, respectively. The animals of unorganized farms were having highest prevalence during *monsoon* season (33.59 %) and lowest during summer season (9.37 %).

An overall positivity of 10.71 % (15/140) of cryptosporidiosis was observed in children of Jammu district. The prevalence of *Cryptosporidium* spp. infection among different age groups of diarrheic children varied non significantly ($p<0.05$), but it was observed to be highest in 1 year-2 years age group (18.18 %) followed by 6 months-1 years age group (7.54 %) and minimum in < 6 months age group (3.12 %). As per season the highest prevalence was recorded during the rainy season and lowest in summer season with an overall prevalence of 17.50 and 6.6 %, respectively. The prevalence of *Cryptosporidium* spp. in diarrheic children of Jammu district as per location was observed to be 12.90, 10.52 and 4.76% in rural, semi-urban and urban children, respectively. Analysis of data further suggests that probability of occurrence of *Cryptosporidium* spp. in children who were living in rural area is 2.96 times higher than those residing in urban area. Diarrheic children having persistent type of diarrhea showed maximum (14.47 %) infection of *Cryptosporidium* spp., whereas those having acute diarrhea showed minimum infection (2.56%). Children whose parents were involved in animal husbandry practices had higher prevalence (14.13 %), of *Cryptosporidium* spp. infection than those children whose parents were not involved (4.16 %) in livestock keeping. Children drinking water from tap water supplied by municipality/public health engineering department were having higher prevalence (12.24 %) of *Cryptosporidium* spp. oocysts in stool samples as compared to children drinking water from hand pump (6.6 %) and tube well (8.33 %) sources.

The 15 *Cryptosporidium* positive samples of children were genotyped *i.e.* 834 bp nested product was subjected to digestion by restriction enzymes Ssp1 and Vsp1 separately. *C. parvum* and *C. hominis* yielded 3 visible bands of 447, 270 and 101 bp with Ssp1 digestion. The two species were differentiated

by the Vsp1 digestion pattern. *C. parvum* produced two visible bands of 627 and 115 bp. *C. hominis* generated two visible bands at 556 and 115 bp due to presence of one additional Vsp1 restriction site RFLP analysis of nested PCR product showed that only one children sample was positive for *C. parvum.*

Purified oocysts of children faecal samples which were positive for *C. parvum/C. hominis* (also identified on basis of PCR-RFLP) were fed to mice. Examination of mice faecal samples by mZN staining revealed presence of *Cryptosporidium* spp. oocysts in only one mouse. It was observed that the mouse found positive for *Cryptosporidium* spp. oocysts was fed with *C. parvum* type of oocysts while mice fed with *C. hominis* oocysts did not reveal any *Cryptosporidium* spp. oocysts by mZN staining.

Sequencing: Molecular characterization of *Cryptosporidium parvum* isolate from cattle were cloned and sequenced. Two sequences have been submitted in gene bank. Accession numbers: KC569975 and KC569976.

Phylogenetic Analysis:

Sequence of present *C. parvum* isolates and other isolates reported from India from different host were aligned using NCBI blast tool and phylogenetic analysis was carried out on the aligned sequences to relationship among isolates using online tool "Gene Bee" with bootstrap value.

Dendogarm differentiated *C. parvum* isolates in two groups (Fig.1). One (RK1) is specific for bovine isolate and other (RK2) contained both human and bovine isolates suggesting that these bovine isolates have zoonotic potential.

Prevalence of helminth parasites affecting livestock in Jammu region

During the year, 556 faecal samples of cattle and buffaloes (Cattle 390, buffaloes 166) were examined and the positivity observed was 57.94 and 60.24 %, respectively. Among sheep (160) and goats (100) examined, 81.25 and 60 % animals were found positive, respectively. The predominant parasites observed were strongyles (46.04 %), amphistomes (15.61 %), *Strongyloides* (2.98 %), *Fasciola* (1.65 %) and anoplocephalids (2.76 %).

Prevalence of hydatidosis in goats of Jammu

The prevalence of hydatidosis was carried out in slaughtered goats (n = 177) by liver and lung examination at Jammu. The prevalence rate of hydatidosis was 19.8 per cent. A total of 14.1% goats had cysts in both the livers and lungs while 2.3 and 3.4 % goats had cysts in the livers or lungs, respectively. A total of 9.1 % goats had fertile cysts. The adult goats (above 4 years) had a significantly higher (p = 0.01) prevalence rate as compared to the young goats (below 2 years). The histo-pathological section of the affected lungs revealed a thick coat of granulation tissue causing fibrosis. The cysts caused progressive focal pressure atrophic lesions at the sites of predilection, resulting in atelectasis, desquamation of bronchial epithelium and interalveolar haemorrhages. It may be concluded that the slaughter of food animals at an early age would help to reduce the infection prevalence in dogs and subsequently in the food animals.

Prevalence of *Cysticercus tenuicollis* in small ruminants in Jammu

The prevalence of cysticercosis due to *Cysticercus tenuicollis* in sheep and goats in Jammu was recorded during January 2011 to June 2012. A total of 520 animals (260 sheep and 260 goats) were randomly examined in different meat shops/slaughter houses for the presence of cysts. Different visceral organs were examined using standard meat inspection technique. Out of 520 animals examined, 265 animals were found to be positive. The overall percent prevalence of cysticercosis in small ruminants was recorded

as 50.96 per cent. *Cysticercus tenuicollis* was found in 51.92 % sheep (n = 135) and in 50 % (n = 130) goats. Organ-wise distribution showed *C. tenuicollis* was more frequently attached to the omentum of sheep and goats than any other visceral organ. In both sheep and goats, the reproductive organs were the least affected.

Prevalence of ecto-parasites affecting livestock in Jammu region Occurrence of *Chrysomya bezziana* in a buffalo in Jammu

The first ever occurrence of *Chrysomya bezziana* from this part of country has been documented. A buffalo, aged five years was presented in the Clinics with traumatic wound in the abnormal growth at the base of tail, housing maggots in it. The larvae were collected in normal saline and processed in the laboratory for identification. The collected larvae were creamy coloured, measured 10-15 mm in size and possessed transverse bands of spines except on the last segment. The anterior end was armed with minute paired hooks which connected posteriorly with cephalopharyngeal skeleton. The dorsal tracheal trunk was not darkly pigmented except in posterior half of 12th segment. The stigmal plates were dark black in colour, opened and were not situated in cavity but clearly exposed with radially arranged three winding slits. Morphological characteristics of anterior spiracles situated on the second segment with 4-6 lobes confirmed the identification as *Chrysomya bezziana* larvae.

Prevalence of ticks on bovines of Jammu district

To determine the prevalence of ticks in bovines, 480 cattle and 480 buffaloes were examined from unorganized dairy units of Jammu district during March 2012 to February 2013. The infestation rate in cattle was found to be 47.08 %, while 37.29 % of examined buffaloes were infested with ticks. Among the ixodid ticks, only one species *i.e. Rhipicephalus (Boophilus) microplus was recorded.* Both in cattle and buffaloes, the prevalence of ticks was the highest in monsoon season and the lowest in winter season. Age-wise, the animals aged < 6 months showed the highest prevalence and the lowest was found in animals >1 year of age. Sex-wise, the males had higher infestation rate than the females.

Prevalence of *Oestrus ovis* in sheep and goats of Jammu

A total of 120 sheep and 120 goat heads were examined to detect *Oestrus ovis* larvae. Of 120 sheep, 119 (99.16 %) and 120 goats, 107 (89.16 %) were infested with *O. ovis* larvae. The intensity of infestation in plain and kandi areas did not differ significantly ($p < 0.05$). In sheep of plain area overall intensity of L_1, L_2 and L_3 was found to be 70.26, 27.92 and 1.81 %, respectively. In sheep of kandi area overall intensity of L_1, L_2 and L_3 was found to be 63.66, 34.12 and 2.2 %, respectively. In goats of plain area overall intensity of L_1, L_2 and L_3 was found to be 69.01, 29.29 and 1.69 %, respectively. In goats of *kandi* area overall intensity of L_1, L_2 and L_3 was found to be 71.29, 27.08 and 1.62 %, respectively. Infestation rate up to 1-year-old was 95.29 %, 1 to 3 years-old 100 % and older than 3 years old was 100 per cent. The overall mean intensity of *O. ovis* larvae in sheep and goats was observed to be 16.9 and 7.34, respectively. Gross lesions present were catarrhal discharge, purulent and bloody exudates and congestion. Histopathology of Cerebral cortex recorded neuronal degeneration with increased peri neuronal space and softening of brain substance.

Detection of acaricide resistance in ticks against deltamethrin

The resistance status of deltamethrin (at 12.5, 25, 50, 100 and 200 ppm) was evaluated against *R. (B.) microplus* using adult immersion test. The mortality of female ticks was increased

with increasing concentrations of deltamethrin. The maximum mortality of 40.0% was observed at 200 ppm concentrations. The regression graph of probit mortality of ticks plotted against log values of progressively increasing concentrations of deltamethrin was utilised for the determination of slope of mortality which was 0.8663 ± 0.06329. The lethal concentration (LC_{50}) was calculated as 376.4 ppm and the resistance factor (RF) was 28.08 which indicated level III resistance status. The dose response curves for egg masses, reproductive index and inhibition of oviposition were -22.06 ± 1.432, -0.1560 ± 0.01876 and 25.00 ± 3.010, respectively. In larval packet test, the slope of mortality was 0.8132 ± 3.0789. The LC_{50} value was calculated as 230.35 ppm and the RF was 19.52 which indicated level II resistance status.

Recommendations:

a. Deworming for ruminants

– Late March or early April and late August or early September for strongyles

– Late October or early November for amphistomes in plains and fasciolosis in hills

b. Backyard poultry farming can enhance economic returns of the farmers with meager inputs

c Deworming for Backyard poultry

– For round worms and tapeworms in June and August

– Control of ectoparasites in January and March by dusting with ectoparasiticide

d. To check the spread of acaricide resistance, there is urgent need to adopt corrective measures like

-- strategic application of acaricides

– change of acaricide group

– correct dose

– effective managmental practices

e. To control hydatidosis in food animals, proper disposal of carcasses and routine deworming of dogs should be recommended.

f. *Cryptosporidium* spp. responsible for diarrhoea in bovine and small ruminants, so being zoonotic infection awareness among farmers and professionals regarding zoonotic significance.

Fig. 1 Lung showing multiple hydatidosis

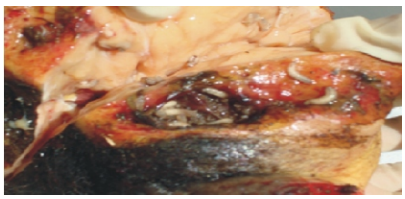


Fig. 2 The presence of larvae of *Chrysomya bezziana* in traumatic wound in the abnormal growth at the base of tail of a buffalo

Fig. 3 Sheep infected with haemonchosis showing diarrhoea and weakness

Fig. 4 A cow severely infested with ticks

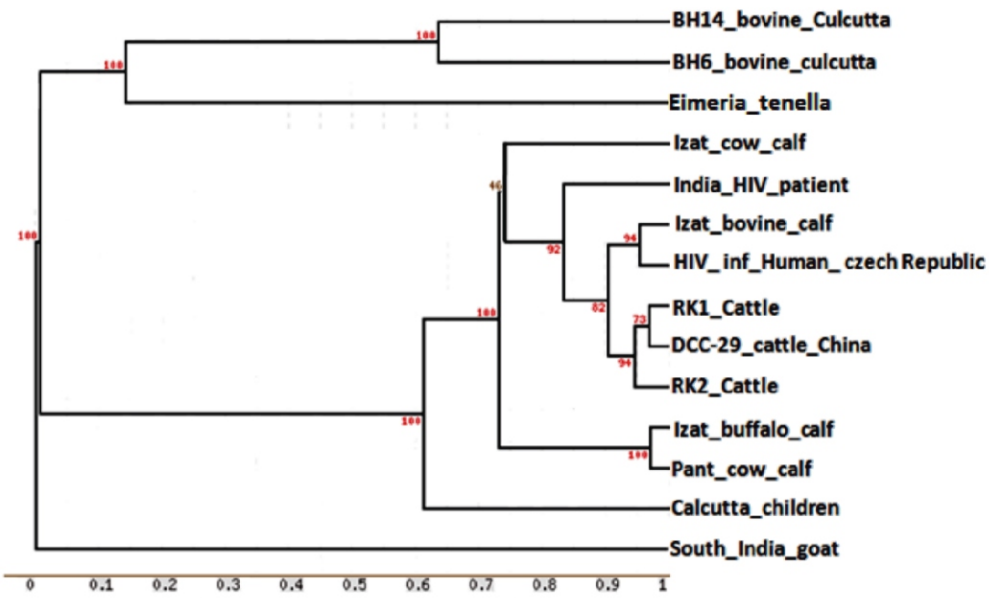


Fig. 5 Dendogarm of *C. parvum* Jammu isolate (RK1 and Rk2)

3.3.4 Animal Nutrition

Nutritional Evaluation of Feedstuffs Available in Jammu

Experiment I:

Studied dietary incorporation of Kinnow mandarin fruit waste on performance of adult goats. KMW after sun-drying contained 92.05% DM. Values of OM, CP and NFE were found to be 95.77, 7.60 and 73.69 per cent, respectively. NDF and ADF content of the KMW was 26.35% and 19.50%, respectively. KMW samples contained mean calcium and phosphorus content as 0.92 and 0.08 per cent, respectively. Isonitrogenous concentrate mixtures containing graded levels of sundried Kinnow waste were subjected to *in vitro digestibility* trial. The dry matter degradability was not affected *in vitro* by Kinnow waste inclusion and therefore highest level of Kinnow waste inclusion tested in the study (40%) was selected for *in vivo* trial. Twelve local adult male goats were randomly allotted to two equal groups and were fed *ad libitum* wheat straw supplemented with concentrate mixture containing (Treatment) or not containing Kinnow waste (control) for a period of 30 days. Significantly ($p< 0.05$) higher crude fibre, acid detergent fibre and calcium and significantly ($p< 0.05$) lower acid insoluble ash, neutral detergent fibre and phosphorus content were present in the Kinnow waste containing concentrate mixture as compared to control. The KMW inclusion led to widening of Ca: P ratio from 2:1 in control group concentrate to 3:1 in treatment group, thereby exposing the animals in treatment group to calcium-phosphorus imbalance. Body weight of the animals, daily intake of feed, nutrient digestibility, nitrogen intake, excretion and balance, blood bio-chemicals and serum enzymes level were comparable among both the groups. Digestible DM intake, digestible OM intake, DCP intake and TDN intake and nutrient density of diet were

comparable between both groups, which indicate that the DMI and energy and protein requirements of the adult male goats can be met by feeding concentrate mixture comprising of KMW up to 40% (w/w).Significantly higher calcium balance was observed in treatment group, whereas negative phosphorus balance was observed in 2 goats of treatment group. It was concluded that Kinnow waste can be used as an energy supplement up to 40% level in the concentrate mixture without any effect on intake, nutrient digestibility and nitrogen balance of adult male goats, however, Kinnow waste containing ration needs phosphorus supplementation to maintain Calcium/Phosphorus ratio in the diet. A net saving of 40% can be made over the cost of concentrate mixture by 40% KMW inclusion, which amounts to Rs. 5.83 per kg. of concentrate mixture. However, in calculating these costs, the cost of KMW procurement, drying and grinding was not factored.

Experiment II:

Experiment was conducted to assess the effect of inclusion of lime treated olive meal incorporation in complete feed on the nutrient intake and digestibility of goats.Olivemeal is a rough ligno-cellulosic feed with low CP but high EE per cent. It has been reported that crude olive meal and lime treated olive meal can replace 25 and 40 per cent of maize, respectively from goat's ration; however, at higher levels, significant decline in *in vitro* dry matter digestibility (IVDMD) was observed and has been attributed to high fat percentage and lingo-cellulosic nature of olive meal. It was hypothesized that lime treated olive meal can be incorporated on ADF replacement basis in complete feed so that it will partly replace both concentrate and roughage n the ration. Olive cake was collected from olive oil mills located in Ramban area of Jammu province. It was sun-dried and ground and was treated with 6% lime. Different isonitrogenous composite diets containing variable levels of lime treated olive cake (0-39.9%) on ADF replacement basis (0-50%) formulated and tested for *in vitro* dry matter digestibility. On the basis of *in vitro* trial 40% ADF replacement (30% olive meal in complete diet) level was selected for *in vivo* trial. In *in vivo* trial, twelve adult male goats were randomly allotted to two equal groups *viz.* control (Conventional concentrate + Wheat straw as complete feed in 40:60 proportion) and treatment (Complete feed with lime treated olive meal at pre-fixed level (30% olive meal or 40% ADF replacement level as per phase I results). The CP%, NDF% and ADF% of bothexperimental rations was comparable; however, high EE, total ash, calcium and lower NFE% were present in treatment than control ration. Feed intake of goats was not affected by the inclusion of olive meal in the ration, indicating that inclusion of olive meal in ration at 30% level had no adverse effect on the palatability. Digestibility of DM, OM, CP and EEwere similar between experimental animals irrespective of dietary treatments, however lime treatment of olive meal was able to significantly ($p<0.05$)increaseCF digestibility in treatment group. All the animals had positive nitrogen balance without any significant difference. Similar

retention value for nitrogen indicate that olive meal available in Jammu region is having different composition as compared to that reported by workers for Mediterranean olive meal in terms of nitrogen binding and its availability. It can be concluded on the basis of the results of this study that olive meal treated with 6% lime (w/w) can be incorporated in complete feed up to 30% level (40% ADF replacement vice-a-vice traditional diet) without affecting the body weight, dry matter intake and digestibility and plane of nutrition of goats.A net saving of about 27% amounting to Rs3.07/- can be made per kg of the ration with the inclusion of olive meal at 30% level.

Augmenting Utilization of Paddy Straw in Ruminant Ration

Paddy straw sampled from different R S Pura locations was evaluated for proximate composition and incriminating factors. Straw contained 88.80± 1.57% organic matter, 1.92±0.57 per cent crude protein, 1.00± 0.30% ether extract, 11.20±1.57% total ash, 2.75± 0.98% calcium and 1.79±0.07% phosphorus on dry matter basis. Anti-nutritional factors were 1.98±0.02% oxalic acid and 7.59±0.02% acid insoluble ash on dry matter basis, indicative of silica content.To evaluate the effect of concentrate and molasses supplementation over dry matter degradability of paddy straw, samples were subjected to *in vitro* dry matter degradability analysis and supplementation , concentrate mixture (60 straw: 40 concentrate mixture proportion) and concentrate mixture with 5% molasses can increase the dry matter digestibility by 13.99 and 26.00 per cent, respectively. IVDMD of paddy straw was significantly ($p<0.05$) higher than wheat straw although wheat straw responded better to supplementation with concentrate mixture and molasses.

3.3.5 Veterinary Anatomy

Anatomical studies on the digestive system of adult Bakerwali goat (*Capra hircus*)

Tissue pieces from the parts of different organs of the digestive system were collected, preserved in formalin solution and processed through paraffin method and slides obtained were stained by H&E, Mallory's method for collagen, Gomori's method for reticulum, Hart's method for elastic fibres, Mercury Bromophenol Blue method for basic proteins, Alcian Blue method for acid mucopolyssacharides and McManus method for glycogen. The basic histological and histochemical architecture of different organs of the digestive system *viz.* cheek, lips, dental pad, oesophagus, stomach (cardiac, fundic and pyloric parts), intestines, liver and salivary glands were recorded.

Anatomical studies on the Female Genital System of Bakerwali Goat (*Capra hircus*) of Jammu region in different age groups

Biometrical parameters of various organs of female genital system in Bakerwali goats pertaining to all the age groups have been conducted and statistically analyzed. The tissue sectioning of all genital organs (ovary, oviduct, uterus, cervix and vagina) has been done. Sections from various organs have been subjected to various histological and histochemical staining methods and their features have been

recorded. Follicular fluid collected and analyzed.

Biochemical estimation of the follicular fluid has been done and found that it contained Total Protein 8.08 g/ dl, Albumin 4.175 g/dl, Ca 3.93 g/dl, Mg 1.976 g/dl and ALP 24.75 g/dl.

Anatomical studies on the skeletal system of adult Bakerwali goat (*Capra hircus*) of Jammu region:

Detailed studies were conducted on the oscoxae and femur of the appendicular skeleton in adult Bakerwali goats. The os coxae was the largest of the flat bones. It consists primarily of three parts *viz*. the ilium, ischium and pubis, which met toform the acetabulum, a large cotyloid cavity with which the head of femur articulates. The ileum was a Modified long bone situated at Cranial component of the pelvic girdle. The ischium was a modified long bone which formed the caudal part of the ventral floor of the pelvis. It was irregularly quadrangular, and presented two surfaces, four borders, and four angles. The pubis was located cranial to the ischium. It also formed the cranial part of the pelvic floor. The pubis is the smallest of three bones of the oscoxae. It may be described as having, a body, two branches two surfaces and three borders.

3.3.6 Livestock Products Technology

Development of some shelf stable meat products from spent hens meat

- Standardized emulsion for chicken snacks and chicken chips contained lean meat (50.60%), corn flour (25%), rice flour (10%), crushed ice (5%), condiment mixture (3%), spice mixture (2%), common salt (2%), whole milk powder (1%), monosodium glutamate (0.5%), sodium tripolyphosphate (0.4%), sodium bicarbonate (0.5%) and sodium nitrite (120 ppm).
- Meat fortified biscuits contained refined wheat flour 26.5%, chicken meat powder 10%, corn flour 6%, sugar 20.5%, fat (bakery dalda) 20.5%, egg 15%, baking powder 1% and salt 0.5%. Ingredients thoroughly mixed. Fat and eggs added , dough thoroughly kneaded. Chicken noodles prepared by admixing 1000 grams of refined wheat flour with 120 grams of dried chicken powder, 20 grams of common salt, 20 grams of spice mixture and flexible dough with sufficient water (340 grams). Noodles steam cooked for 30 minutes and oven dried (50-60°C , 3-4), packaged in low density polyethylene. Shelf life of Biscuits and noodles two months and chips and curls one month at ambient temperature.

Quality assessment of traditional meat products available in local markets of Jammu

- Goshtaba had highest fat but within normal range. Mean values for total plate and psychrophillic counts comparatively higher for tandoori chicken, seekh kebabs and boti kebab. Mean sensory scores for traditional meat products was good to excellent. Traditionally methodology needs replacement by modern emulsion technology with hygienic precautions.

Effect of different flours on the quality attributes of fish snacks

- Efforts were made to develop good quality and highly nutritious fish snacks from fish meat utilizing extrusion technology. Incorporation of 30 % rice flour and

0% oil were found to be optimum in the basic formulation for preparation of fish snacks with a cooking time of 31 min. Three flours could be incorporated in the basic formulation at optimum levels *viz.* 20 % corn flour, 10 % black gram flour and 10 % peanut flour replacing the rice flour. Incorporation of corn flour in the formulation significantly ($P<0.05$) increased the emulsion stability, cooking yield, pH, and carbohydrate content of the snacks whereas the fat and ash content decreased significantly ($P<0.05$). Incorporation of black gram flour and peanut flour in the formulation significantly ($P<0.05$) increased the emulsion stability, cooking yield, pH, crude protein, ether extract and ash content of the snacks whereas, the carbohydrate content decreased significantly ($P<0.05$). The products developed were shelf stable and could be stored in LDPE for a period of 21 days at room temperature without appreciable deterioration in quality

3.3.7 Teaching Veterinary Clinical Complex

Study on medical and surgical interference of intestinal obstruction in dairy cattle

Cows Suffering from intestinal obstruction due to intussusception were treated without resecting the intussusceptal mass. The intussuscepted mass was by passed by constructing the intestinal part stroma between aboral and oral to intussusception with 100 % success rate.

Hormonal induction of Estrus in post-partum anestrus Buffaloes

Anestrous buffaloes were treated with different hormonal treatment for induction of cyclicity. CIDR based protocol was found to be best for induction of estrus as 100 % buffaloes came into estrus.

Evaluation of contrast materials in myelography for diagnosis of spinal cord diseases in canines

The contrast effect of two concentration of iohexol (300 mg I/ml; group A and 350 mg I/ml; group B) contrast material @ 0.5 ml/kg body weight were evaluated in 6 dogs, presented to clinics with the history of hind quarter weakness / paralysis /paresis, for the diagnosis of spinal cord diseases. Contrast agents were administrated through cisterna magna and myelograms were taken at different intervals. Blood were collected before myelography and 60 minutes after myelography. Males were more affected than females. Hb, packed cell volume and total leucocyte count decreased non-significantly but there were no changes in differential leucocyte count. Myelograms of group B was better than group A. Lateral myelographic views were of better diagnostic quality as compared to VD views. The most common spinal cord injuries were compression of spinal cord and severed spinal cord.

3.3.8 Animal Genetics & Breeding

Genetic Polymorphism of Lactoferrin gene in Jersey crossbred cattle

Total of 50 samples of blood and milk of crossbred cattle were collected

from the Government Dairy Cattle farm, Belicharana, and from the local areas of R.S. Pura. Jammu. Genomic DNA was isolated and specific primer was used for the amplification of the promoter region. The PCR product comprised of 115 bp. The PCR product was initially denatured with denaturing agents and then run on native PAGE which was later silver stained. All the 50 samples revealed one type of banding pattern viz, two bands (Plate-1). Single genotype was present in all animals. Hence promoter region of Lactoferrin gene is monomorphic in crossbred cattle.

The amplified PCR product of another region of lactoferrin gene was of 301 bp (part of intron 6) (Plate-2). *EcoRI/PCR-RFLP* revealed three genotypes *viz.*, AA, AB and BB with genotypic frequency of 0.50, 0.10, and 0.40 respectively (Plate 3). Allelic frequencies for A and B alleles were 0.55 and 0.45, respectively. The chi-square

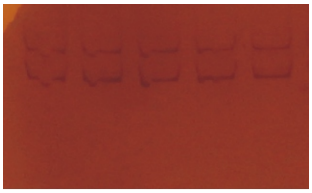


Plate 1: SSCP of promoter region of Lactoferrin gene

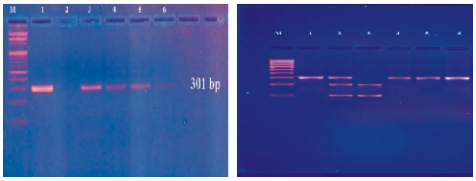


Plate 2 Amplification of PCR Products
Lane M: 100bp DNA Ladder
Lane 1,3,4,5 and 6: PCR products

value was highly significant revealing that the population under study was not in H-W equilibrium. Polymorphic information content (PIC) for co-dominant marker PCR-RFLP was estimated to be 0.372. The value of PIC and heterozygosity suggested that the two allele marker was highly informative. Thus, polymorphism existed in intron-6 region of bovine Lf gene which suggested that polymorphism could be associated with somatic cell count (susceptibility/resistance to mastitis).

3.3.9 Veterinary Gynecology & Obstetrics

Molecular basis of capacitation like changes in the assessment and prevention of cryodamage during cryopreservation of bovine spermatozoa (Buffalo and Crossbred Bulls)

- Soya based extender resulted in acceptable freezability of cattle semen in terms of intact acrosome and sperm abnormalities.
- Decrease in spermatozoa motility and live sperm count was maximum between equilibration and 24 hour after freezing in both extenders. Soya extender decreased sperm motility and live sperm count at freezing compared to Tris egg yolk.
- Decrease in per cent intact acrosome found highest from stages of equilibration to 24 hour after freezing in both extenders (non significant difference in both extenders).
- Most critical stage was from stage of equilibration to the stage of freezing affecting spermatozoa integrity and viability.
- Soya based semen extender (SE) can be an alternative to conventional Tris extender (being free from animal proteins).

Breeding and management strategies in dairy animal for socioeconomic upliftment of rural women

In the project estrus was induced in anestrus cows and buffaloes with an aim to reduce the inter-calving period and thus augmenting fertility and productivity of the animals for economic upliftment of rural women dairy farmers. A total of 40 anestrus cows and 30 anestrus buffaloes were treated for induction of estrus using different protocols.

- Five one day training programmes on "Management of infertility problem in diary animals" were organized at four different villages of R.S. Pura and total 92 women dairy farmers participated in these trainings.
- One day training entitled "Empowerment of rural women through development of value added indigenous milk products" was organized on 31st January, 2013 in collaboration with the Division of LPT, where 24 women dairy farmers attended the programme.
- Animal infertility camp was organized on 19th February, 2013 at village New Agra Chak and 45 animals were treated.

Augmentation of fertility and control of calving interval in rural cattle

- Farmers should be educated on the benefits of estrus detection and timely insemination.
- Balanced ration feeding with mineral mixture supplementation and timely deworming in dairy cattle can resume cyclicity in about 30% anoestrus animals.
- Hormonal therapy can induce estrus in 100% treated animals with 40% conception rate.
- Crestar ear implant has best result 100% estrus induction with 50% conception rate in first AI and resumption of cyclicity in all treated animals.
- Various hormonal protocols can be used for treatment of anestrus animals, reducing service period and reduction in intercalving period, increased calf crop, increased fecundity and higher milk production in the treated animals.
- Conventional made P4 Sponge (CSWRI)found cost-effective to induce estrus in dairy animals.Another project suggested to manufacture such sponges at our place and used for mass synchronisation and treatment of infertile dairy animals in rural areas.

3.1.10 Veterinary Public Health & Epidemiology

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

A total of 29 milk samples comprised of 17 from animals (cattle, buffalo and goat) and 12 from household supplies were subjected for isolation of Staphylococcus aureus. Out of 29 samples 15 samples were found positive for *Staph. aureus.*

Seroprevalence studies on brucellosis in animals and humans

A total of 62 serum samples comprised of 47 sheep, 13 cattle and 2 canine samples were collected and were subjected to RBPT, STAT and Indirect ELISA.

S.No	Species	No. of samples	RBPT	STAT	I-ELISA
1.	Cattle	13	1	1	1
2.	Sheep	47	2	4	5
3.	Canine	2	0	0	0
	Total	**62**	**3**	**5**	**6**

Virulence gene profile of Shiga toxin-producing *Escherichia coli* from bovines and their handlers; milk and milk products was studied where in a total of 103 bovine faecal samples and 70 bovine handler samples were processed for the isolation of *E. coli*. Target specific primers of mPCR for stx_1, stx_2, *eaeA* and *hlyA*genes detected Shiga toxin producing *E.*

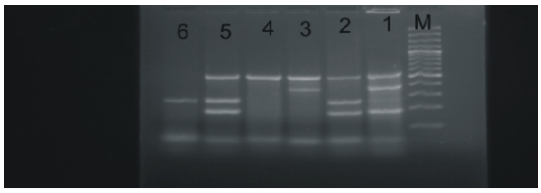


Fig 1. Agarose gel showing mPCR amplification products of stx_1, stx_2, eaeA and hlyA genes in E. coli isolates from bovines and their handlers

coli (STEC) in 15 (11.90 %) of 126 *E. coli* isolates. Twenty three (18.25 %) *E. coli* isolates revealed the presence of one or more virulence genes. The most frequent gene combination was stx_1, stx_2 and *hlyA*. The prevalence of STEC in cattle, buffalo and bovine handlers was 15, 6.7 and 4.28 %, respectively.

In another study the occurrence and multidrug resistance of shiga-toxin producing *Escherichia coli* from milk and milk products was evaluated where in a total of 205 samples, 150 from raw milk and 55 from milk products were processed and 25.36 % of samples revealed *E. coli*. The mPCR using specific primers for stx_1*and* stx_2 genes detected 3.90 % STEC with a prevalence of 4 % in milk and 3.64 % in milk products. Twenty five of 52 (48 %) *E. coli* isolates revealed multidrug resistance to four or more antibiotics.

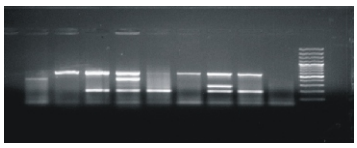


Fig 2: Agarose gel showing mPCR amplification products of stx_1, stx_2, eaeA and hlyA genes in E. Coli isolates from mlik and milk products

3.3.11 Veterinary Animal Husbandry Extension Education

Documentation, Validation & Extension of suitable package of practices (PoPs) of Indigenous Technical Knowledge and Practices (ITKs) in treatment of various ailments of Livestock in Jammu Division of J&K State

Fig 1 ITK interaction meet at Billawar Kathua

Fig 2 ITK interaction meet at Udhampur

Fig 3. Interaction with ITK healers Udhampur

Fig 4. Interaction with ITK healers Billawar

ITK healers from 6 districts *viz.* Jammu, Samba, Kathua, Reasi, Rajouri and Udhampur have been identified and their methods of treatment for livestock have been documented. Seventy-nine villages in different identified districts have been surveyed and 80 ITKs related to animal husbandry have been documented. Thirty-six medicinal plants which are being used by traditional healers have been collected and their validation in treatment of animal diseases is under trial. Several ITK interaction meets were held with traditional healers in different parts of Jammu division to document the practices

3.3.12 Veterinary Medicine

Epidemiological studies on haemonchosis in small ruminants and anthelmintic evaluation of local herbs

Fig 1 Haemonchus in Hank's balanced salt solution

To evaluate the anthelmintic potential of locally available herbs viz., Artemisia absinthium (Linn.), Vernonia anthelmintica (L.) Willd., Scindapsus officinalis (Roxb.) Schott., Butea monosperma (Lam.) Kuntze, Zanthoxylum armatum DC. and Mallotus philippensis (Lam.) Muell. Arg. in vitro trials using different concentrations ranging from 10 to 100 mg/ml of each herb were conducted on fresh adult Haemonchus worms of sheep and goat origin. The results revealed that aqueous extract of Artemisia absinthium (Linn.) showed good activity with 100 mg/ml concentration at 1 hr and excellent at 2 hrs compared to the levamisol. The aqueous extract of Vernonia anthelmintica (L.) Willd. showed good activity too at 1 hr and excellent at 2 hrs but with higher concentration of 500 mg/ml.

Clinico-therapeutic studies on ketosis in buffaloes with special reference to oxidative stress

Study was conducted on 18 clinical cases of ketosis. The prominent clinical signs were sudden and unexpected drop in milk production, depraved appetite, wasting and depression. Biochemical parameters, viz. plasma glucose, total plasma protein, LDL and HDL-cholesterol, calcium and magnesium decreased significantly. Whereas, values of AST, ALT significantly increased in ketotic buffaloes. While the oxidative stress indices like lipid peroxidase increased significantly and antioxidant's like SOD, Catalase and GPx decreased significantly in ketotic buffaloes.

Administration of insulin with dextrose plus vitamin E and Se therapy had better ameliorative potential.

Clinico-therapeutic studies on canine otitis externa

Screening of 273 dogs revealed 21.97 % incidence of otitis externa. The cytological examination of swabs from clinical cases of otitis showed either Coccus or Rods organisms along with neutrophils, mononuclear cells,

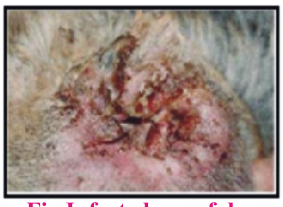


Fig Infected ear of dog

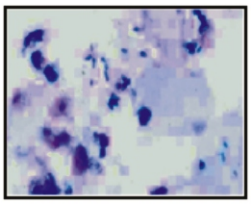


Fig Cytology of infected ear swab

epithelial cells and erythrocytes. Fungal infection Malassezia pachydermatis, and bacteria like Staphylococcus spp., Pseudomonas sp. and Streptococcus sp were observed.

Combinations of Antibiotics/ Antifungal/ Antiparasitic with fishoil @5ml oid orally was found to be most effective treatment in treating Bacterial, Fungal and Parasitic otitis externa. Based on CST, enrofloxacin and gentamicin antibiotics were observed to be highly efficacious.

Studies on urinary tract disorders In dogs in Jammu

Study was conducted on 28 dogs suffering from various urinary tract disorders. Clinical, haemato-biochemical and urine parameters were studied in the affected dogs. The prevalence of urinary tract disorders (UTDs)

Fig Sonogram showing abscess at neck of Urinary bladder in ultrasound

Fig Contrast radiograph for diagnosis of urinary affection

was found to be 3.22 % (28/867). Intrinsic-renal (35.71 %) was most encountered disorder followed by pre-renal and post-renal. Upper UTDs was most encountered (67.86 %) than lower UTDs.

Urine examination revealed change in colour (yellow brown to colourless), proteinuria, presence of leucocytes and bilirubin. Ultrasonography with haemato-biochemical and urine observations were found to be significant diagnostic tool in UTDs. Diuretic mannitol with supportive therapy found to be more effective in improving GFR.

Seroprevelance of Brucellosis in Large Ruminants of Jammu

Study was undertaken to determine the occurrence of brucellosis in large ruminants of Jammu. A total of 320 serum samples (160 from cattle and buffalo each) were analyzed, and 10

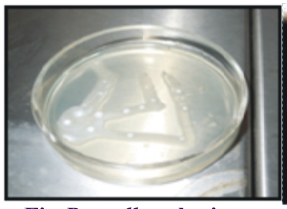


Fig *Brucella* colonies on agar plate

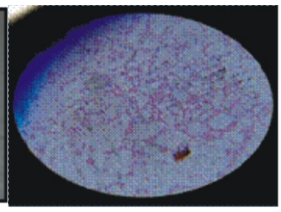


Fig Gram staining of Brucella isolates

(3.13 %) and 17 (5.31 %) samples were positive to Rose Bengal Plate Test (RBPT) and Standard Tube Agglutination Test (STAT), respectively.. On screening 30 milk samples

from serological positive and doubtful animals by milk ring test, 7 samples were found positive. On isolation from milk samples, 2 (6.66 %) samples, one from cattle and buffalo each, yielded Brucella abortus. The presence of brucellosis in large ruminants poses a significant economic loss to the farmer and a public health hazard to the general population

Clinico-therapeutic studies on bovine fasciolosis

Prevalence of fasciolosis in bovines from Jammu was studied. 750 faecal samples (478 buffaloes and 272 cattle) were examined over the period of 12 months from October, 2011 to

Fig Bottle jaw condition in buffalo suffering from fasciolosis

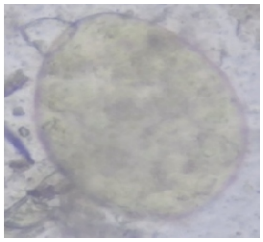


Fig *Fasciola* egg (40X magnification

September, 2012. Overall prevalence of infection in bovines was 3.47 % with buffaloes 3.56 (%) and cattle 3.31 (%). Hemato-biochemical and mineral studies on Fasciola infected bovines revealed significant ($p<0.05$) decrease in Hb, PCV, TEC,

lymphocyte and monocyte count and increase

in eosinophil and TLC. Prevalence of anaemia in Fasciola infected animals ranged from 54.16 (%) to 50 (%) on Hb and PCV basis, respectively. Total Plasma protein and albumin values together with A:G ratio revealed significant ($p<0.05$) decrease along with increase ($p<0.05$) in plasma AST and ALT activity. Plasma Ca, Pi and iron values showed significant ($p<0.05$) decrease. Study of therapeutic efficacy of Artemesia meritima based on EPG reduction revealed that preparation had nil effect against Fasciola species at all stages of experiment.

3.3.13 Veterinary Pharmacology and Toxicology

Pharmacokinetics of antimicrobial agents in small ruminants

- Pharmacokinetics and dosage regimen of Pazufloxacin(PZF) @

5mg.kg^{-1}BW studied in healthy (n=5) and fever induced goats (n=5) following single intravenous administration.(i.v) using HPLC Method.

- Disposition kinetics of antimicrobial agent significantly altered in fever induced goats compared to healthy goats

- Dosage regimen of pazufloxacin calculated in healthy goats after i.v administering 6.50±0.52 mgkg^{-1}BW followed by 6.03±0.52mgkg^{-1}BW at 8 h interval against bacterial isolates with MIC=0.25µg.ml^{-1}. Dosage regimen of pazufloxacin in fever induced goats was higher(10.86±0.33mg.kg^{-1}BW)followed by 10.35±0.32 mg.kg^{-1}BW at 8 h interval, indicating significant alteration in disposition kinetics of PZF in febrile animals.

Toxicity of pesticides

- Study evaluated effects of chlorpyrifos, lead acetate(100ppm in H_2O), vitamin C alone(100mg in H_2O), and in combinations on various haemato-biochemical and oxidative stress parameters in wistar rats.

- Significant decrease in TEC, PCV and Hb values, and significant increase in ESR produced by both toxicants. Lead acetate caused increase in TLC while chlorpyrifos caused decrease in TLC.

- Significant increase in lipid peroxidation and a lowering activities of GSH, GST, GPx, SOD and catalase observed by exposing animals to these toxicants (alone or in combination).

- Ameliorative effect of vitamin C more prominent with lead acetate and chlorpyrifos individually compared to in combination with chlorpyrifos and lead acetate.

Screening of plants for their Pharmacological activity

- Anti-hyperglycemic effect of three different extracts (cold, hot aqueous and alcoholic) of Ipomoea carnea leaves for management of streptozotocin (STZ) induced diabetes mellitus and improvement in oxidative stress parameters along with their safety evaluated in rats.

- Significant antidiabetic effect of aqueous extracts (cold and hot) at 500mg/kg B.wt and alcoholic @500mg and 750mg/ kg B.wt was observed as compared to diabetic control. Leaf extracts improved anti oxidative stress status of diabetic rats compared untreated diabetic rats without overt effects on liver and kidney.

- All Ipomoea carnea leaves extracts have prominent antidiabetic effect in experimentally induced STZ diabetic rats and can be an alternative remedy for treatment of Type II diabetes mellitus and complications

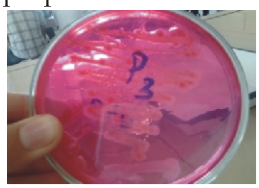
3.3.14. Live Stock Production and Management

Study on zoonotic important fish pathogens in poultry fish integration pond at integrate farming system

During the experimentation it was observed

that water quality parameters degrade in medium and high dose of poultry manure treated water with the progress of experiment due accumulation of organic load while in lower dose of poultry manure and control the quality of water was in normal range. Growth of fish was significantly increased in medium dose of poultry excreta. The skin samples of fish in this study showed high concentration of bacterial infection, such as Salmonella and E. coli in the fish exposed to higher dose of poultry waste. No external parasite was observed during the experiment.

The results of present study shows that 0.13 kg/m^3 of poultry litter is having good impact on water quality as well as fish growth and also indicate that application of excessive doses of organic manure may causes environmental pollution due to excessive load of pathogenic microbes. Therefore, it is recommended that animal waste used to enhance the productivity of pond water should be from disease free source and in proper amount.



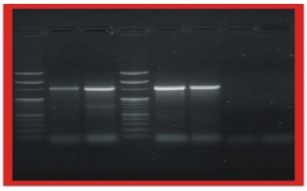
Salmonella sp.

E. Coli

3.3.15. Veterinary Pathology

Study of Liver Lesions of Slaughtered Sheep and Goats in Jammu

Prevalence of liver Hydatidosis, Hepatitis Cysticercosa, Fasciolosis and Dicrocoeliosis were found to be 20.45, 3.63, 4.54 and 3.63 % in sheep and 17.77, 7.77, 3.88 and 3.33% in goats, respectively.



Picture showing amplified products of Proteus, Bacillus, Staphylococcus and Citrobacter (1500 bp). The nucleotide sequences were aligned with available sequences using BLAST, which confirmed the identity on species level

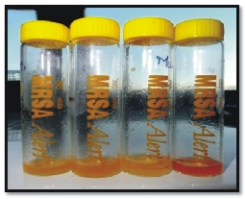
3.3.16. Veterinary Microbiology

16S rDNA PCR for confirmation of unidentified cultures

In the VTCC network project several cultures were characterized from goat milk. In the study of goat farm 55 lactating does were screened for clinical or subclinical mastitis out of which 22 does were found to be positive for mastitis by CMT. Milk samples were collected from affected goats to determine the bacterial pathogens prevalent in cases of goat mastitis. 18 samples were positive for bacterial cultures while four were negative. They were further identified by biochemical tests and confirmed by 16s Universal primers to be Proteus mirabilis ,Bacillus cereus, Bacillus spp.,Staphylococcus aureus (Coagulase positive), Staphylococcus (Coagulase negative) and Citrobacter freundii.

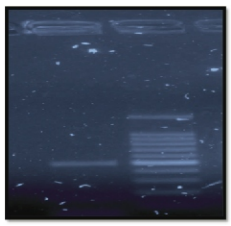
MRSA from Equines

Bacteria were isolated from 17 wound sample of equines and a total of 6 (35.29 %) isolates of Staphylococcus aureus were obtained .These were further processed for Methicillin resistance. Out of 6 isolates only 3 were found to be MRSA positive. These cultures are being investigated for mecA and vanA/vanB/vanX genes that may renders these cultures highly drug resistant.



Molecular detection of Rhodococcus equi

Rhodococcus equi is a Gram-positive coccobacillus commonly found in dry and dusty soil and can be important for diseases of horses and sometimes goats. R. equi is an important pathogen causing pneumonia in foals. It is now known that R. equi can infect wild boar as well as domestic pigs and humans. All strains isolated from foals contain a large plasmid (Virulence Associated plasmid). This plasmid has been shown to be essential for Infection of foals, and presumably plays a similar role for infection of other hosts.



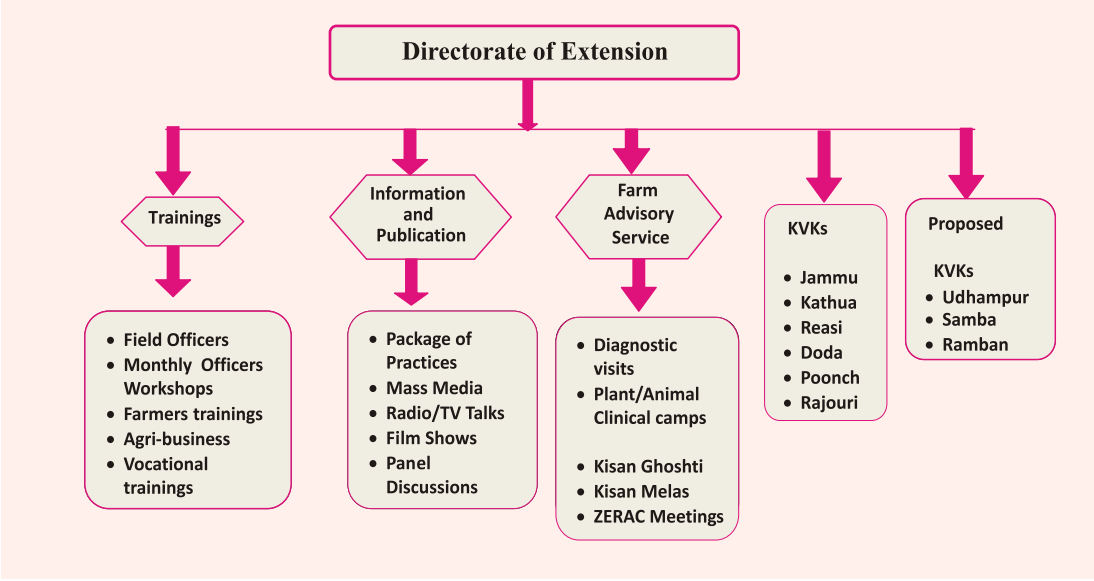
PCR using primers specific for vapA gene of R equii isolated from horse

4. EXTENSION

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 feed back. Therefore, the role of the Directorate is two fold, 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 Education 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

4.1 Major works and meetings organized by Directorate of Extension

4.1.1 Scientific Advisory Committee (SAC) Meetings of KVKs:

The Scientific Advisory Committee (SAC) Meetings of KVKs functioning under the administrative control of the Directorate of Extension were organized in order to plan, review and monitor the implementation of action plan of KVKs. During the meetings, the progress made during the second half of the year 2011-12 was reviewed and Action Plans for the year 2012-13 were devised. The details are placed below:

S.No	Name of KVK	Date
1.	Krishi Vigyan Kendra, Bhaderwah, Doda	6th SAC 11th May 2012
2.	Krishi Vigyan Kendra, Tanda, Reasi	5th SAC 12th May 2012
3.	Krishi Vigyan Kendra, Tandwal, Rajouri	6th SAC 14th May 2012
4.	Krishi Vigyan Kendra, Qazi Morha Poonch	5th SAC 15th May 2012
5.	Krishi Vigyan Kendra, R.S.Pura, Jammu	11thSAC 16th May 2012
6.	Krishi Vigyan Kendra, Rajani, Distt. Kathua	5th SAC 19th May 2012

4.1.2 Zonal Research & Extension Advisory Committee (ZREAC) Meetings

Directorate is organizing regularly two Zonal Research & Extension Advisory Committee (ZREAC) meetings, one each before the onset of Kharif and Rabi seasons in which proven technologies generated by research wing of the university are discussed with the state line departments for further dissemination to the farmers in the field. During the year 2012-13, two ZREAC meetings firstly for Kharif 2012 was organized on June 27, 2012 and second for Rabi 2012-13 on December 7, 2013 at Main campus, Chatha under the chairmanship of Prof. Dilip K. Arora Vice- Chancellor. The meeting was attended by Directors, Deans, Heads of the Divisions from Faculty of Agriculture and resource personnel of monthly workshops of SKUAST-Jammu and Directors from the Department of Agriculture, Horticulture, Floriculture, Sericulture and Command Area Development department along with their concerned officers.

4.1.3 Brain storming session for promotion of Strawberry cultivation in Jammu region:

One day brain storming session for promotion

Prof. Dilip K. Arora, Vice Chancellor chairing the Brain storming session

of Strawberry cultivation in Jammu region was held at KVK , Jammu at R.S.Pura on 5th of November, 2012 under the chairmanship of , SKUAST-Jammu. Prof & Head, Division of Fruit Sciences gave a detailed account of the role of SKUAST-J in promotion of strawberry cultivation in Jammu through a power point presentation. During the interaction, strawberry growers informed the house that Chandler cultivar was not giving the standard size of the fruit, therefore, needs to be given top priority for evaluation/introduction of new cultivars by the SKUAST-J scientists. Besides, quality planting material having increased shelf life should be procured and distributed among the farmers. It was also decided during discussion that Ozava variety of California may be added in the research trials being already conducted on ten other varieties of strawberry by the Division of Fruit Science. A booklet on strawberry cultivation suited to Jammu region/conditions be prepared.

4.1.4 University level workshop of KVKs

One University level workshop is organized every year in which action

plans of each KVK are discussed at Directorate level before presentation in the Scientific Advisory Committee meetings of various KVKs and Zonal workshop of Zone I.

One day University Level Workshop for Krishi Vigyan Kendras (KVKs) under SKUAST-Jammu was held on 26th March, 2013 in the conference hall of SKUAST-J, Main campus Chatha Prof. Dilip K. Arora, Hon'ble Vice-Chancellor called upon the scientists of the various divisions of the university to work in close coordination with the scientists working in Krishi Vigyan Kendras for generating the technologies acceptable and needed at priority by the society and for the benefit of the farmers. During his address, Prof. Arora emphasized that KVKs should act as bridge between farmers and University scientists for the benefit of the farming community. It is only the KVKs which can make farmers economically empowered. He further stated that rendering services through KVKs is not merely meaning the service to the farmers but also the service to the society and to the mankind.

4.2 Trainings organized by Directorate of Extension

Three one day trainings were organized by Directorate of Extension for Scientific staff of all KVKs under administrative control of SKUAST-J in order to provide technological backstopping for augmenting their skills to improve the subject matter and knowledge being imparted under various training programmes. During this period, three one day training programmes were organized on the following topics:

a) Agribusiness management
b) Entrepreneurship development
c) ICT in agricultural development

4.2.1 Officers Monthly Workshops:

Directorate of Extension conducted 68 Officers Monthly Workshops at various KVKs and district headquarters of the Jammu region during the period. The workshops were attended by the district and sub-divisional level officers from Department of Agriculture and Department of Horticulture.

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

State Agriculture Management Extension Training Institute for Jammu Division is functioning in the Directorate of Extension. The workshops-cum-training programmes organised by SAMETI-J during the period are as follows:

S. No.	Title	Date	No.of Participants
1.	Two days Training programme on scaling up of water productivity in Horticulture and Floriculture Crops in collaboration with Division of FOA, Chatha	April 25-26, 2012	30
2	Three days training programme on Advances in mulberry cultural practices under rainfed conditions in collaboration with Division of Sericulture, FOA, SKUAST-J from	June 12-14, 2012	48
3	Two days training programme on Climate Change Emerging pest problems and their Management in collaboration with Division of Entomology, Chatha.	July 10-11, 2012	56
4	Three days training programme on Nursery Pond Management and induced breeding technique in collaboration with Division of Livestock Production and Management, FVSc, & AH, R.S. Pura .	July30-August1, 2012	57
5	Two days training programme on Soil and Plant Diagnosis from September 10 -11, 2012 in collaboration with Division of Soil Science, FOA, Chatha.	September 10-11, 2012	38
6	Two days training programme on Precision Farming Techniques for Improving Crop Productivity in collaboration with Division of Agricultural Engineering FOA Chatha .	September 24-25, 2012	40
7	Three days training programme on "Recent Advance in Processing and Packaging of Milk and Meat Products" in collaboration with Division of Livestock Products Technology (LPT), FVSc & AH, R.S. Pura, Jammu .	September 24-26, 2012	36
8	Two days training programme on "Soil and Water conservation for enhancing productivity in Kandi Areas of Jammu region" in collaboration with Division of Soil Science, FOA, Chatha.	September 26-27, 2012	46
9	Two days of Training Programme on "Development of Horticulture in rainfed and Kandi area i.e. Rainfed Fruit culture" in collaboration with Division of Fruit Science, FOA, Chatha.	October 11-12, 2012	42
10	Two days training programme on "Development of Horticulture in rainfed and Kandi area i.e. Rainfed Fruit culture" in collaboration with Division of Soil Science, FOA, Chatha.	October 17-18, 2012	60
11	Two days training programme on "Management of Apairy" in collaboration with Division of Entomology, FOA, Chatha.	November 01-02, 2012.	42

12	Two days Training Programme on "Agri-Business Management" in collaboration with Division of Agril. Economics & Statistics, FOA, Chatha.	November 26-27, 2012	32
13	Two days Training Programme on "Application of Micro Irrigation System for enhancing water use efficiency" in collaboration with Division of Agril. Engineering, FOA, Chatha.	November 26-27, 2012.	38
14	Two days Training Programme on "Communicating Agricultural Science through Mainstream Media" organized by Directorate of SAMETI-J, Chatha	January 15-16, 2013	46
15	Two days Training Programme on "Agro-Techniques on important medicinal plants" on in collaboration with Div. of Agro-forestry, SKUAST-J, Main Campus, Chatha.	January 16-17, 2013	33
16	Two days Training Programme on "Composite Fish Engineering Technologies for Enhancing Productivity for Jammu Region" in collaboration with Div. of Agril. Engineering, SKUAST-J, Main Campus, Chatha.	January 21-22, 2013	34
17	One day Training Programme on "Composite Fish Farming (Carp culture)" in collaboration with Division of Livestock Production and Management, FVSc & AH, R S Pura Jammu	January 22nd, 2013	19
18	Two Days Training Programme on "Role of Multipurpose Tree Species in Diversification of Farming in collaboration with Div. of Agro-forestry, SKUAST-J Main Campus Chatha	February 07-08, 2013	36
19	Two days Training Programme on "Agricultural Marketing and Credit Management" in collaboration with Div. of Economics & Statistics, SKUAST-J, Main Campus, Chatha.	February 19-20, 2013	18
20	Two days Training Programme on "Production & Processing of Mushrooms as viable source of farm income" in collaboration with Div. of Plant Pathology, SKUAST-J, Main Campus, Chatha.	February 19-20, 2013	34
21	Two days Training Programme on "Physiological and Bio-Chemical aspects of abiotic biotic stress in Crop plants" in collaboration with Div. of Biochemistry, SKUAST-J, Main Campus, Chatha.	February 27-28, 2013	20
22	Two days Training Programme on "Value addition of fruits, vegetables and cereals" in collaboration with Div. of Post Harvest Technology, SKUAST-J, Main Campus, Chatha.	February 27-28, 2013	41
23	Two days Training Programme o n "Integrated Disease and Pest Management for Vegetable Crops" in collaboration with Div. of Entomology, SKUAST-J, Main Campus, Chatha.	March 07-08, 2013	28

4.4 Training programmes organized by the KVKs:

4.4.1 Farmers Trainings:

Krishi Vigyan Kendras (KVKs) working under the administrative control of SKUAST-J are organizing 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 period.

	KVK Jammu		KVK Doda		KVK Rajouri		KVK Reasi		KVK Poonch		KVK Kathua	
	N	T	N	T	N	T	N	T	N	T	N	T
Grand Total	41	874	38	842	57	1499	52	1201	45	813	40	1211

N: No. of Trainings, T: Total no. of Trainees

Total Farmers Trainings Organized	273
No. of Trainees	6400

Training on nursery management in floriculture at KVK, Jammu

Training on value addition at KVK Rajouri

Training on Poultry management at KVK, Kathua

Trainings on value addition at KVK, Reasi

Training on Fisheries at KVK, Doda

Training on Seed treatment at KVK, Kathua

4.4.2 In-service trainings

Krishi Vigyan Kendras organized On and Off campus, In-Service refresher courses for field functionaries from line departments of Agriculture, Horticulture, Command Area Development, Animal husbandry and sheep husbandry etc. to refresh and update their knowledge/ skill. The details are as under:-

	KVK Jammu		KVK Doda		KVK Reasi (Udhampur)		KVK Poonch		KVK Kathua		KVK Rajouri	
	N	T	N	T	N	T	N	T	N	T	N	T
Grand Total	7	71	9	99	4	79	11	114	6	129	10	211

N: No. of Trainings, T: No. Of trainees

Total In-service Trainings Organized	47
No. of trainees participated	703

4.4.3 Rural youth/Vocational trainings:

KVK's have conducted 39 short and long term agriculture based vocational trainings for rural youth, farm women to create self employment through income generating activities. A total of 775 participants were trained during the period under report.

	KVK Jammu		KVK Rajouri		KVK Reasi (Udham pur)		KVK Poonch		KVK Kathua		KVK Doda	
	N	T	N	T	N	T	N	T	N	T	N	T
Total	7	104	8	212	6	128	8	182	4	54	6	95

N: No. of Trainings, T: No. of trainees

Total In-service Trainings Organized	39
No. of trainees participated	775

Vocational training on Poultry management at KVK, Kathua

Vocational trainings on value addition at KVK, Kathua

4.5 Technology transferred and assessed

S. No	Name of Technology	Technical Intervention	Economic benefit (C:B Ratio)	Feedback
KVK Jammu				
1	Weed management in mash (Var. Uttara)	Pre-emergence application of pendimethalin @ 1 kg *a.i.* /ha followed by one hoeing after one month of sowing	1:2.81	Farmers of the area are accepting this technology
2	Impact of Sulpur on Til (Var. GT2)	Recommended dose of fertilizer+ S- 20 Kg/ ha as basal Dose	1:4.09	Very effective
3	Application of vermiwash on Marigold	Recommended dose of fertilizer + Vermiwash spray (10 %)	1:3.9	Farmers appreciated the intervention and are ready to use this technology
4	Azolla application in Paddy	NPK + Azolla @ 50 kg/ha	1:2.50	On going
5	Quality improvement in Aonla	Boron application	1:4.7	On going
6	Soil test based fertilizer recommendation in Strawberry	Soil test based fertilizer recommendation	-	On going
7	Impact of fish seed/ha on production	Heavy loss of fish seed due to birds, snakes & mortality	1:4.1	Fish Production may be increased by 5-10 % in stocking rate
8	Impact of feed supplement on fish production	*Agrimin forte* as supplement in fish feed for faster growth	1: 4.0	Production increased by supplementation.
KVK Rajouri				
1	Varietal evaluation of Okra under intermediate conditions	New Variety (*Varsha Upahar*)	1:2.07	Production and productivity of Okra can be increased by adoption of improved varieties
2	Evaluation of appropriate weeding tool for dryland maize of Rajouri district	Weeding tool- Wheel hand hoe	1:1.44	Production and productivity of Maize can be increased by adoption of ergonomically designed wheel hand hoe as

				compared to chemical control
3	Evaluation of improved fodder grasses under intermediate conditions	*Napier* hybrid		Production and productivity of fodder grasses can be increased by planting of perennial fodder grasses viz., Setaria and Napier on bunds and boundaries and even on locally available grasslands.
4	Management of blister beetle in Maize	Integrated pest management (Trap crop+ hand picking)	1:1.84	Production and productivity of maize can be increased by adoption of IPM for blister beetle
KVK, Reasi				
1	Performance of different wheat cultivars in Udhampur	Varietal evaluation	In progress	Farmers convinced with the performance of HS490, PBW-527 and PBW621
2	Weed management in wheat	Application of Sulphosulphorne@400g/ha	In progress	Pre plant herbicides have given good results
3	Integrated nutrient management in turmeric	75% recommended NPK and 20t/ha vermin-compost	1:1.90	Treatment gave higher results
4	Evaluation of different ginger selections in Reasi.	Varietal evaluation (H.P. selection)	1:1.90	Selection from H.P. gave slightly higher yield than J&K selections
5	Weed management in onion	post emergence Application of Terga super@1.0l/ha	Awaited	Pre-treatment have given best results.
6	Gastro intestinal parasitic control in goats	*Zyclose bolus* (Closantal)	1: 1.82	Treatment with both Banaminth and Zyclose was found effective in controlling parasite where as Zyclose bolus was found effective in controlling Liver fluke infection
7	Management of paddy blast.	Carbendazim (0.2%) Spray	1: 2.39	Farmers were satisfied after seeing the field demonstration .
KVK Kathua				
1	Disease Management	Spray of propiconazole @ 0.1 % manage the sheath blight and reduce the losses in grain yield	1: 1.75	The farmer were ready to adopt the technology in future
2	Disease Management	Spray of Mancozeb 63 WP + Metalaxyl 8 @ 0.25 % manage the purple blotch and downy mildew and reduce the losses in onion yield	1: 2.15	The farmer were ready to adopt the technology in future
3	Weed Management	Application of pretilachlor @ 1500 ml/ha at 3-7 DAT followed by metsulfuron methyl @ 75 g/ha at 35 DAT satisfactorily manage wide spectrum of weeds in general and BLWs at late stage in particular	1: 1.82	Farmers were satisfied with the technology assessed and refined.

4	Nutrient management	Farmers were advised to apply 1/3rd of N as basal dose followed by need-based N fertilizer application based on use of LCC for better rice production and productivity	1: 2.10	Farmers were satisfied with the use of LCC for N scheduling in rice.
5	Varietal evaluation	PBW -550 can be replaced with HD-2967 as well as PBW- 621	1: 2.17	Farmers were satisfied with the performance of varieties.
6	Varietal Evaluation	Wheat variety PBW -527 can be replaced with Raj-3077 for better productivity.	1: 1.75	Farmers were satisfied with the performance of tested variety.
7	Nutrient management for realizing better rice	Soil test based application of N,P& K should be done for realizing better rice production and productivity	1: 1.82	Farmers were satisfied with the soil test based use of N, P & K in rice.
8	Nutrient Management in okra	Varsha Uphar can be sown as a replacement to Parbhani Kranti	1: 2.15	Farmers were ready to grow Varsha Uphar
9	Varietal Evaluation	It is recommended that variety P-89 can be sown for better yield as compared to farmer practice	1: 3.20	Farmers were ready to grow P-89 for better yield
10	Insect management of Gram Pod borer	Use of Indoxacarb14.5 Sc @ 0.3 ml/lt. of water can be recommended for control of Pod borer under rainfed conditions of Kathua	1:1.45	Farmers satisfied and ready to adopt this insecticide for control of Pod borer of Gram
11	Disease management of yellow rust in wheat	Propiconazole @ 0.1% should be sprayed for management of yellow rust in wheat to reduce the loss in grain yield due to heavy incidence of the disease in the area	1: 2.12	Farmers were satisfied with the performance of the tested fungicides and are ready to adopt this technology in future.
12	Insect management in the standing wheat crop against termite	Seed treatment with chloropyriphos @ 4 ml/kg and spray of chloropyriphos @ 0.1% in the standing wheat crop can effectively manage the termite attack	1: 1.52	Farmers were satisfied with the performance of the tested insecticide and are ready to adopt this technology in future.
13	Weed Management in Mash	Application of Quizalofop ethyl (PoE) @ 50 ml a.i./ha resulted in 65.0 % reduction in weed density and increased the grain yield to 30.21% over farmers practice (no spray).	1: 2.35	Farmers were satisfied and ready to adopt Quizalofop ethyl for management of weeds in Mash
14	Nutrient management in basmati rice.	Incorporation of *Sesbania* and inoculation of *azotobactor* resulted yield advantage of 35.0 % over farmers practice	1:2.45	Farmers were ready to adopt green manuring and use of bio-fertilizers for supplementing N through chemical fertilizers in basmati rice
15	Insect management of Gram Pod borer	Use of Novaluron @ 0.1 ml/l of water resulted in 26.38 % increase in yield over farmers practice and 78.13 % reduction in damage to the pods of gram	1:2.45	Farmers satisfied with the efficacy of the tested insecticides

16	Nutrient management	Farmers were advised to apply 1/3rd of N as basal dose followed by N application based on LCC	1:2.21	Farmers satisfied with the use of LCC for N scheduling in rice
17	Varietal evaluation	PBW -550 can well be replaced with HD-2967 as well as PBW-621	1:2.17	Farmers were sat isfied with the performance of varieties tested
18	Varietal Evaluation	Wheat variety PBW -527 can be replaced with Raj-3077 for better productivity.	1:1.75	Farmers were satisfied with the performance of t ested variety
19	Fodder system evaluation	Sorghum + cowpea fodder mixture enhanced the fodder availability per unit area	1:1.85	Farmers were satisfied with the performance of fodder mixtures

KVK, Poonch

1	Cucumber	Use of Carboryl and Cypermethrin	1:3.52	Least insect pest incidence was observed in the crop sprayed with Carboryl than Cypermethrin and farmer practice
2	Maize	Captan @ 3g/kg seed	1:2.8	Treated seed gave 21.50% higher yield over non-treated 10.50%.
3	Radish	Varietal evaluation (Var.Spa rkle White)		White Ivory gave 25.45% higher yield over famer practice and sparkle white 18.75%.
4	Wheat	Varietal evaluation- Var. 2 PBW 373		HS490 gave 26.67% higher yield than PBW 373 with BC ratio= 1:30.
5	Garlic	Varietal evaluation Var. 3 Garlic (Oot y)	In Progress	
6	Standardization of time of planting of Cauliflower	Date of planting 20-10-12	In Progress	

KVK Doda

1	Integrated Nutrient Management in knol khol	Recommended dose of fertilizer + vermi-compost (3-4 t/ha)	2:60	Farmers satisfied with the INM practice
2	Effect of bio - fertilizer on productivity of pe a(Var. Ankur).	RDF+seed treatment(rhizobium @ 5 ml/100 ml of water /2 kg of seed)	3:00	Farmers satisfied with use of *rhizobium* inoculation and balanced used of fertilizer.
3	Effect of different levels of nitrogen and phosphorus on growth and yield of cabbage.	cabbage (var.Pride of india)with FYM 100t/ha & RDF of N&P @180kg/ha & 90kg/ha	1:2.60	Farmers satisfied with this technology.
4	Weed management in Marigold	Pre –emergence spray Atrazine @ 1.5 kg/ha + 3 hand weedings.	-	Farmers satisfied with this technology and practicing the same.

On Farm Trial on growth and yield of cabbage by KVK Rajouri

On farm Trial on green manuring by KVK Kathua

4.6 DEMONSTRATIONS

4.6.1 Under ISOPAM

S. No.	Name of the District	Area in Acres	No. of participants	Crop Impact
1	Jammu	20.00	20	Increased Yield
2	Samba	20.00	20	Increased Yield
2	Rajouri	12.50	19	Increased Yield
3	Reasi	50.00	100	Increased Yield
4	Kathua	18.75	30	Increased Yield
5	Poonch	50.00	68	Increased Yield
6	Doda	15.00	29	Increased Yield

4.6.2 Other Front Line Demonstrations

1 . KVK Jammu

S. No.	Technology Demonstrated	Area (ha)	No. of participants	Crop Impact
1	Improved cultivation of Wheat	14.0	60	Better yield
2	Improved cultivation of Paddy	6.0	15	Increased yield
3	Improved seed of Gram	4.0	20	Better yield
4	Improved cultivation of *Toria*	2.0	10	Better yield
5	Mash Cultivation	1.55	15	Very good
6	Cultivation of *Til*	0.7	4	Very good
7	Improved cultivation of Maize	4.0	8	Very good
8	Composite fish framing	1.2	11	Increased Income

2. KVK Kathua

S. No.	Technology Demonstrated	Area (ha)	No. Of participants	Crop Impact
1	Technology demonstrated for Maize, Paddy, Wheat, Sesame, Toria, Gobi sarson, Gram, Mash	181.1	816	Farmers were satisfied with the technology and ready to adopt the technology in future

3. KVK Rajouri

S. No	Technology demonstrated	Area (ha)	No. of participants	Crop Impact
1	High yielding variety along with full scientific package of practices of Maize	10.0	50	37.1% increase in productivity with B:C ratio of 1:1.34
2	High yielding variety along with full scientific package of practices of Paddy	3.0	15	26.9 % increase in productivity with B:C ratio of 1:1.11
3	High yielding variety along with full scientific package of practices of Mash	3.0	19	45.8 % incre ase in productivity with B:C ratio of 1:1.75
4	High yielding variety along with full scientific package of practices of Okra	0.25	04	30.6 % increase in productivity with B:C ratio of 1:2.07
5	High yielding variety along with full scientific package of practices of Wheat	10.0	49	-
6	High yielding variety along with full scientific package of practices of Mustard	3.0	15	-
7	High yielding variety along with full scientific package of practices of Gobi Sarsoon	3.0	18	-

4. KVK Reasi

S.No.	Technology demonstrated on Crops	Area (ha)	No. Of participants	Crop Impact
1	Oilseeds	10.6	94	Excellent
2	Pulses	9.7	72	Good
3	Wheat	6.0	40	Good
4	maize	5.0	42	Excellent
5	Paddy	3.0	12	Good
6	Oats	1.0	13	Good
7	Marigold	1.0	20	Moderately Good
8	Vegetables	5.7	321	Good
9	Spices(Turmeric and ginger)	0.2	61	Moderately Good
10	Dhingri	200 bags	50	Good

5. KVK Poonch

S. No.	Technology demonstrated on Crops	Area (ha)	No. Of participants	Crop Impact
1	Maize	10.0	39	Maize FLDs conducted by KVK during 2012-13, Maize Hybrid PA4794 gave average yield 32.65 q/ha which is also higher than the district state and national productivity
2	Paddy	10.0	30	In case of Paddy variety K 343 gave average yield 46.2q/ha which is also higher than district and state productivity of Paddy.
3	Wheat	10.0	36	crops are in the reproductive phase and still required one month for maturity. The data shall be submitted later.
4	Mustard	1.0	04	crops are in the reproductive phase and still required one month for maturity. The data shall be submitted later.
5	Rajmash	4.0	15	30.99 % increase yield was observed where IPM operations were practiced. 17 % incidence of disease was observed in IPM operation over non IPM operation (32.8 %).
6	Oat	2.0	08	Crops are in the reproductive phase and still required one month for maturity.

6. KVK Doda

1	Maize	38	08	Farmers were satisfied and ready to adopt the technology in future.
2	Mustard	40	08	
3	Gobi Sarson	10	02	
4	Mash	15	03	
5	Oats	15	03	
6	Mustard	20	04	
7	Gobi-Sarson	10	02	
8	Oats	15	03	

Demonstration of Azolla cultivation at KVK, Jammu

Demonstration of Leaf Colour Chart (LCC) at KVK Rajouri

Demonstration of fish stocking at KVK, Jammu

Demonstration of insecticide application on peach against leaf curl aphid, KVK, Doda

4.7 -

FARM ADVISORY SERVICES (FAS)

KVK, Jammu

Providing current *mandi* rates of different commodities to the farmers through NCDX.

Farmers Field Visits	-	55
Diagnostic visits	-	14
Clinical camps	-	2

Agro-advisories on biweekly basis through print and electronic media is being provided to the farmers.

KVK, Kathua

KVK, Kathua is issuing agro-advisories on bi-weekly basis to the farmers of the district through print media.

KVK Poonch

KVK, Poonch with the help of RARS, Rajouri Agro Meteorology is providing weekly weather forecasting to the farmers and allied Department. Moreover, it is also providing current rate list of commodities i.e. cereals of NSE/BSE.

KVK Rajouri

Vet Clinical Camp (in collaboration with FVSc)	-	1
Awareness Camps	-	5

KVK Reasi

Delivered lectures and conducted OFTs and FLDs under ATMA

Provided Resource persons in different training programmes/ Awareness camps organized by the line departments.

Diagnostic Visit	-	193
Farmers visit to KVK	-	1383

KVK Doda

Krishi Vigyan Kendra is extending farm advisory services to the farmers of the district in the fields of agriculture and allied sectors in coordination with line departments in form of train ings, diagnostic visits, campaigns and demonstrations.

Animal being treated in Veterinary Clinical Camp at KVK, Rajouri

4.8 CONSULTANCY SERVICES PROVIDED

KVK	Type of Consultancy	Place/ Organization
Jammu	Resource Person for Line Departments Under Different schemes	Department of Agriculture. Department of Floriculture. Department of Horticulture Department of Animal Husbandry and Sheep Husbandry Directorate of Fisheries
	Resource Parson for Nehru Yuva Kendra	NYK, Jammu
	Resource Person for NABARD	NABARD
	Resource Person for SAMITI	SAMETI, Jammu
Kathua	Resource Person for RKVY	RKVY, Kathua
	Resource Person for RSETI	RESTI, Kathua
	Resource Person for Line Departments of Distt. Kathua	Department of Agriculture. Department of Floriculture. Department of Horticulture Department of Animal Husbandry and Sheep Husbandry
Reasi	Resource Person for Monthly workshop of Officers	Udhampur
	Scientist and field functionaries interaction meetings	KVK and Line departments
	Providing resource person for various programmes being organized by NABARD	NABARD
	Resource person for Nehru Yuva Kendra	NYK, Udhampur
Poonch		
	Providing Consultancy services to the Agriculture Department, Horticulture Department and other line Department	Department of Agriculture. Department of Floriculture. Department of Horticulture Department of Animal Husbandry and Sheep Husbandry
Doda	Consultancy regarding cultivation of medicinal and Aromatic Plants and establishment of herbel garden	Bhaderwah Development Authority
	Resource Person for Monthly workshop of Officers	Doda
	Resource Person for Line Departments of Distt. Kathua	Department of Agriculture. Department of Floriculture. Department of Horticulture Department of Animal Husbandry and Sheep Husbandry
Rajouri	Resource Person for Monthly workshop of Officers	Rajouri
	Scientist and field functionaries interaction meetings	KVK and Line departments
	Providing resource person for various programmes being organized by NABARD	NABARD
	Resource person for Nehru Yuva Kendra	NYK, Rajouri
	Resource person for the Horticulture Mission Programme	Rajouri

Rajouri	Resource Person for Monthly workshop of Officers Scientist and field functionaries interaction meetings Providing resource person for various programmes being organized by NABARD Resource person for Nehru Yuva Kendra Resource person for the Horticulture Mission Programme	Rajouri KVK and Line departments NABARD NYK, Rajouri Rajouri

4.9 FARMERS EDUCATIVE EVENTS:

S.No	Activity	KVK, Jammu		KVK, Kathua		KVK, Reasi		KVK, Doda		KVK, Rajouri		KVK, Poonch	
		N	P	N	P	N	P	N	P	N	P	N	P
1	Campaigns	1	24	1	19			1	35	3	174	1	15
2	Kissan Goshti	5	235	2	100	2	35	3	66	2	50	2	150
3	Field Day	1		4	163	6	231	5	52	3	79	4	130
4	Exposure Visit	5	187	-	-	-	-			1	5	-	-
5	Technology Week			-	-	-	-			3	63	-	-
6	Extrainees sammelan	2	55	-	-	-	-			2	43	-	-
7	Kisan Mela (Participated)	7	3700	4	1580	3	1090	4	700	3	1000	-	-
8	Awareness camps	2	102	7	700	2	41	3	70	3	135	6	168
9	Important Days	2	125	4	180	2	158	2	35	-	-		
10	Film Show	14	300			2	150	2	35	3	265	4	90
11	Radio Talks	10		6		3		6	-	2			

N- Number of programmes T- Number of participants

5. INFRASTRUCTURE DEVELOPMENT

5.1 Inaugral Ceremonies

University Guest House

Honble Vice Chancellor, Prof. Dilip K. Arora, inaugurated University Guest House at Railway road, Jammu in the presence of the University Governance.



Hon'ble Vice Chancellor inaugurating University Guest House

5.2 Works in progress during 2012-13

- The University has been given the aesathetic look by developing the green lawns in front of all major buildings. The sprawling lawns have been developed and are being maintained by the staff of the University. Small water bodies with the stocking of fish and ducks are maintained to give the ecological sustainable feelings to staff of the University.

- The University has taken up the construction of Residential Complex for University staff and most of the buildings including Auditorium and International Guest House for visiting scientists of national and international repute are coming up with fast speed and whole work is likely to be completed by March, 2014.

Station: Main Campus Chatha

1. Construction of Examination Hall complex (G+1)
2 Construction of Lecture Theatre (04 Nos) (G+1)
3 Construction of Directorate of Extension Education building (G+1)
4 Construction of Estates Division building (G+1)
5 Construction of Health Centre (G.F)
6 Construction of International Guest House (GF)
7 Construction of Vice Chancellor's Residence (G+1)
8 Construction of Director's Residence (G+1)
9 Construction of Residential Quarters for Assistant Professor (G+2) (10 sets)
10 Construction of Residential Quarters for Professors/Associate Professor (G+2) (06 sets)
11 Construction of Residential Quarters for Non-Teaching Staff (G+1) (08 sets)
12 Construction of Auditorium building
13 Construction of School of Biotechnology

14 Construction of Seed Processing laboratory
15 Construction of Sports facility
16 Construction of Girls Hostel (FF & 2nd Floor)
17 Construction of Road and associated drain at Chatha
18 Construction of Miltching Parlour
19 Construction of Animal sheds, Dairy Barn and other infrastructure in Farm, Office etc
20 Chain link fencing to outer periphery
21 Chain link fencing and compound wall
22 Construction of box type culvert
23 Construction of Fish Pond (6 No.)
24 Construction of Threshing Floor near Seed Processing centre
25 Construction of Internal Service Roads in Agriculture Research Farm
26 Construction of Drainage Channel under IFS

Station: FVSc &AH R.S. Pura

1 Construction of Instructional Farms at FVSc & AH Campus, R.S. Pura
2 Repair/Renovation to New Student's Hostel
3 Repair/Renovation to the Canteen Facility
4 Construction of Basket ball Court and lawn tennis court

Station: KVK Rajouri

1 Construction of Seed Storage shed

5.3 New Works proposed during 2013-14

Main Campus Chatha

1. Construction of class IV employees residential quarters (06 sets)
2. Construction of Post Office and Shopping Complex
3. Construction of School of Agri Business Management and controller of examination building.
4. Construction of Brick work Compound wall around Girls Hostel
5. Construction of Lawn Tennis Court, Basket Ball Court, Volley Ball Court and Multipurpose ground
6. Providing & fixing of L.T/ HT line alongwith distribution Transformers in Residential Area

FVSc &AH R.S. Pura

1. Construction of Postmortem facility for Division of Veterinary Pathology
2. Construction of Road from Main Rotary to Library Building and Boys Hostel
3. Laying of 11 KVA HT Independent Feeder (UPS line) from Rangpur Mullana (Baspur) to FVSc & AH campus
4. Construction of Lawn Tennis Court, Basket Ball Court, Volley Ball Court and Multipurpose ground
5. Development of lawns by way of its beautification and fixing of benches and other allied works
6. Providing and fixing of Barbed wire fencing to Seed production Farm, Chakroi
7. Development of Deep Drilling Tubewell and stabilizing of percussion (irrigation) including pumping machinery and electrical equipments required for commissioning of Deep Tubewell at Seed Production Farm Chakroi.

6. AWARDS AND RECOGNITIONS

Name of Teacher/Scientist	Name of Award/Distinction/ Recognition	Awarding Institution/Organization
Dr. Reyazul Rouf Mir	Young Scientist Award in Agriculture and Allied Science	J&K Council for Science & Technology
Dr. Uma Shankar	1st Prize in Poster presentation in 2nd J&K Agricultural Science Congress	J&K Council for Science & Technology
Dr. Sarabdeep Kour	Best poster presentation award	77th Annual Convention of the Indian Society of Soil Science held at PAU, Ludhiana
Dr. P. Bakshi, Dr. B. Bhushan, Dr. V.K.Wali and Dr. A.Jasrotia	Best Poster Presentation	J&K Council for Science & Technology
Dr. H.K.Sharma	Best Poster Presentation Award	GADVASU, Ludhiana
Dr. M.Rashid	Best Poster Presentation Award	GADVASU, Ludhiana
Dr. Abha Tikoo	Best Poster presentation award during 2nd J&KASC	J&K Council for Science & Technology
Dr. R. K. Bhardwaj	Three Best oral paper presentation and one Best Poster presentation awards during 31st Annual Convention of Indian Society for Veterinary Medicine (ISVM) and National Symposium	N.D.PC.V.V, Mhow (Madhya Pradesh)
Dr. Rajeev Singh	Awarded Fellow	Academy of Sciences for Animal Welfare
Dr. Brij Nandan	Councillor of Zone I (J&K, H.P and Punjab) (Elected for 2013-2015)	Indian Society of Pulses Research and Development, Kanpur
Dr. Vikas Tandon	Best Poster Presentation	J&K Council for Science & Technology
Dr. Gyanendra Kumar Rai	Young Scientist Associate	Bioved Research Institute of Agriculture and Technology, Allahabad
Dr. Shahid Ahamad	• Achiever Award - 2011	Society for Advancement of Human and Nature
	• Distinguished Service Awards-2012	Bioved Research Institute of Agriculture and Technology, Allahabad

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

7.1 MAJOR PROGRAMMES

2nd J&K AGRICULTURAL SCIENCE CONGRESS

To draw a roadmap for increasing production and productivity in hill agriculture and its allied sectors in the state on sustainable basis, SKUAST-Jammu in collaboration with J&K State Council for Science & Technology, Department of Science & Technology, GoI, New Delhi and Nation Horticulture Board, GoI organized 2nd Jammu and Kashmir Agricultural Science Congress, from 15-17 December, 2012 with focal theme: "Sustainable Hill Agriculture for Food and Livelihood Security: Technological innovations, opportunities and challenges".

2nd J&K AGRICULTURAL SCIENCE CONGRESS

The congress was inaugurated by Jenab Ghulam Hassan Mir, Hon'ble Minister for Agriculture Production as Chief Guest in presence of Hon'ble Minister for Revenue, Releif & Rehablitation Sh Raman Bhalla as guest of honour and other dignitaries of country and state. There was an overwhelming response of participants to this congress from within and outside the state and we received more than 500 Abstracts. More than 400 delegates registered for the congress and presented their work through more than 100 oral and 300 poster presentations. The main features of the congress were five Invited Lecture series where leading experts of the different fields presented the recent technological advances, scientific deliberations in technical sessions comprising of ten oral and three poster sessions three poster sessions covering 11 sub-themes. Apart from this, there was also farmer-scientist-development department interactive session. An exhibition showcasing Agro-technologies was also displayed during the congress. The congress brought together scientists and academicians from different areas of agriculture and allied sciences.

The highlights of the congress was thought provking Sher-e-Kashmir Memorial Lecture by Prof Swapan Kumar Datta, Hon'ble Dy Director General(Crop Sciences), ICAR, New Delhi. "On Bioengineered crops: Change with Time". As an outcome of this congress recommendations of various technical sessions have been submitted to J&K State Council for Science & Technology for proposed course of action by the concerned administrative and development departments.

National Symposium in Plant Pathology

Division of Plant Pathology in collaboration with Indian Society of Mycology and Plant Pathology (ISMPP) organized National Symposium on "Emerging Trends in Plant Pathology" and North Zone the Meet of ISMPP at Main Campus Chatha on 19-20 December, 2012. The participants from all over the country deliberated on the issues and trends emerging in Plant Pathology.

Workshop on Appraisal-cum-Data validation

Two days' workshop on Appraisal-cum-Data Validation organized by National Information System on Agricultural Education Network in India (NISAGENET) was held at the University campus during 12-13 September, 2012. The Nodal Officers from 22 institutes of the country participated.

Brain Storming Session:

Promotion of Strawberry cultivation in Jammu Region One day brain storming session for promotion of Strawberry cultivation in Jammu region was held under the Chairmanship of Prof. D.K. Arora, Vice Chancellor, SKUAST-Jammu at KVK, R.S.Pura on 5th November, 2012. Scientists from DBT-New Delhi, Jammu University, Kashmir University besides host University participate.

Integrated Farming Approach of Horticulture and Animal Husbandry including Crop Production

Two days Brain Storming Session on "Integrated Farming Approach of Horticulture & Animal Husbandry including Crop Production" was organized in collaboration with the Department of Biotechnology (DBT), Govt. of India on October 15-16, 2012. Deliberations on the sub-themes viz; Basmati, Vermi-composting, High value crops (Saffron, Kiwi, Olive and Millets), Integrated Farming Approach, Goat Rearing, Artificial Insemination and Poultry Products were made by the experts from ICAR, DBT, New Delhi; NBPGR, Regional Station, Shimla; PAU, Ludhiana; CARI, Izatnagar and University of Jammu besides the host institute.

7.2 OTHER PROGRAMMES

S.No	Organizer	Nature of programme sponsoring Institute	Title of the programme/ event	Date and Venue	No. of participants
1	Divison of Soil Sciences	SAMETI	Soil and plant diagnosis	10-11 September, 2012	28
		SAMETI	Soil diagnosis and efficient nutrient management for sustainable agriculture	17-18 October, 2012	42
		SAMETI	Soil and water conservation for enhancing productivity in *kandi* areas of Jammu	26-27 September, 2012	32
2	Divison of Agroforestry	Ministry of Agriculture & Co-operation, GoI	Agroforestry in sustainable farming and natural resource management in hills of North-Western Himalayas	12-19 October, 2012	16
3	Division of Agro-meteorology	Department of Agriculture & Cooperation, Ministry of Agriculture, Government of India	Climate Variability and its Impacts on Crop Production	17-24 September, 2012 Main Campus, Chatha	18
		CRIDA, Hyderabad	One day Farmers' Awareness Programme on Climate Change	19 October, 2012 Suchetgarh, R.S.Pura	149 Farmers
				5 November, 2012 Mahal Shah, Samba	147 Farmers
				13 March, 2012 Tikri, Udhampur	184 Farmers
				2 January, 2013 Panthal, Reasi	155 Farmers
				7 February, 2013 Sherpur, Kathua	177 Farmers
				6 March, 2013 Chak Haria	159 Farmers
				13 March, 2013 Rakh Jaroakh, Ramban	151 Farmers
				25 March, 2013 Thanda Paani, Rajouri	157 Farmers
4	Division of Olericulture & Floriculture	HTMM-1 (ICAR)	Recent trends in vegetable production/seed production	30 March, 2013 Suhanjana	25

		HTMM-1 (ICAR)	Seed production of summer vegetables	1 March, 2013 Jinder Melu, R. S. Pura	32
		HTMM-1 (ICAR)	Production te chnology of hybrid vegetable production/seed production	2 November, 2012 Main Campus, Chatha	
		HTMM-1 (ICAR)	Trench techniques & peri urban production of early vegetables on the banks of river Tawi	19 October, 2012 Kotha Puran, Marh, Jammu	16
		HTMM-1 (ICAR)	Scientific nursery raising of hybrid vegetable	16 October, 2012 Chakra, Bishnah	24
		HTMM-1 (ICAR)	Off season vegetable production through forcing	21 September, 2012 Pargwal, Jammu	27
5	Division of Plant Pathology				
		SAMETI	Production and processing of mushrooms as viable source of farm income	19-20 February, 2013 Main Campus , Chatha	17
6	Division of Sericulture	SAMETI	Management of multiple rearing: Problems and prospects	25 May, 2012 Cherry, Udhampur	35
		SAMETI	Management of rain fed sericulture	8 June, 2012 Kanjali, Reasi	60
		SAMETI	Innovation in rearing technology f or spring season	13 August, 2012 KVK-Kathua	40
		SAMETI	Advances in Mulberry cultural practices under rainfed conditions	12-14 June, 2012	20
		SAMETI	Pre-rearing Management for optimal cocoon production	21 November, 2012	20
7	Division of PHT	HTMM-1 (ICAR)	Processing of tomatoes & cole vegetables	9 & 20 November, 2012 Nama Khu, Akhnoor	31
		HTMM-1 (ICAR)	Drying of vegetables	28 December, 2012 Flora Nagbani, Domana	42
		HTMM-1 (ICAR)	Value addition of winter vegetables & processing of kinnow	22, 24 & 29 January, 2013 Agharjeeto, Reasi	50

		HTMM-1 (ICAR)	Value addition of mushrooms	Korotana, R.S.Pura	56
		HTMM-1 (ICAR)	Processing of hill-lemon and osmo-dehydration of aonla	Said (Hiranagar),	35
		HTMM-1 (ICAR)	Processing of aonla,	Raya,	35
		HTMM-1 (ICAR)	Processing & value addition of strawberry	Panoriyan (Garhi), Utter Baini, Samba	39
8	Division of Entomology	HTMM-1 (ICAR)	IPM modules in vegetable crops	8 November, 2012 Basht, Udhampur	100
		HTMM-1 (ICAR)	IPM modules in vegetable crops	20 November, 2012 Ari Tarore, Samba	100
		HTMM-1 (ICAR)	IPM modules in vegetable crops	6 March, 2013 Narayana Village, Akhnoor	120
		HTMM-1 (ICAR)	IPM modules in vegetable crops	16 March, 2013 Pahariwala, Akhnooor	70
9	DLRSS,Rakh Dhiansar	Department of Floriculture, J&K Govt	Enhancing flower production through micro irrigation systems	19-20 February, 2013 DLRSS, Rakh Dhiansar	36 Farmers
10	RARS, Rajouri	Protection of Plant Varieties and Farmers Rights Authority, Ministry of Agriculture, Govt. of India	Protection of Plant Varieties and Farmers Rights Act 2001	3 October, 2012 PWD Dak Bungalow, Rajouri	125
		HTMM-1, ICAR	Follow up and review of rainwater harvesting training	26 December, 2012 Dehrian, Rajouri	60
			Follow up and review of rainwater harvesting training	Village Ladote 28th Dec,2012	60
			Follow up and review of rainwater harvesting training	31 December, 2012 Rajdhani, Rajouri	61
			Follow up and review of rainwater harvesting training	2 January, 2013 Khablan, Rajouri	60
			Follow up and review of rainwater harvesting training	3 January, 2013 Sasalkote, Rajouri	67
			Follow up and review of rainwater harvesting training	21 January, 2013 Nagrota, Rajouri	56

	Follow up and review of rainwater harvesting training	24 January, 2013 Dhangri, Rajouri	42
	Follow up and review of rainwater harvesting training	28 January, 2013 RARS, Rajouri	61
Tribal Sub-Plan (TSP)	Seed production of *Rabi* crops (cereals, pulses, oil seeds and forages)	13 February, 2013 Nagrota Saldhar , Rajouri	35
	Seed production of *Rabi* crops (cereals, pulses, oil seeds, forages and vegetables)	14 February, 2013 Dhanwan, Rajouri	32
	Training and demonstration of seed production activities	15 February, 2013 RARS, Rajouri	46
	Recent Advances in Seed Production of Field Crops	21 February, 2013 Dehrian, Rajouri	30
	Training and demonstration of Safe Storage Seed Grains	12 March, 2013 RARS, Rajouri	45
JKSCST	Improving the productivity of traditional agricultural system of Rajouri with scientific interventions	27 November, 2012 Dehrian, Rajouri	61
	Improving the productivity of traditional agricultural system of Rajouri with scientific interventions	6 December, 2012	60
	Improving the productivity of traditional agricultural system of Rajouri with scientific interventions	13 December, 2012 Kaller Andrulla, Rajouri	37
	Improving the productivity of traditional agricultural system of Rajouri with scientific interventions	20 December, 2012 Khablan, Rajouri	41
	Improving the productivity of traditional agricultural system of Rajouri with scientific interventions	24 December, 2012 Sasalkote, Rajouri	46

11	Division of Livestock Production & Management	SKUAST-J	Upliftment of rural women through backyard poultry in 10 different batches	23 July,2012 3 September, 2012 27 September, 2012 29 September, 2012 10 October, 2012 8 January, 2013 16 January, 2013 23 January, 2013 Poultry Farm, R.S Pura	30 40 40 20 40 20 60 20 Total 270 trainees
			Nursery pond Management and Induced breeding techniques	30 July-1 August, 2012	20
			Training on Composite Fish Farming	21 February, 2013	19
12	Division of Veterinary Parasitology	DBT-New Delhi	DBT Task Force meeting	4-5 December, 2012 SKUAST-J	55
13	Division of Animal Nutrition	Ministry of Environment & Forestry, GOI	Ecofriendly Livestock Production Systems	14 March, 2013 FVSc & AH, R S Pura	150
14	Division of Vety. Medicine	NAIP, Project, ICAR	Animal Health camps	7-8 September, 2012 Jathi, Ramgarh, Ganota & Kudgam, Bhaderwah	200 Farmers

Training programmes on IPM modules in vegetable crops

Farmer awareness programmes on climate change in Jammu region

Training Programmes under "Tribal Sub-Plan"for district Rajouri

Processing of Kinnow into squash (Extraction of juice, Filtering, Filling of squash)

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

International

- Dr. Anish Yadav, Associate Professor (Veterinary Parasitology) attended Short Research Stay Programme organized by USC-Spain, w.e.f November 20-December 19, 2012.
- Dr. D. P. Abrol, Professor (Entomology) attended 11th Asian Apicultural Association conference & Api Expo, held at Kuala, Terengganu, Malaysia w.e.f September 28-October 2, 2012.
- Dr. Sachin Gupta, Assistant Professor (Plant Pathology) attended:
  - "Training on Integrated Pest Management" at Volcani Agricultural Complex, Israel w.e.f April 30-May 23, 2012.
  - "Practical Management course on crop Protection" at PTC + Barneveld, Netherland w.e.f June 4-29, 2012.
- Dr. Sandeep Mann, Associate Professor (Agricultural Engineering) attended training programme on Agricultural Engineering Technologies at CINADCO, Training Centre Israel w.e.f. October 23-November15, 2012
- Dr. Vishal Gupta, Assistant Professor (Plant Pathology) participated in
  - "Training-Workshop on harmonizing detection of *Xanthomonas oryzae* pathovars" at IRRI, Philippines w.e.f May 21-26, 2012.
  - "Training course on standardization of stem rust note taking and evaluation of germplasm with emphasis on emerging threats of yellow and leaf rust" at Kenya Agriculture Research Institute, Njora w.e.f September 25- October 5, 2012.

National

- Dr. S. K. Kotwal, Professor (VPH) participated in international workshop entitled "One Health Workshop-India organized by Massey University, New Zealand at New Delhi w.e.f July 19-21, 2012.
- Dr. Anil Kumar Singh, Assistant Professor (Biotechnology) attended winter school on "Exploitation of microbial and genomic resources for plant disease management" at UAS, Dharwad w.e.f December 29, 2012-February 18, 2013.
- Dr. Anju Bhat, Associate Professor (PHT) attended:
  - summer school on "Advances in fruit & vegetable preservation & processing" at Dr. YSPUHF, Nauni, Solan w.e.f June 25-July 15, 2012.
  - National Seminar on "An integrated approach for enhancing the productivity, quality and safety of Indian food products" at National Productivity Council, New Delhi w.e.f January 11-12, 2013.
- Dr. Brij Nandan, Scientist (Agronomy) attended:
  - summer school on "Geospatial technologies and applications" at CGRT, CSKHPKV, Palampur w.e.f June 24-July 14, 2012.
  - winter school on "Crop Management Strategies under changing climate" held at *Department of Agronomy, CAFT, COA, GBPUAT, Pantnagar w.e.f October 9-29, 2012.*
- Dr. Gyanendra Kumar Rai, Assistant Professor (Biochemistry) attended:
  - winter school on "Applications of Genomics in Crop Improvement" at Department of Molecular Biology and Genetic Engineering, GBPUA&T,

Pantnagar w.e.f December 27, 2012-January 16, 2013.

- Dr. Gyanendra Kumar Rai, Assistant Professor (Biochemistry) attended 15th Indian Scientists and Farmer congress on Agricultural and Global Climate Change, by Bioved Research Institute of Agriculture and Technology, Allahabad, w.e.f Februry 22-24, 2013.

- Dr. J. P. Singh, Assistant Professor (Agricultural Engineering) attended:
  - summer school on "Engineering Interventions in Conservation Agriculture for Enhancing Agricultural Productivity and Climate Change Mitigation" at CIAE, Bhopal w.e.f. June 22- July 12, 2012
  - winter school on "Recent advances in micro irrigation and fertigation" at IARI, New Delhi w.e.f. November 5-25, 2012

- Dr. Jagmohan Singh, Assistant Professor (PHT) attended summer school on "Newer concepts and techniques in development of health foods" at CIPHET, Ludhiana w.e.f July 1-21, 2012.

- Dr. Kafil Hussain, Assistant Professor (Veterinary Medicine) attended summer school on "Advances in educational methodology and instructional technology" at NAARM, Hyderabad w.e.f July 5-25, 2012.

- Dr. R. K. Srivastava, Associate Professor (Agricultural Engineering) attended winter School on "Recent advances in micro irrigation and fertigation" at IARI, New Delhi w.e.f. November 5-25, 2012

- Dr. Rajesh Kumar, Assistant Professor (Fruit Science) attended winter school on "Exploitation of underutilized horticultural crops" at CIAH, Bikaner w.e.f. September 3-27, 2012.

- Mr. Lalit Upadhyay, SMS (Agroforestry) attended:
  - winter school on "crop production strategies under changing climate" at GBPUAT, Pantnagar w.e.f October 9-29, 2012.
  - National seminar on "New paradigm and approaches in Agriculture Extension" at UHF, Solan w.e.f December 18-20, 2012.

- Dr. P. K. Rai, SMS (Soil Science) attended winter school on "Environmental Science" at Jammu University, Jammu w.e.f November 21-December11, 2012.

- Dr. A. K. Gupta, Sr. Scientist (Agronomy) attended XXX biennial workshop on AICRP-IFS at ICAR Research Complex, Goa w.e.f November 16-18, 2012.

- Dr. A. K. Sharma, Associate Director Research (RARS, Rajouri) attended 2 days training programme on "Soil diagnosis and efficient nutrient management for sustainable agricultural production" at SKUAST-J w.e.f October 17-18, 2012.

- Dr. Vikas Sharma, Jr. Scientist (Agronomy), attended 2 days training programme on "Soil diagnosis and efficient nutrient management for sustainable agricultural production" at SKUAST-J w.e.f October 17-18, 2012.

- Dr. M. H. Chesti, Jr. Scientist (Soil Science) attended:
  - 2 days training programme on "Soil diagnosis and efficient nutrient management for sustainable agricultural production" at SKUAST-J w.e.f October 17-18, 2012.
  - "Advances in Biosciences" at Department of Botany, Amar Singh College, Srinagar on June 12, 2012.

- Dr. M .A. Aziz, Jr. Scientist (Soil Science) attended 2 days training programme on "Soil diagnosis and efficient nutrient management for sustainable agricultural production" at SKUAST-J w.e.f October 17-18, 2012.

- Dr. A. K Gupta, Professor (Olericulture) attended 3rd annual group meeting of All Indian Network Research Project on Onion and Garlic, at JAU, Junagadh w.e.f June 22-23, 2012.
- Dr. Satesh Kumar, Assistant Professor (Olericulture) attended 3rd annual group meeting of All Indian Network Research Project on Onion and Garlic, at JAU, Junagadh w.e.f June 22-23, 2012.
- Dr. A. K Mondal, Associate Professor (Soil Science) participated in the poster session of 100th Indian Science Congress at Kolkata w.e.f January 3-7, 2013.
- Dr. Abhijit Samanta, Sr. Scientist (Soil Science) attended training programme on "Remote Sensing and GIS application in natural resource management" at NBSS & LUP, Nagpur w.e.f February 12-March 14, 2013.
- Dr. Aditi Lal Koul, Assistant Professor (VPB) attended National training programme on "Molecular Genetic Data Generation, Analysis and Utilization in Animal Breeding" at CAFT (AGB), Dairy Cattle Breeding Division NDRI, Karnal w.e.f. March 5-25, 2013.
- Dr. Anil Kumar Pandey, Assistant Professor (VGO) attended Policy Workshop on "Effectiveness and Training Transfer of CAFT Programmes at NARS" at NAARM, Hyderabad w.e.f September 10-11, 2012.
- Dr. Anil Kumar, Professor (Agronomy) attended:
  - 20th Biennial workshop of AICRP on weed control at KAU, Thrissur w.e.f April 17-18, 2012.
  - Biennial conference of Indian Society of Weed Science at KAU, Thrissur, w.e.f April 19-20, 2012.
- Dr. Anjani Kumar Singh, Jr. Scientist (PBG) attended Recent Advances in Statistical and Computational Genomics Data Analysis held at ISRI, New Delhi w.e.f November 6-26, 2012.
- Dr. Ankur Sharma, Assistant Professor (VSR) attended advanced refresher training course on "Advances in Veterinary Diagnostic, Anaesthetic and Surgical techniques" at Department of Veterinary Surgery & Radiology, CAFT, College of Veterinary Sciences, GADVASU, Ludhiana w.e.f October 3-23, 2012.
- Dr. Pankaj Gupta, Assistant Professor (VSR) attended advanced refresher training course on "Advances in Veterinary Diagnostic, Anaesthetic and Surgical techniques" at Department of Veterinary Surgery & Radiology, CAFT, College of Veterinary Sciences, GADVASU, Ludhiana w.e.f October 3-23, 2012.
- Dr. Arvind Kumar, Assistant Professor (LPT) attended training programme on "Newer Concepts and Techniques in Development of Health Foods" at CIPHET, Ludhiana, w.e.f July 1-21, 2012.
- Dr. Ashok Dangi, Asstt. Professor participated in the 8th Biennial Animal Nutrition Association Conference, at Rajasthan University of Veterinary and Animal Sciences, Bikaner, w.e.f November 28-30, 2012.
- Dr. Asma Khan, Associate professor (LPT) attended 02 days Brain Storming session on the theme entitled "Integrated farming Approach of Horticulture and Animal Husbandry including Crop Production" at SKUAST-J w.e.f October 15-16, 2012.
- Dr. B. S. Jamwal, Chief Scientist (PBG) attended Chickpea Annual Rabi Group Meet at GBPUAT Pantnagar, w.e.f. September 1-3, 2012.

- Dr. Brij Nandan, Jr. Scientist (Agronomy) attended:
  - Chickpea Annual Rabi Group Meet at GBPUAT Pantnagar, w.e.f. September 1-3, 2012.
  - 3rd International Agronomy Congress, organized by Indian Society of Agronomy and ICAR at New Delhi w.e.f November 26-30, 2012
- Dr. S. K. Singh , Jr. Scientist (Plant Pathology) attended Chickpea Annual Rabi Group Meet at GBPUAT Pantnagar, w.e.f. September 1-3, 2012.
- Dr. Banarsi Lal, SMS (Extension Education) attended National seminar on "New paradigm and approaches in Agriculture Extension" at UHF, Solan w.e.f December 18-20, 2012.
- Dr. Brajeshwar Singh,Jr. Scientist (Plant Pathology) attended:
  - 21 days advanced faculty training "Genomics and Diagnosis of Emerging Phytopathogens in Indian Agriculture" at Division of Plant Pathology, IARI, New Delhi, October 3-23, 2012.
  - 10 days training on "National Training on Polyphasic Microbial Identification: Methods and Applications" at NBAIM, Mau, Varanasi, w.e.f March 5-14, 2013.
- Dr. D. P. Abrol, Professor (Entomology) attended International Conference on Insect Science at UAS, Bangalore w.e.f February 14-17, 2013.
- Dr. R. K. Gupta, Associate Professor (Entomology) attended International Conference on Insect Science at UAS, Bangalore w.e.f February 14 -17, 2013.
- Dr. Deepak Kumar, Assistant Professor (Plant Pathology) participated in training on "Application of Biotechnological Tools and Bioinformatics in Agriculture" at SVPU, Meerut w.e.f December 21, 2012 to January 8, 2013.
- Dr. Dileep Kachroo, Chief Scientist (Agronomy) attended:
  - XXX biennial workshop on AICRP-IFS at ICAR Research Complex, Goa on November 16-18, 2012.
- Dr. H. K. Sharma, Assistant Professor (VPH) attended:
  - Dr. H.K.Sharma, Assistant Professor (VPH) attended International Symposium on "One Health: Way Forward to Challenges in Food Safety and Zoonoses in 21st Century" and XIth Annual conference of IAVPHS, at GADVASU, Ludhiana w.e.f December 13-14, 2012.
  - 10 days training course on "Multipronged approaches for the diagnosis and surveillance of brucellosis" at PD_ADMAS, Hebbal, Bengaluru w.e.f. February 19-28, 2013.
- Dr. Maninder Singh, Assistant Professor (VPH) attended 10 days training course on "Multipronged approaches for the diagnosis and surveillance of brucellosis" at PD_ADMAS, Hebbal, Bengaluru w.e.f. February 19-28, 2013.
- Dr. K. R. Sharma, Professor (Soil Science) attended National Conference on "sustainable Farming system and Bio-Industrial watershed management for Food security and Enhancing Income of farming Community" at Lucknow, UP w.e.f April 16-17, 2013.
- Dr. Kafil Hussain, Assistant Professor (Veterinary Mediine) participated in 21 days training programme on "Abiotic stress impact on livestock production and health" at IVRI, Izatnagar w.e.f September 14-October 5, 2012.
- Dr. Kuldeep Srivastava, Assistant professor (Entomology) attended 21 days training programme on 'Forecast Modelling in crops' at IASRI, New Delhi w.e.f July 17- August 6, 2013
- Dr. Lekh Chand, Associate Professor (Agronomy) participated in 5th All India wheat and barley research

worker's meet at ARS, Durgapura, Jaipur, Rajasthan w.e.f August 24-27, 2012

- Dr. M. P. Sharma, Professor (Soil Science) participated in NAIP sponsored workshop on 'Scientific report writing and presentation' at NAARM, Hyderabad w.e.f November 20-23, 2012.
- Dr. M. Rashid attended)VPH(Assitant Professor :

➢ 21 days 2012, 8 October - 18Hssar wef September of Microbiology LLRUVAS, on Deptt., training course of us diseases of animals CAFT.

➢ 1 day seminar on theme, 'Science for shaping the future of India' sponsored by the Indian Science Congress Association, Jammu Chapter at Dept. of Zoology, Govt. College for Women Parade Ground, Jammu on October 20, 2012.

- Dr. M. K. Khushu, Chief Scientist (Agrometeorology) attended:

¬ Workshop on "Application of Crop Simulation Model and Decision Support System in Yield Forecasting" at BHU, Varansi w.e.f June 28-30, 2012

➢ XII Biennial Workshop of AICRP and Annual Review Meeting of AICRPAM-NICRA at MPUAT, Udaipur w.e.f October 9-12, 2012

➢ National Symposium on "Climate Change and Indian Agriculture: Silicing Down the Uncertainties" at CRIDA, Hyderabad w.e.f January 22-23, 2013

➢ Regional Review Meeting under FASAL (South) at IARI, New Delhi, w.e.f November 8-9, 2012.

➢ Review meeting on crop simulation modeling organized by Regional Meteorological Centre, Rambagh, Srinagar, w.e.f July, 26-27, 2012

➢ 2 days meeting at Agromet Division, under FASAL Project at IMD, Pune w.e.f October 4-5, 2012.

- Dr. M. Rashid, Assistant Professor (VPH) attended International Symposium on "One Health: Way Forward to Challenges in Food Safety and Zoonoses in 21st Century" and XIthAnnual conference of IAVPHS, at GADVASU, Ludhiana w.e.f December 13-14, 2012.
- Dr. Maninder Singh Assitant Professor (VPH) attended International Symposium on "One Health: Way Forward to Challenges in Food Safety and Zoonoses in 21st Century" and XIthAnnual conference of IAVPHS, at GADVASU, Ludhiana w.e.f December 13-14, 2012.
- Dr. Magdeshwar Sharma, Jr. Scientist (Entomology) attended:

➢ Short Course on Pest management in high value crops under Protected Cultivation at Division of Entomology, CSKHPKV, Palampur, on June 11, 2012.

➢ New Frontiers in Integrated Pest Management in Rice and Rice based Cropping Systems at Crop protection division, Directorate of Rice Research, Rajendrnagar, Hyderabad w.e.f September 13-3 October, 2012.

- Dr. Mahender Singh, Sr. Scientist (Agrometeorology) attended:

➢ 2 days training programme on 'Soil Diagnosis and Efficient nutrient management for sustainable Agriculture Production organized by SAMETI at SKUAST J w.e.f October 17-18, 2012.

➢ National Symposium "Climate Change and Indian Agriculture: Slicing Down The Uncertainties" organized by Association of Agrometeorologists- AP Chapter and CRIDA, Hyderabad, w.e.f w.e.f January 22-23, 2013.

- Dr. Vikas Abrol, Jr. Scientist (Soil Science) attended:

- 2 days training programme on 'Soil Diagnosis and Efficient nutrient management for sustainable Agriculture Production organized by SAMETI at SKUAST J w.e.f October 17-18, 2012.
- 21 days *summer school on* "Vegetable production under changing climate scenario" CAFT, Horticulture, Solan w.e.f September 1-21, 2012.
- *21 days winter school on* "Resource Conservation for Shaping Future Agriculture" at CAFT, Department of Agronomy, GBPUA&T, Pantnagar w.e.f February 15- March 7, 2013.

- Dr. Brinder Singh, Jr. Scientist (Soil Science)) attended 2 days training programme on 'Soil Diagnosis and Efficient nutrient management for sustainable Agriculture Production organized by SAMETI at SKUAST J w.e.f October 17-18, 2012.
- Dr. Jai Kumar, Jr. Scientist (Agronomy) attended:

- National Symposium "Climate Change and Indian Agriculture: Slicing Down The Uncertainties" organized by Association of Agrometeorologists- AP Chapter and CRIDA, Hyderabad, w.e.f w.e.f January 22-23, 2013.
- 2 days training programme on 'Soil Diagnosis and Efficient nutrient management for sustainable Agriculture Production organized by SAMETI at SKUAST J w.e.f October 17-18, 2012.

- Dr. Mandeep Singh Azad, Assistant Professor (SVC) attended National seminar on 'New Paradigm in livestock production at NDRI, Karnal.w.e.f January 28-30, 2013.
- Dr. Manoj Kumar Tripathi, Assistant Professor (Vety. Physiology) attended XXI Annual Conference and National Symposium on "Physiological Research In Changing Environmental Scenario For Sustainable Livestock and Poultry Production" at Division of Physiology and Biochemistry, VCVS&AH, NAU, Navsar, Gujarat w.e.f November 6-8, 2012.
- Dr. Manoj Kumar, Assistant Professor (Agricultural Engineering) attended:

- "Meeting of Expert Advisory Group on Analytical/Industrial/Sensors & Allied Instrumentation KIIT University, Bhubaneswar, Orissa w.e.f. August 8-9, 2012.
- Training on CAD (Cero Element Pro 5.0) Software for Machinery Design at CIAE Bhopal,w.e.f. February 4-March 6, 2013.

- Dr. Manpreet Kour, Jr. Scientist (Agronomy) attended 21 days training programme on "Sustainable Natural Resource management for Ecological Agriculture" at Department of Soil Science, PAU, Ludhiana w.e.f October 10-30, 2012.
- Dr. Meenakshi Gupta, Assistant professor (Agronomy) participated in 21 days training on Geospatial technologies and their application at CSKHPKV, Palmpur w.e.f June 24-July 14, 2012.
- Dr. Sarabdeep Kour Assistant professor (Soil Science) participated in:

- 21 days training on Geospatial technologies and their application at CSKHPKV, Palmpur w.e.f June 24-July 14, 2012.
- 77th Annual Convention of the Indian Society of soil science held at PAU, Ludhiana w.e.f December 03-06, 2012.

- Mr. Rakesh Sharma, STA (Agronomy) participated in 21 days training on Geospatial technologies and their application at CSKHPKV, Palmpur w.e.f June 24-July 14, 2012.
- Dr. Moni Gupta, Assistant Professor (Biochemistry) attended "6th International conference on Legume

Genetics and Genomics" at ICRISAT, Hyderabad w.e.f October, 2012.

- Dr. N. P. Thakur, Sr. Scientist (Soil Science) attended XXX biennial workshop on AICRP-IFS at ICAR Research Complex, Goa w.e.f November 16-18, 2012.
- Dr. Pavan Kumar, Assistant Professor (LPT) attended 21 days National Training Programme on "Innovative Trends in Dairy and Food Products Formulation" at CAFT, Dairy Processing, NDRI, Karnal, w.e.f October 10-30, 2012.
- Dr. Peeyush Sharma, Assistant Professor (Soil Science) attended 21 days summer school on 'Sustainable natural resource management for ecological agriculture' at Deptt. of Soil Science, PAU, Ludhiana w.e.f October 10-30, 2012.
- Dr. Puneet Choudhary, SMS (Agroforestry) attended:
  - 1 day training on "Agriculture Entrepreneurship development' at SKUAST-J on March 29, 2013.
  - 1 day training on "Agriculture Entrepreneurship development' at SKUAST-J on March 30, 2013.
  - 1 day training on Extension methodologies for dissemination of agriculture technologies at SKUAST-J on March 28, 2013.
  - University level workshop of KVKs at SKUAST-J on March 26, 2013.
- Dr. R. K. Bhardwaj, Assistant Professor (Veterinary Medicine) attended 10th Annual Convention of Indian Society for Advancement of Canine Practice and National Canine Congress at Hotel Manvin's, Panaji, Goa w.e.f February 6-8, 2013.
- Dr. R. K. Gupta, Professor (Olericulture) participated in:
  - International conference on "Biotechnology: A Rendezvous with basic science for global prosperity (BTBS-2012)" at NAAS Complex, New Delhi w.e.f December 26-27, 2012.
  - National Seminar at AMU, Aligarh, UP w.e.f February 23-24, 2013.
- Dr. Rajiv Singh, Associate Professor (Veterinary Medicine) participated in:
  - 31st Annual Convention of Indian Society for Veterinary Medicine (ISVM) and National Symposium on "Advancing Veterinary Medicine and its Specialties for Augmented Productivity and Health: Issues and Strategies in the farm and companion animals" at College of Veterinary Sciences & Animal Husbandry, NDPCVV, Mhow (MP) w.e.f January 9-11, 2013.
  - Brainstorming Session on "Mastitis Management in Dairy Animals" at NAAS, New Delhi on October 31, 2012.
  - National Congress on Canine Practice & Symposium on "New Horizons in Companion Animal Health & Management" and 10th Annual Convention of ISACP, at Panaji, Goa w.e.f February 6-8, 2013.
  - University Seminar entitled "Mineral imbalances in livestock" at Conference Hall, FVSc & AH, R. S. Pura on 8th August, 2012
- Dr. V. S. Wazir, Associate Professor (Veterinary Medicine) participated in 31st Annual Convention of Indian Society for Veterinary Medicine (ISVM) and National Symposium on "Advancing Veterinary Medicine and its Specialties for Augmented Productivity and Health: Issues and Strategies in the farm and companion animals" at College of Veterinary Sciences & Animal Husbandry, NDPCVV, Mhow (MP) w.e.f January 9-11, 2013.
- Dr. R. K. Bhardwaj, Associate Professor (Veterinary Medicine)

participated in 31st Annual Convention of Indian Society for Veterinary Medicine (ISVM) and National Symposium on "Advancing Veterinary Medicine and its Specialties for Augmented Productivity and Health: Issues and Strategies in the farm and companion animals" at College of Veterinary Sciences & Animal Husbandry, NDPCVV, Mhow (MP) w.e.f January 9-11, 2013.

- Dr. Rakesh Sharma SMS (Agriculture Extension) attended: 4 days short course on Emerging challenges and paradigm for sustainable agriculture rural development at Solan w.e.f December 18-19, 2012
  - 4 days short course on Market led extension at NIAM, Jaipur w.e.f May 28-June 1, 2012.
  - 21 days training on Experiential learning and andogogical methods for developing entrepreneurial human resource CAFT in Agril. Ext. IARI, New Delhi w.e.f September 11-October 12, 2012.
  - 1 day training on "Agriculture Entrepreneurship development' at SKUAST-Jammu on March 30, 2013.
  - 1 day training on Agriculture Entrepreneurship development at SKUAST-J w.e.f March 29, 2013.
  - 1 day training on Extension methodologies for dissemination of agriculture technologies at SKUAST-J w.e.f March 28, 2013.
  - University level workshop of KVK's at SKUAST-J, on March 26, 2013.
- Dr. Ramphool Puniya, Assistant Professor (Agronomy) participated in 3rd International Agronomy Congress on "Agriculture Diversification, Climate Change Management and Livelihoods", at IARI, New Delhi, w.e.f November 26-30, 2012.
- Dr. S. K. Gupta, Professor (Agroforestry) attended:
  - NAIP Sponsored National Workshop on "Industrial Agroforestry" organized by Forestry College and Research Institute, TNAU, Mettupalayam w.e.f. March 21-23, 2013.
  - NAIP Sponsored Workshop on "Scientific Report Writing and Presentation" NAARM, Hydrabad w.e.f. November 20-23, 2012.
- Dr. S. K. Singh, Jr. Scientist (Plant Pathology) attended 7 days "High throughput phenotyping (resistance screening) for chickpea and pigeon pea diseases" at ICRISAT, Pattancheru, Hyderabad (A.P.) w.e.f December 3-9, 2012.
- Dr. Sabahat Gazal, Assistant Professor (Veterinary Microbiology) attended "5th Science Conclave 2012"- A Congregation of Nobel laureates and eminent scientists, at IIIT-Allahabad w.e.f December 8-14, 2012.
- Dr. Sachin Gupta, Assistant Professor (Plant Pathology) participated in:
  - Annual Conference and Symposium of ISMPP at NAU, Navsari w.e.f January 21-23, 2013.
  - National training on "Polyphasic Microbial identification: Methods and Applications" at NBAIM, Mau (U.P) w.e.f March 5-14, 2013.
- Dr. Sandeep Chopra, Associate Professor (Olericulture) participated in 5th Indian Horticulture Congress-2012, at PAU, Ludhiana w.e.f November 6-9, 2012.
- Dr. Sanjay Khar, Programme Coordinator (KVK, Rajouri) attended:
  - 1 day training programme on Extension methodologies for dissemination of agriculture technologies at SKUAST-Jammu March 28, 2013.

- University level workshop of KVKs at SKUAST-Jammu on March 26, 2013.
- 7th National Conference on KVKs at Jabalpur w.e.f November 20-22, 2012.
- Brainstorming session on Strawberry cultivation at SKUAST-Jammu on October 16, 2012.
- 1 day training programme on Agriculture Entrepreneurship development, SKUAST-J on March 29, 2013
- 1 day training programme on Role of ICT in Agriculture SKUAST-J on March 30, 2013.
- Zonal workshop of KVKs at CSKHPKV Palampur w.e.f May 20-22, 2012.

• Dr. Sanku Borkataki, Assistant Professor (Veterinary Parasitology) attended 23rd NCVP organized by Assam Agricultural University at Khanapura, Guwahati. w.e.f December 12-14, 2012.

• Dr. Shafiqur Rahman, Assistant Professor (Veterinary Pathology) attended XXIX Annual Conference of Indian Association of Veterinary Pathologists, *National Symposium on* "Challenges in diagnostic pathology in domestic, pet, wild and aquatic animals" and *National Seminar on* "Emerging trends in diagnosis and control of poultry diseases" at Department of Veterinary Pathology, LLRUV&AS, Hisar w.e.f November 5-7, 2012.

• Dr. Shagufta Azmi, Associate Professor (Veterinary Pathology) attended National congress on canine practice and symposium on the topic "New Horizons in Companion Animal Health & Management" in connection with the X Annual Convention of Indian Society for Advancement of Canine Practice at Hotel Manvins, Panji, Goa w.e.f February 6-8, 2013.

• Dr. Sudershan Kumar, Associate Professor (VGO) attended:

- International Congress of Canine Practice on "Modern Concepts in Canine Health and Diseases of Human Concern" and IX Annual Convention of Indian Society for Advancement of Canine Practice at Bikaner, Rajasthan.w.e.f. February 911, 2012.
- National Symposium on "Recent Advances in Reproductive Biotechnology: Retrospective and Prospective Vision" under the auspices of Indian Society for the Study of Reproduction and Fertility (ISSRF) at NDRI, Karnal .w.e.f. January 30-31, 2012.
- National Symposium on "Addressing Animal Reproductive Stresses Through Biotechnological Tools" and XXVIII Annual Convention of ISSAR at COVSc, Khanapara, Guwahati w.e.f. November 21-23, 2012.

• Dr. Sunil Kumar, Associate Professor (LPT) attended a 5th Annual Conference and National Symposium of Indian Meat Science Association on "Emerging Technological Changes to Meet the Demands of Domestic and Export Meat Sector" organized by NRC Meat Chengicherla, Hyderabad w.e.f February 7-9, 2013.

• Dr. Zuhaib Fayaz Bhat, Assistant Professor (LPT) attended a 5th Annual Conference and National Symposium of Indian Meat Science Association on "Emerging Technological Changes to Meet the Demands of Domestic and Export Meat Sector" at NRC Meat Chengicherla, Hyderabad w.e.f

February 7-9, 2013.

- Dr. Susheel Sharma, Jr. Scientist (Horticulture) attended short training on "Application of Bioinformatics tools in Agriculture" at Bioinformatics Centre USI, IARI, New Delhi. w.e.f March 11-13, 2013
- Dr. Uma Shankar, Assistant Professor (Entomology) attended 21 days training programme on "Taxonomy of insects and mites" at UAS, Banaglore w.e.f July 20-August 14, 2012.
- Dr. V. B. Singh, Jr. Scientist (Plant Pathology) attended 21 days training course entitled, "Managing plant microbe interactions for the management of soil borne pathogens" Deptt. of Plant Pathology COA, GBPUA&T, Pantnagar, w.e.f January 22 to February 11, 2012.
- Dr. V. K. Singh, Jr. Scientist (Plant Pathology) attended *2 days* International BHU Alumni Meet & Seminar on Mahamana's Vision of National Building, at BHU, Varanasi w.e.f December 23-24, 2012.
- Dr. V.K. Razdan, Professor (Plant Pathology) attended 4th International Saffron Symposium at SKUAST-K, Srinagar w.e.f October 22-25, 2012.
- Dr. Vishal Gupta, Assistant Professor (Plant Pathology) attended
  - 4th International Saffron Symposium at SKUAST-K, Srinagar w.e.f October 22-25, 2012.
  - "National symposium on Biotechnological approaches for Plant Protection" at ICAR, Research Complex, Goa w.e.f January 27-29, 2013.
- Dr. Vijay Bharti, Jr. Scientist (Agronomy), attended:
  - 21 days training programme on, "Extension strategy for entrepreneurship development and management in agro-processing and value addition" at BCKV, Kalyani, WB w.e.f December 11-31, 2012.
  - 3 days training programme on, "Hydrological data entry and processing using surface water date entry system (SWDES)" at National Institute of Hydrology, Jammu w.e.f February 26-28, 2013.
  - 6 days training programme on, "Data analysis for Water Management Research using SAS" at DWM, Bhubaneswar (ICAR) w.e.f February 18-23, 2013.
- Dr. Vijay Khajuria, Jr. Scientist (Agronomy) attended:
  - training programme on data analysis using SAS of the NAIP consortium "Strengthening statistical computing for NARS" at NDRI, Karnal, Haryana w.e.f March 11-16, 2013.
  - winter school on "System based conservation agricultural for sustained productivity and soil health" at PDFSR, Modipuram w.e.f October 3-23, 2012.
- Dr. Vikas Tandon, Programme Coordinator (KVK, Reasi) participated in National Horticulture congress at PAU Ludhiana w.e.f. November 06-09, 2012.
- Dr. Zuhaib Fayaz Bhat, Assistant Professor (LPT) attended 21 days training programme on "Responsible Harvest And Quality Standards For Seafood Export" at CAFT, CIFE, Versova, Mumbai, w.e.f January 9-29, 2013.
- Er. Hemant Dadhich, Assistant Professor (Agricultural Engineering) attended Workshop on "Scientific Report Writing and Presentation" at NAARM Hyderabad w.e.f. March 4-7, 2013

- Er. Sushmita M. Dadhich Assistant Professor (Agricultural Engineering) attended 3 months training on "Software related to Natural Resource Management" at IIT, New Delhi w.e.f. March 28- June 27, 2013
- K. V. Deshpande attended 8th Biennial Animal Nutrition Association Conference, at Bikaner w.e.f November 28-30, 2012.
- Ms. Meenakshi Gupta attended UGC Sponsored General Orientation Course organized by Academic Staff College, University of Jammu w.e.f. January 10-Feb 08, 2013.

- Dr. Vinod Gupta, SMS (Agriculture Extension) attended:

➢ 21 days training programme on "Experiential learning and ogogical methods for developing entrepreneurial human resource," at CAFT in Agril. Ext. IARI, New Delhi, September 11-October 12, 2012.

➢ training course on "Emerging challenges and Paradigm for Sustainable Agriculture Rural Development", at Solan, w.e.f. December 18-19, 2012.

➢ training course on Market led extension, at NIAM, Jaipur, w.e.f. May 28-June 1, 2012.

9. EXTERNALLY FUNDED RESEARCH PROJECTS

S.No	Title of The Project	Principal Investigator
Horticulture Technology Mini-Mission-1 (ICAR)		
1.	Promotion of year round cultivation of mushroom for self employment in Jammu division	Dr. Sachin Gupta (Plant Pathology)
2.	Promotion of biological control as a key component for management of soil borne diseases of horticultural crops in Jammu province of J&K	Dr. Vishal Gupta (Plant Pathology)
3.	Site specific analysis and demonstration of Nutrients fruit growing areas of Jammu under precision Horticulture	Dr. A. K. Bhat (Soil Science)
4.	Production of quality planting material of ornamental crops in Jammu	Dr. R. K. Pandey (Floriculture)
5.	Seed production of hybrids and open pollinated varieties of vegetables under mid hill conditions of Jammu region	Dr. Sanjeev Kumar (Vegetable)
6.	Trench Cultivation of vegetables as livelihood security on the perenial river beds of Jammu District	Dr. R.K. Samnotra (Vegetable)
7.	Value addition and post harvest handling of perishable agro horticultural produce for women empowerment in J&K state	Dr Raj Kumari Kaul (PHT)
8.	Construction of rainwater harvesting and its demonstration for Supplementary benefits for Horticultural crops in sub-temperate areas	Dr Vikas Sharma (Agronomy)
9.	Production of quality planting material for sub-tropical fruits	Dr.V.K.Wali (Fruit Science)
10.	Establishment of Rootstock and Budwood bank and its large scale production	Dr.V.K.Wali (Fruit Science)
11.	Training and demonstration on rejuvenation of old/unproductive orchards in Jammu Sub- tropics	Dr.V.K.Wali (Fruit Science)
12.	Technology refinement in micro irrigation and fertigation for improving quality and productivity of important horticultural crops in rainfed areas of Jammu	Dr. Dileep Kachroo(Agronomy)
13.	Standardization/Refinement of Production Technologies for Cultivation of Hybrid Vegetables in Jammu Region	Dr. Satesh Kumar(Vegetable Science)
14.	Technology refinement and dissemination of ginger and turmeric in Jammu region	Dr. Sandeep Chopra (Vegetable Science)
15.	Determination of quality and harvest maturity for commercially grown fruit crops in Jammu sub-tropics	Dr. Parshant Bakshi (Fruit Science)

16.	High density orcharding of mango and guava in Jammu sub-tropics	Dr. Akash Sharma (Fruit Science)
17.	Development and promotion of integrated pest and weed management module in important vegetable crops of Jammu	Dr. Uma Shankar (Entomology)
18	Establishment of additional rootstock and budwood bank and virus indexing facilities at Bhaderwah and their large scale multiplication	Dr. Amit Jasrotia (Fruit Science)
	Department of Science & Technology (DST)	
19	Popularization of bio-fertilizers in rainfed areas of Jammu division for sustainable agriculture development	Dr. S.K.Kher (Agril. Extension)
20	Determining Genetic Diversity among Common Bean (Phaseolus vulgaris L.) Genotypesand Assessment for Water Stress Tolerance	Dr. Sajad M Zarg (School of Biotechnology)
21	Effect of non -insecticidal agrochemicals on growth and development of insect pests	Dr. Kuldeep Srivastava (Entomology)
22	Diversity analysis of Pseudomonas Fluorescence and its utilization in disease supp ression and nut rient management	Dr. Vishal Gupta (Plant Pathology)
23	Socioeconomic upliftment of women farmers through backyard poultry farming	Dr. Rajesh Katoch (Veterinary Parasitology)
	Department of Bio-Technology (DBT)	
24	Isolation, characterization and multi plication of bioagents for management of wilt disease in solanaceous crop in Jammu	Dr. Sachin Gupta (Plant Pathology)
25	Bovine Cryptosporidiosis and its Zoonotic Potential in Jammu District	Dr. Rajesh Katoch (Veterinary Parasitology)
26	Assessment of genetic diversity of Basmati rice using molecular markers and *Insitu*con servation through articipatory approach	Dr. R.K. Salogtra (Plant Breeding & Genetics)
27	Androgenesis Mediated Introgression of Fruit and Shoot Borer (Leucinodes orbonalis) Resistant Genes into Cultivated Eggplant (Solanum melongena)	Dr. Pooja Rattan (Vegetables)
28	Morphometry and Phylogeography honeybees and stingless bees in India	Dr. D. P. Abrol (Entomology)
29	Breeding and Management strategies in Dairy Animals for Socio Economic upliftment of rural women	Dr. A. K. Pandey (Vet Gynecology & Obstetrics)
30	Popularization of lac cultivation through large scale demonstrations and trainings in Jammu and Kashmir	Dr. R. K. Gupta (Entomology)

31	Impact of chawki reared silkworm on double cropping system and its role in livelihood generation in rural areas	Dr. Ramesh Bali (Sericulture)
32	National Initiative on Climate Resilient Agriculture, AICRPDA, CRIDA	Dr. Mahender Singh (Agrometeorology)
33	Seed Production in Agricultural crops and Fisheries	Dr. Bikram Singh (PBG)
34	Enhancement of livelihood security through farming systems and related farm enterprises in north-west Himalayas.	Dr. Rajiv Singh (Veterinary Medicine)
35	Network project on outreach of technologies for temperate fruit crops	Dr. Amit Jasrotia (Pomology)
36	Strengthening Statistical Computing for NARS	Dr. Manish Kr. Sharma (Economics & Statistics)
37	Network Project on Insect Biosystemetic	Dr. D.P. Abrol (Entomology)
38	National Initiative on climate Resilient Agriculture, AICRPAM, CRIDA	Dr. M.K. Khushu (Agromet)
39	Seed Project Component Tribal Sub -Plan (TSP)	Dr. Manmohan Sharma (PBG)
40	Natioanal Agricultural Innovative Project (NAIP) Component III	Dr. A. K. Raina (Agriculture Engineering)
41	Vulnerable assessment of major food crop production zones to climate variability in major rainfed crops zones (AICRPAM-NICRA)	Dr. M. K. Khushu (Agromet)
42	Climate change on Lac crop performance (NICRA)	Dr. R. K. Gupta (Entomology)
43	National Information System on Agricultural Network (NISAGENET)	Dr. Manish Kr. Sharma (Economics & Statistics)
	National Oilseeds and Vegetable Oils Development Board (NOVOD)	
44	National Network on Integrated Development of Jatropha	Dr. Mohd. Saleem (Agroforestry)
	Ministry of Food Processing, Govt. of India	
45	Seed capital assistance for running the already established Food Processing Training Centre	Dr Raj Kumari Kaul (PHT)

	Ministry of Agriculture Sciences, Govt. of India	
46	Scaling up of Water Productivity in Agriculture for Livelihoods through Teaching -cum-Demonstration, Training of Trainers and Farmers (SWPA)	Er. N. K. Gupta (Water Management)
	National Horticulture Board	
47	Commercialization of soft fruits in Jammu plains through Hi-tech production and post harvest management	Dr. M. Jamwal (Pomology)
48	Establishment of Mother plant nursery for high pedigree planting material for fruit crops	Dr. V. K. Wali (Pomology)
	Jammu and Kashmir Science & Technology	
49	Improving the productivity of Traditional Agriculture system in Rajouri with Scientific Interventions	Dr M.H. Chesti (Soil Science)
50	Mechanisms Controlling the Metalaxyl Induced Developmental Toxicity with Special Reference to Reproduction Indices in Wistar Rats	Dr Mudasir Sultana (Vety. Pharmacology)
	Indian Council of Medical Research	
51	Epidemiological studies on important emerging bacterial zoonotic diseases of equines used for tourism and pilgrimage in Jammu and Kashmir	Dr. Anil Taku (Vety. Microbiology)
	Ministry of Earth Science (MES)	
52	Agro Advisory Services (Jammu)	Dr. M. K Khushu (Agrometeorology)
53	Agro Advisory Services (Rajouri)	Dr. Vikas Sharma (Agronomy)
54	Forecasting Agricultural Output using Space, And Land based observations (FASAL)	Dr. M. K. Khushu(Agro meteorology)
	Indian institute of natural resins and gums, Ranchi	
55	National Initiative on Climate Resilient Agriculture (NICRA) on Lac	Dr. R. K. Gupta (Entomology)
	Indian Meteorology Department (IMD)	
56	Agrometeorology Advisory Services	Dr. Veena Sharma (Soil Science)
	National Science Foundation, USA	
57	Developing chickpea resistance using novel insecticidal genes of the fragile fern, Cystopteris fragilis	Dr R.K. Salgotra (PBG)
	Indian Immunological limited (Hyderabad)	
58	Evaluation of Tick-Mid-Gut Vaccine	Dr. Rajesh Katoch (Vet Parasitology)
	Indian Institute of Remote Sensing	
59	Soil carbon polls assessment under national carbon project	Dr. A. K. Bhat (Soil Science)
	National knowledge network (NKN)	
60	National knowledge network (NKN)	Dr. Manish Kr. Sharma (Economics & Statistics)
	National Innovation Foundation, Ahmedabad	
61	Documentation, Validation and Extension of suitable package of practices of Indigenous Technical Knowledge and Practices (ITKs) in treatment of various ailments of Livestock in Jammu Division of J&K State	Dr. M. S. Bhadwal (Vet & Animal Husbandary Ext Edu)

	National Medicinal Plant Board	
62	Conservation, production and sustainable management of Shatavar (*Asparagus recemosus* Willd.)	Dr. Meenakshi Gupta (Agroforestry)
	Ministry of Human Resource Deve lopment (MHRD), Department of Higher Education	
63	All India Survey on Higher Education (AISHE)	Dr. S. E. H. Rizvi (Nodal Officer) (Economics & Statistics)

All India Coordinated Research Projects (ICAR)

S.No.	Title of the project	Directorate/Div ision
1	All India Coordinated rice improvement project, Chatha	Genetics & Plant Breeding
2	All India Coordinated Research project on Integrated Farming System Research Centre, Chatha	Directorate of Research
3	All India Coordinated project on wheat and barley, Chatha	Genetics & Plant Breeding
4	All India Coordinated project on Water Management Research Centre, Chatha	Directorate of Research
5	All India Coordinated Research Project on Chickpea, Samba	Directorate of Research
6	All India Co ordinated Research Project on Agro meteorology, Chatha	Directorate of Research
7	All India Co ordinated Research Project for Dryland Agriculture, Rakh Dhiansar	Directorate of Research
8	All India Coordinated Research Project on Maize, Udhampur	Directorate of Research
9	All India Co ordinated Research Project on Rape Seed and Mustard, Chatha	Genetics & Plant Breeding
10	All India Coordinated Research project on Honey Bee and pollinators, Chatha (Voluntary Centre)	Entomology
11	All India Coordinated Research project on Onion and Garlic, Chatha (Voluntary Centre)	Olericulture
12	All India Coordinated Research project on Weed Control, Chatha (Voluntary Centre)	Agronomy
13	All India Coordinated Research project on Vegetables, Chatha (Voluntary Centre)	Olericulture
14	All India Coordinated Research project on Linseed, Chatha (Voluntary Centre)	Agronomy

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11. LINKAGES AND COLLABORATION

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

12. STATUTORY MEETINGS

12.1 University Council Meeting

7TH University Council Meeting

7th University Council meetings was held on 06-04-2012 at Raj Bhavan, Jammu under the Chairmanship of Sh. N.N. Vohra, Hon'ble Governor of Jammu & Kashmir and Chancellor of SKUAST-Jammu.

Shri N.N.Vohra Hon'ble Governor J&K and Chancellor, SKUAST Jammu Chairing 7th University Council Meeting

Hon'ble Governor emphasized the need for greater coordination among the Universities of the State and extension agencies of the Government besides creating a corpus of scientists to share expertise and research findings and for convergence of initiatives to effectively meet the effects of climate change and take required measures for enhancing agri-productivity on sustainable basis.

Sh.Vohra firther suggested that the larger objectives of the State would be far better served if the Vice Chancellors of all the Universities and major institutions of higher learning in J&K could establish effective coordination and carry through collaborative approaches in identified areas. Reviewing the status of establishment of Krishi Vigyan Kendras, the Governor called for making the Kendras as nodal points for transfer of agri-technology from the labs to land and dissemination of improved agricultural practices for the speedy growth of agriculture and each of its allied sectors. He stressed the importance of ensuring the establishment of Krishi Vigyan Kendras within envisaged time-lines, adding that if sustained coordinated efforts can be organized, there can be no difficulty in achieving a significantly high growth rate in agriculture production in the next 2-3 years. He also asked the University to propagate the model of integrated farming so that the small land holding farmers could achieve surpluses.

Referring to the vocational training courses being run by the Universities, the Hon'ble Governor stressed that the intake of youth for undergoing such short-term courses should be increased to enlarge their employability as also equipping them with necessary skills to set up their own ventures in the sectors like dairy, fish and poultry farming, food processing, vegetable and mushroom cultivation, apiculture, sericulture,etc.

To ensure against any further delay, the Hon'ble Governor urged the Agriculture Minister to early convene a meeting of all concerned authorities and arrive at an agreed approach to set up a multi-disciplinary Empowered Task Force for Water Management. He advised that a similar Task Force approach could be adopted for the collection and analysis of all data relating to Agriculture and its allied sectors for evolving region, area and crop specific strategies for boosting production. He stressed the usefulness of drawing up a comprehensive Action Plan for transfer of requisite agricultural practices to enhance productivity and production of various crops in the rainfed areas of the State.

Sham Lal Sharma, Minister for Horticulture and Floriculture, put forth several suggestions for the growth of these sectors, adding that these have a vast potential in the State. He gave details of some of the new initiatives taken by these two departments, under his charge, for

harnessing this potential. Ghulam Hassan Mir,Hon'ble Minister for Agriculture, emphasized the need for greater coordination among the Farm Universities and the extension agencies of the Government for the growth of Agriculture and its allied sectors in the State. He added that such a coordinated approach would go a long way in maximizing benefits of various schemes aimed at the growth of Agriculture sector.

Aga Syed Ruhulla Mehdi, Minister for Animal and Sheep Husbandry, emphasized the need for running courses in Dairy Technology by the Farm Universities of the State, as this sector has huge potential for generating wealth and employment avenues.

Dr. B. Mishra, Vice Chancellor, SKUAST, Jammu, presented a detailed report on the status of teaching, research and extension activities undertaken by the University. He dwelt on the achievements of the University in varied fields and the new varieties of seeds of different crops developed and released by it. He informed the meeting about the up-to-date status in regard to the setting up of new Krishi Vigyan Kendras in Jammu Division.

The meeting took stock of various research projects and other initiatives taken after the last meeting of the SKUAST, besides discussing other agenda items which included a review of the follow-up action in respect of various decisions taken in the last meeting.

The Council approved the two-tier Career Advancement Scheme for Non-Teaching employees of the University besides taking decisions on various other agenda items.

8TH University Council Meeting

8th University Council meetings was held on 26-09-2012 at Raj Bhavan, Srinagar under the Chairmanship of Sh. N.N. Vohra, Hon'ble Governor of Jammu & Kashmir and Chancellor of SKUAST-Jammu

The Hon'ble Governor suggested that the Larger objectives of the State would be far better served if the Vice Chancellors of all the Universities and major institutions of higher learning in J&K could establish effective coordination and collaborative approaches in identified areas. He suggested that there should be regular interaction among these institutions to promote the welfare of the people of the State.

Referring to the need for undertaking study of impact of deficient rains on the agriculture and its allied ectors, the Hon'ble Governor observed that research projects should be taken up by the Farm Universities to most effectively deal with this issue on short and long-term basis. While referring to the proposal for DNA finger printing of elite germplasm of important crops of the State, the Hon'ble Chief Minister asked Vice Chancellors of both the Agricultural Universities to draw up a policy document for setting up of such hi-tech laboratories.

The Chancellor, Sh. Vohra and Pro-Chancellor, Jenab Omar Abdullah of SKUAST-Jammu emphasized the need for adequate utilization of infrastructure, equipment and all other logistics and resources available with the University for maximizing their outputs. They stressed the need for taking all required measures on urgent basis for reducing imports and gradually making the State self-reliant in meeting the requirements of dairy, poultry, mutton and fish. They also called for more close coordination among both the Farm Universities of the State and extension agencies of the Government for enhancing agri-productivity on sustainable basis.

The Hon'ble Chief Minister said that lot of effort has been made to develop entrepreneurship in the State and added that there is need to increase its outreach in various sectors.

Shri N.N.Vohra Hon'ble Governor J&K and Chancellor, SKUAST Jammu Chairing 8th University Council Meeting

While reviewing the infrastructure development programme of the University, the Chief Minister advised the Vice Chancellor to go in for third party monitoring of these projects.

Sham Lal Sharma, Minister for Horticulture and Floriculture, put forth several suggestions for the growth of these sectors, adding that they have a vast potential in the State.

Ghulam Hassan Mir, Minister for Agriculture, emphasized the need for optimum utilization of available land and other infrastructure by the University, particularly for seed production.

Aga Syed Ruhulla Mehdi, Minister for Animal and Sheep Husbandry, said that efforts need to be further intensified for increasing the production of dairy, mutton, poultry and fish in the State.

Dr. D. K. Arora, Vice Chancellor, SKUAST, Jammu, presented a detailed report on the status of teaching, research and extension activities undertaken by the University. He dwelt on the achievements of the University in varied fields and the new varieties of seeds of different crops developed and released by it. He also gave details of the future researchable issues.

The meeting took stock of various research projects and other initiatives taken after the last meeting of the Council of the SKUAST-J, besides discussing other agenda items which included a review of the follow-up action in respect of various decisions taken in the last meeting.

Approval for setting up the School of Agri-Business Management with an intake capacity of 30 students, on self-sustainable basis to this effect was given by the University Council.

13.2 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. 19th and 20th meetings of Board of Management of SKUAST-Jammu were held on 04.04.2012 and 22.08.2012 in the Committee Hall of Vice Chancellor's Secretariat, SKUAST-J, Chatha, Jammu.

Dr. D.K.Arora, Hon'ble Vice-Chancellor Chairing the 20th Board of Management Meeting

13.3 RESEARCH COUNCIL MEETING

The 13th Research Council Meeting of SKUAST-Jammu was held in the Conference Hall at Main Campus, Chatha, Jammu, on 30th and 31st July, 2012 under the chairmanship of Dr. D. K. Arora, Vice-Chancellor. Dr. R. P. Dua, ADG (Food Crops), ICAR, New Delhi and Dr. S. S. Randhawa, Director Research cum Dean PG Studies, GADVASU, Ludhiana, participated as the experts of eminence from agriculture and veterinary fields, respectively.

Dr. A. S. Bali, Director Research and Member Secretary of the Research Council expressed his gratitude to the experts of eminence for accepting the invitation and being present in the meeting, as their vast experience will help to shape the future research priorities in the University.

13th Research Council Meeting SKUAST-J

Dr. R. P. Dua (External Expert on Agricultural Sciences), expressed his satisfaction with the interaction that he had with the scientists during the presentations in the RCM, however, while commenting up on the work being carried out in different Divisions he made the following remarks.

- Need to incorporate molecular techniques in the breeding programmes and to do so, projects for funding should be submitted to DBT and DST, so that a molecular lab comes up.
- Breeding for yellow rust resistance and terminal heat tolerance in wheat should be taken up.
- In the maize breeding programme exchange of germplasm within the University should take place.
- Priority should be given to the vegetable breeding programme, particularly in lettuce and broccoli and the work should be carried out on scientific lines.
- In case of fruit crops emphasis should be on strawberry and olive, giving prominence to *in vitro* propagation through tissue culture techniques.
- Focus needs to be made on projects involving value addition, preservation during transportation and packaging.
- More impetus needs to be given to mushroom propagation. For working on host pathogen interactions in yellow rust, differential hosts should be procured and maintained.
- Instead of working on individual crops like Jatropha, different cropping systems involving agroforestry models should be developed.
- Projects on pesticide residues should be taken up and the projects having only the academic importance should be replaced with the ones having applied nature.

- Multidisciplinary approach and long term experimentations should be taken up.
- Studies on the impact factor of various recommendations should be taken up so that if some modifications were needed that could be incorporated in the package of practices.
- There was need to redraft the projects in the Agricultural Engineering.
- At the out stations the projects should be taken up in collaboration with the main campus and emphasis should be on breeding programmes apart from the disease/insect pest problems related to the respective local areas.
- Good Integrated Farming System model had been evolved, however, the model needs to be transferred to the farmers.
- Breeding projects should be taken up for developing good pulse variety for the region.

Dr. Arora, Vice Chancellor, in his concluding remarks expressed that though the University had adequate infrastructure, yet it lacked good quality of research for which resources need to be generated. In order to improve the scientific environment of the University he made the following observations:

- Need of inter disciplinary interactions, as there was lot of human resource potential in the University and the focus needed to be on the frontal areas of research.
- In order to generate well educated and trained students need to have good academic curricula in the University.
- Projects on molecular plant breeding and plant pathology, host pathogen interaction and biochemical pesticide residue analysis need to be taken up. Brain storming sessions should be organized for molecular plant pathology and molecular plant breeding.
- Studies on hard core genomic should be taken up and stress should be on gene sequencing and bioinformatics.
- Water harvesting and management needs to be given more emphasis, for which good projects should be formulated after having a brain storming session involving the concerned officers from the state departments, so that fresh ideas are generated.
- Proper sanitation should be maintained for the animals in the Veterinary College and in the post mortem area.
- Molecular diagnostic technique needs to be developed for animal diseases.
- In the veterinary the linkage in various projects needs to be developed and external funding was very important to do quality research.
- Veterinary biochemistry, physiology and microbiology need to be strengthened.
- He stressed the need for establishing sanitation, Post Mortem and Incineration facilities in the faculty.
- He said that bio-safety and bio security are important issues that need immediate attention.
- He emphasized that molecular diagnostic techniques should be developed and linkage projects need to be improved.
- He made a special mention that priority should be given to proposed projects

for external funding and advised the Dean F.V.Sc. & A.H. to hold brain storming sessions and submit more number of projects for external funding.

- In the end Vice Chancellor assured that a good scientist shall be encouraged and provided all the facilities.

5th EXTENSION COUNCIL MEETING

5th Extension Council, Meeting of SKUAST-J was held on May 04, 2012 in Conference Hall, Main Campus Chatha under the chairmanship of Sh. Shaleen Kabra, IAS, Hon'ble Vice-Chancellor, SKUAST-J. Dr. A.K. Mehta, Assistant Director General (Retd.), Indian Council of Agricultural Research and Dr. S.L. Tickoo, Director Animal Husbandry (Retd.) J&K Govt. were invited eminent experts.

5th EXTENSION COUNCIL MEETING

Sh. Shaleen Kabra, Vice-Chancellor in his key note address emphasized the need for prioritizing the key issues of skill development; need based research and transfer of technology from lab to land. "Business as usual approach is a *status quo* approach and it does not lead to pro-active innovative initiatives in research and extension, Sh. Kabra remarked, in his address. He impressed upon the scientists to prepare a vision document for propelling the interdisciplinary need based research. He further emphasized that compartmentalization of research and extension activities are unable to achieve the desired outcomes. He stressed upon the University and the line departments to collectively frame a training calendar, where focus should be on creating awareness among the farmers about the latest technologies, training of trainers and involvement of Panchayati Raj Institutions to achieve 4 % growth rate in agriculture. Sh. Kabra projected a road map for making farming, an economically viable venture through knowledge up gradation, entrepreneurship development and capital flow. He further directed that training courses should be formulated in a manner to make them relevant to the society and the modules to be developed which can be passed on to the beneficiaries as per their requirement. He further emphasized that transformation will come through Panchayati Raj Institutions and they will decide the programmes as well as their implementation. He laid stress for making communication more institutionalized.

OTHER MEETING

DBT Task Force Meeting on Animal Biotechnolgy I

Task force meeting on Animal Biotechnology-I was held on 4 and 5 December 2012 at R.S. Pura campus sponsored by DBT, New Delhi. Scientist from NIANP, Bangalore, IISC, Bangalore, IVRI Bareilly, TANUVAS Chennai, Anna University, NBAGR, Karnal, CIFA, Bhuwaneswar, NII, New Delhi, NRC on Mithun, Anand Agriculture University, GADVASU etc. participated.

13. VISITS OF IMPORTANT DIGNITARIES

- Sh. G.H. Mir, Hon'ble Minister for Agriculture Production, J&K Govt.
- Sh. Raman Bhalla, Hon'ble Minister for Revenue, Relief and Rehabilitation, J&K Govt.
- Sh. A.G.Malik, Hon'ble Minister for Higher Education, J&K Govt.
- Dr. S.K.Sharma, Vice-Chancellor , CSK HPKV, Palampur.
- Dr. Tej Pratap, Vice-Chancellor, SKUAST-Kashmir.
- Sh. Shaleen Kabra, Commissioner/ Secretary Agriculture Production Deptt. J&K Govt.
- Prof. Swapan K.Datta, Deputy Director General, (Crop Science), ICAR, New Delhi.
- Dr. J.S.Sidhu, Assistant Director General (Seeds) ICAR, New Delhi.
- Dr. Dev Kumar, Asstt. Director General (Seeds), ICAR , New Delhi
- Sh. Rashpal Singh, Vice-Chairman, J&K Advisory Board for welfare of Kissans.
- Dr. Arun Kumar Sharma, Director NBAIM, Kushmaur, Maunath Bhanjan U.P
- Prof. P.K. Gupta, Hon. Emeritus Prof. and NASI Senior Scientist,
- Dr. D. Swaroop, Director, Central Institute for Research on Goats, Makhdoom, U.P.
- Dr. Vivek Fellener, Professor, Department of Animal Science and Dr. Kelly D. Zering, Professor and Extension Specialist, Department of Agricultural and Resource Economics from North Carolina State University, Raleigh, USA.
- Dr. R. K. Thakur, Project Coordinator, AICRP on Honeybee and Pollinators
- Professor V.V. Ramamurthy, National Coordinator, Network project on Insect Biosystematics.
- Dr. A.K. Mehta, Assistant Director General (Retd.), Indian Council of Agricultural Research
- Dr. R. P. Dua, Asstt. Director General (Food Crops), ICAR, New Delhi
- Dr. S. S. Randhawa, Director Research cum Dean PG Studies, GADVASU, Ludhiana
- Prof. R. Samiyyan, Department of Entomology, TNAU, Coimbtore.
- Dr. B. Gangwar, Project Director, PDFSR, Modipuram, Meerut.

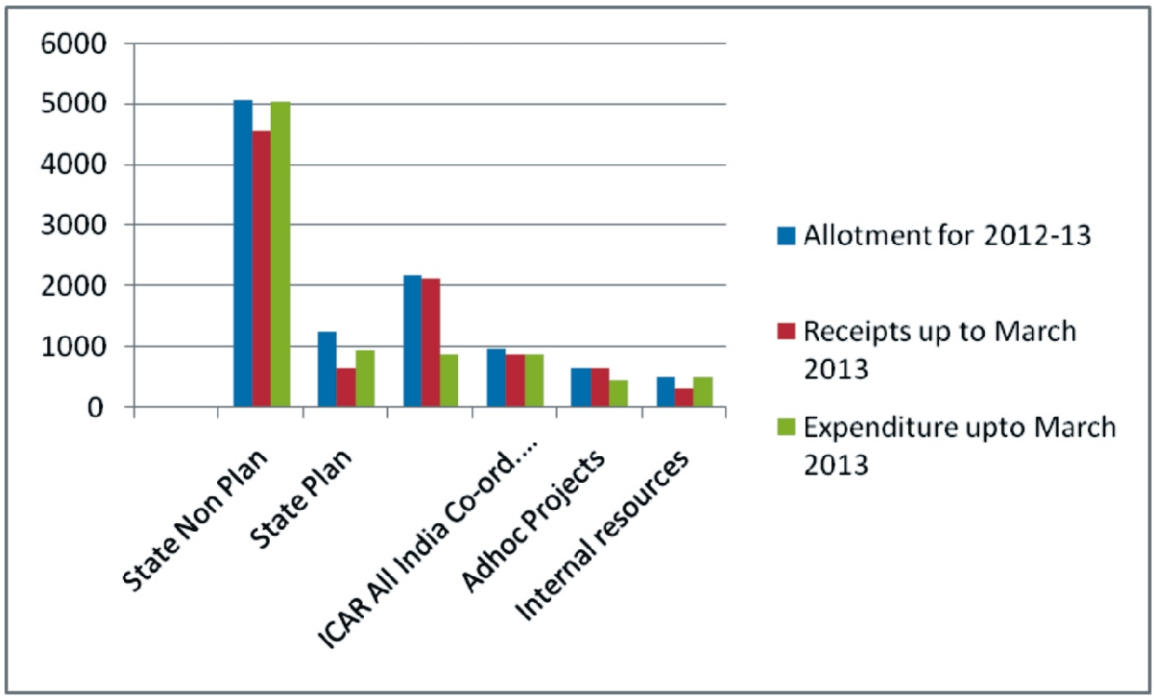
Sh. G.H. Mir, Hon'ble Minister for Agriculture Production & Sh. Raman Bhalla, Hon'ble Minister for Revenue, Relief and Rehabilitation, J&K Govt inspecting the stalls during 2nd Agricultural Science Congress

Visit of Prof. R. Samiyyan, Department of Entomology, TNAU, Coimbtore to SKUAST-Jammu

14. RESOURCES AND FINANCIAL ESTIMATES (2012-13)

(Rs. In Lakhs)

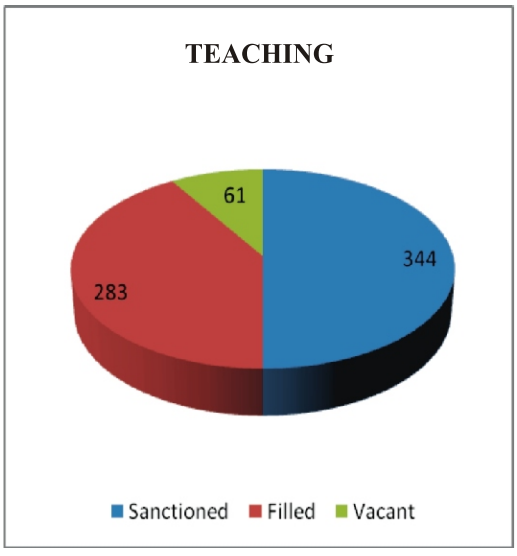
S.No	Particulars	Allotment for 2012-13	Receipts up to March 2013	Expenditure upto March 2013
1	State Non Plan	5059.87	4555.00	5012.93
2	State Plan	1245.00	642.50	960.08
3	ICAR SAU Dev.Grants & PMs Special Grant	2178.00	2131.83	886.95
4	ICAR All India Co-ord. Research Schemes	979.86	885.49	865.51
5	Adhoc Projects	660.19	660.19	441.67
6	Internal resources	500.00	323.34	500.00
	Total	**10622.92**	**9198.35**	**8667.14**

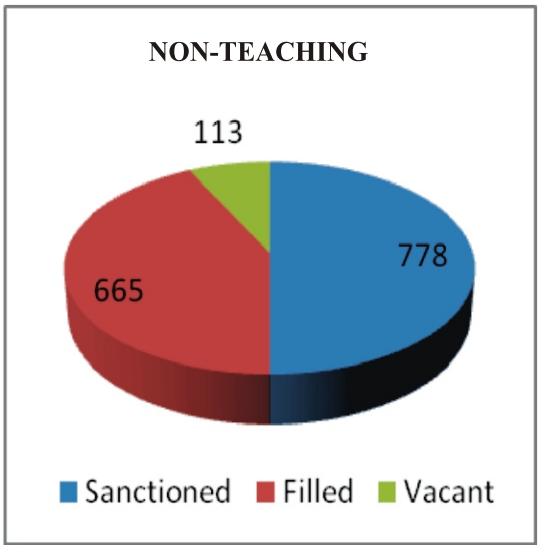


15. STAFF POSITION

Staff Position (As on March 31, 2013)

Category	Sanctioned	Filled	Vacant
A. Teaching			
Dean	02	01	01
Associate Dean	02	01	01
Professor / Equivalent	34	18	16
Assoc . Professor / Equivalent	86	70	16
Asstt .Professor / Equivalent	220	193	27
Total	**344**	**283**	**61**
B. Non-Teaching			
Administrative Officers	9	7	2
Administrative	230	185	45
Technical staff	35	30	5
Auxiliary / supporting staff	504	443	61
Total	**778**	**665**	**113**
Total A+B	**1122**	**948**	**174**





16. APPOINTMENTS, PROMOTIONS AND SUPERANNUATION

16.1 Appointments

Governance

Vice-Chancellor SKUAST-J

Dr. Dilip K. Arora, joined as the new Vice Chancellor of the SKUAST-Jammu on 15.05.2012. Prior to joining this assignment, Dr. Arora served for 10 years as Director, National Bureau of Agricultrally Important Microorganisms, Kusmaur, Maunath Bhajan, Uttar Pradesh, Born at Allahabad on June 29, 1952, Dr. Arora did his Ph.D in Botany (1978) from the Banaras Hindu university. In his earlier career, he worked in various foreign institutions for 13 years. His foreign assignments included his working as Post Doctoral Fellow and visiting professor / scientist at the Michigan State University, USA, University of Idaho, USA, Institute of Microbiology, Poland, INRA, France, Gifu University, Japan, Lund University, Sweden and Dongguk University, Korea. Dr. Arora is the recipient of many national and international awards and honours. He has published more than 121 Research papers and reviews in National and International Journals and has 21 books to his credit.

Registrar

Prof. Bharat Bhushan Gupta

Project Planning and Monitoring Officer

Prof. Deepak Kher

Teaching

S.No.	Name	Appointed as
1	Dr. Prashant Bakshi	Assoc. Professor (Fruit Sciences)
2	Dr. Manoj Kumar Tripathi	Asstt. Prof. (Vety. Physiology)
3	Dr.Ashok Dangi	Asstt. Prof. (Vety. Anatomy and Histology)
4	Dr. Narinder Kumar	Asstt. Prof. (Vety. Pathology)
5	Dr. Pardeep Mahadev Sawant	Asstt. Prof. (Vety. Microbiology & immunology)
6	Dr. Sabhat Gazal	Asstt. Prof. (Vety. Microbiology & immunology)
7	Dr. Mandeep Singh Azad	SMS (Animal Sciences)

Non-Teaching

1	Rakesh Gupta	Computer Assistant
2	Madhu Sudhan Sharma	Computer Assistant
3	Isha Manhas	Computer Assistant
4	Sunil Kumar	Computer Assistant
4	Rameshwar Sharma	Livestock Assitant
5	Anit Pal Kour	Livestock Assitant
6	Nishi chand	Livestock Assitant
7	Imitiaz Ahmed	Livestock Assitant
8	Parvinder Singh Sodi	Livestock Assitant
9	Rafaqat Rashid Lone	Livestock Assitant
10	Rajinder Singh	Livestock Assitant

11	Raghbir Chander	Livestock Assitant
12	Manzoor Masood	Livestock Assitant
13	Vikram Singh	Livestock Assitant
14	Smt. Sukhwinder Kour	Livestock Assitant
15	Richa Bharti	Junior Phsyiotherapist
16	Vikas Gupta	Programme Asstt. (Farm)
17	Mushtaq Ahmad Guroo	Programme Asstt. (Farm)
18	Poonam Abrol	Prog. Asstt. (Home Science)

16.2 Promotions

Teaching

S.No	Name	Appointed as
1	Dr. S.K.Mondal	Professor (Plant Breeding & Genetics)
2	Dr. Bimal Singh Jamwal	Professor (Plant Breeding & Genetics)
3	Dr. R.K. Samnotra	Professor (Vegetable)
4	Dr. Hafeez Ahmad	Professor (Entomology)
5	Dr. Sushil Kumar Gupta	Professor (Agroforestry)
6	Dr. Asim Kumar Mondal	Professor (Soil Sciences)
7	Dr. Rajeev Singh	Professor (Veterinary Medicine)
8	Dr. L.M. Gupta	Associate Professor (Agroforestry)
9	Dr. Sandeep Chopra	Associate Professor (Vegetables)

Non - Teaching

1	Sh. Sohan Lal Sharma	Dy. Comptroller
2	Sh. Ramneek Sharma	Accountant
3	Sh. Nirmal Jeet Singh Dogra	Accountant
4	Ms. Rifat Rasool Nazki	Accountant
5	Sh. Kulwant Singh Sambyal	Accountant
6	S. Harcharan Singh Sudan	Accountant
7	Sh. Harinder Singh	Accountant
8	Sh. Neeraj Gupta	Sr. Stenographer
9	Sh. Vinod Kumar	Sr. Stenographer
10	Sh. Rakesh Kumar	Sr. Stenographer
11	Smt. Devinder Kour	Sr. Stenographer
12	Sh. Rajesh Singh	Sr. Stenographer
13	Smt. Shivani Sharma	ACT
14	Sh. Ghulam Hasssan	FCLA
15	Sh. Ram Paul	FCLA
16	Sh. Shiv Ram	FCLA
17	Sh. Kashmir Singh	FCLA
18	Sh. Vijay Paul	FCLA
19	Sh. Ravinder Kr. Bhat	FCLA
20	Sh. Shadhi Lal Bhat	FCLA
21	Sh. Ranjit Singh	FCLA
22	Sh. Tirth Ram Sharma	FCLA
23	Shiv Dev Singh	FCLA
24	Sh. Kuldeep Sharma	FCLA
25	Sh. Deepak Kumar	FCLA
26	Sh. Krishan Lal	FCLA

16.3 Superannuation

S.No.	Name	Designation	Date of Superannuation
1	Dr. B. Mishra	Vice Chancellor	12.04.2012
2	Dr. A.S.Bali	Director Research	30.04.2012
2	Dr. V.S.Verma	Prof. Plant Pathology	31.01.2013
3	Dr. C.S.Kalha	Associate Dean , FOA	28.02.2013
4	Dr. Rajinder Dhar	Prof. Agronomy, WMRC	31.03.2013
5	Dr. Sudershan Kumar	Assoc. Prof. (AGRO)	31.03.2013 (VRS)

Supporting Staff

S.No.	Name	Designation	Date of Superannuation
1	Tejinder Singh	Driver	30.04.2012
2	Sh. Abdul Latif	Driver	30.04.2012
3	Sh. Ram Dass	Gardener	30.04.2012
4	Smt. Santosh Kumari	Cook	30.04.2012
5	Sh. Suraj Singh Baugal	Mechanic	30.06.2012
6	Sh. Som Nath	Gardener	31.10.2012
7	Sh. Bal krishen	Gardener	31.10.2012
8	Sh. Sandokhu Ram	Lab Attendant	31.10.2012
9	Sh. Nirmal Singh	FCLA	30.11.2012
10	Sh. C.L.Gupta	FCLA	31.01.2013

16.4 Employees who left this University during (2012-13)

S.No.	Name	Designation	Date of Leaving
1	Dr. Probal Jyoti Deloy	Asstt. Prof. (Vety. Anatomy)	11.09.2012
2	Dr. Pavan Kumar	Asstt. Prof. (LTP)	28.03.2013

17. PERSONNEL (AS ON 31.03.2013)

* Assistant Professor / Equivalent and above

Governance:

Vice Chancellors Office

S.No	Name	Designation
1	Prof. Dilip K.Arora	Vice-Chancellor
2	Sh. Devinder Sharma	Secretary to Vice Chanellor
3	Sh. Ajay Sharma	PRO to Vice-Chancellor

Registrar Office

S.No	Name	Designation
1.	Prof. B.B.Gupta	Registrar
2.	Sh. Jatinder Raina	Dy. Registrar (Est.)
3.	Sh. Sanjay Sharma	Dy. Registrar (Secy.)
4.	Dr. Bharat Bhushan	Dy. Registrar (Acad.)
5.	Smt. Hansey Koul	Assistant Registrar (Est.)
6.	Sh. Tarseem Raj	Assistant Registrar (R&C)
7.	Sh. Manohar Lal	Assistant Registrar (Acad.)
8.	Sh. Atul Mahajan	Assistant Registrar (Legal)

Project Planning & Monitoring Office

S.No	Name	Designation
1.	Prof. Deepak Kher	PPMO
2.	Sh. Ajay Kumar	Assistant PPMO (Officiating)

Comptroller Office

S.No.	Name	Designation
1.	Sh. S.C.Bhandari	Comptroller
2.	Sh. Sohan Lal Sharma	Dy. Comptroller
3.	Sh. Rashpal Singh	Dy. Comptroller (officiating)
4.	Sh. Devinder Samnotra	Assistant Comptroller
5.	Sh. Manmohan Singh	Assistant Comptroller
6.	Sh. Babu Ram	Assistant Comptroller
7.	Sh. Raman Sharma	Assistant Comptroller

Estates Office

S.No	Name	Designation
1.	Sh. P.B.Gandhi	Estates Officer
2.	S. Iqbal Singh Sudan	Executive Engineer
3.	Sh. Kewal Kumar Raina	Assistant Executive Engineer

Directorate of Education

1	Prof. R.M.Bhagat	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
5	Sh. Keemti Lal	Assistant Registrar

Directorate of Extension

S.No.	Name	Designation
1.	Dr. K. S Risam	Director Extension
2.	Dr. Pramod Baru	Associate Director Extension
3.	Prof. R.K. Arora	Associate Director Extension

Directorate of Research

S.No.	Name	Designation
1.	Prof. Ajay Koul	Director Research(Officiating)
2.	Prof. R.R. Jat	Associate Director Research
3.	Dr. Pradeep Wali	Deputy Director Research
4.	Dr. M. C. Dwivedi	Farm Manager

Library

S.No	Name	Designation
1.	Prof. V.K.Razdan	University Librarian (Officiating)
2.	Smt. Shashi Prabha Raina	Assistant Librarian
3.	Sh. Leela Dhar Mengi	Assistant Librarian

Faculty of Agriculture, Chatha

Deans Office

S.No	Name	Designation
1.	Dr. J.P.Sharma	Dean
2.	Smt. Raj Kumari Aima	Administrative Officer
3.	Sh.Vijay Sharma	Accounts Officers (Officiating)

Division of Agricultural Extension Education

S.No.	Name	Designation
1.	Dr. Rakesh Nanda	Professor & Head
2.	Dr. S.K.Kher	Professor
3.	Dr. Rajinder Peshin	Associate Professor
4.	Dr. P.S.Slathia	Associate Professor
5.	Dr. Nafees Ahmad	Associate Professor
6.	Dr. Poonam Parihar	Assistant Professor
7.	Dr. L.K. Sharma	Assistant Professor

Division of Agriculture Engineering

S.No.	Name	Designation
1.	Dr. A.K. Raina	Chief Scientist & I/c Head
2.	Dr. Sushil Sharma	Associate Professor
3.	Dr. Sandeep Mann	Associate Professor
4.	Dr. R.K. Srivastava	Associate Professor
5.	Dr. J.P. Singh	Assistant Professor
6.	Er. Hemant Dadhich	Assistant Professor
7.	Er. Sushmita M. Dadhich	Assistant Professor
8.	Dr. Manoj Kumar	Assistant Professor

Divsion of Agronomy

S.No	Name	Designation
1.	Dr. Dileep Kachroo	Professor & Head
2.	Dr. B.C. Sharma	Professor
3.	Dr. Anil Kumar	Professor
4.	Dr. Lekh Chand	Associate Professor
5.	Dr. B.R. Bazaya	Assistant Professor
6.	Dr. Meenakshi Gupta	Assistant Professor
7.	Mrs. Neetu Sharma	Assistant Professor
8.	Dr. Sarabdeep Kour	Assistant Professor
9.	Dr. R. Puniya	Assistant Professor

Division Agricultural Economics & Statistics

S.No.	Name	Designation
1.	Dr. S. E. H. Rizvi	Professor & Head
2.	Dr. Jyoti Kachroo (Punjabi)	Professor
3.	Dr. Manish Kr. Sharma	Associate Professor
4.	Dr. Sudhakar Dwivedi	Associate Professor
5.	Dr. S. P. Singh	Assistant Professor
6.	Dr. Anil Bhat	Assistant Professor

Division of Biochemistry and Plant Physiology

S.No.	Name	Designation
1	Dr. Sanjay Guleria	Associate Professor & Head
2	Dr. S. A. Mallick	Professor
3	Dr. Moni Gupta	Assistant Professor
4	Mr. Gurdev Chand	Assistant Professor
5	Dr. Vikas Sharma	Assistant Professor
6	Dr. B. K. Sinha	Assistant Professor

Division of Agroforestry

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

Division of Entomology

S. No.	Name	Designation
1	Dr. D. P. Abrol	Professor & Head
2	Dr. V. Kaul	Professor
3	Dr. Hafeez Ahmad	Professor
4	Dr. R. K. Gupta	Associate Professor
5	Dr.Kuldeep Srivastava	Assistant Professor
6	Dr. Uma Shankar	Assistant Professor
7	Dr. Devinder Sharma	Assistant 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	Associate Professor
4.	Dr. Sandeep Chopra	Associate Professor
5.	Dr. Satesh Kumar	Assistant Professor

6.	Dr.Sanjeev Kumar	Assistant Professor
7.	Dr. Manoj Kumar	Assistant Professor
8.	Dr.Sheetal Dogra	Assistant Professor
9.	Dr.Arvinder Singh	Assistant Professor
10	Dr.Nomita Laishram	Assistant Professor

Division of Plant Breeding & Genetics

S.No	Name	Designation
1	Dr. Bikram Singh	Professor & Head
2	Dr. S.K. Gupta	Professor
3	Dr. A.K. Razdan	Professor
4	Dr. S.K. Mondal	Professor
5	Dr. S.K. Sudan	Associate Professor
6	Dr. R.R. Mir	Assistant Professor
7	Dr. Sumita Kumari	Assistant Professor

Division of Plant Pathology

S. No.	Name	Designation
1	Dr. V.K. Razdan	Professor & Head
2	Dr. S. K. Singh	Associate Professor
3	Dr. Sachin Gupta	Assistant Professor
4	Dr. Deepak Kumar	Assistant Professor
5	Dr. R.S. Sodhi	Assistant Professor
6	Dr. Vishal Gupta	Assistant Professor

Division of Fruit Science & PHT

Fruit Science Section

S.No.	Name	Designation
1	Dr. V. K. Wali	Professor & Head
2	Dr. R.M.Sharma	Professor
3	Dr. Parshant Bakshi	Associate Professor
4	Dr. Deep Ji Bhat	Assistant Professor
5	Dr. Mahital Jamwal	Assistant Professor
6	Dr. Arti Sharma	Assistant Professor
7	Dr. Akash Sharma	Assistant Professor
8	Dr. Rajesh Kumar	Assistant Professor
9	Dr. Nirmal Sharma	Assistant Professor

Post Harvest Technology Section

S.No.	Name	Designation
1	Dr Raj Kumari Kaul	Professor and Head
2	Dr Anju Bhat	Associate Professor
3	Dr Jagmohan Singh	Assistant Professor
4	Dr Monika Sood	Assistant Professor
5	Dr. Julie Dogra	Assistant Professor

Division of Sericulture

S. No.	Name	Designation
1.	Dr. K. Ram	Professor & Head
2.	Dr. Ajay Koul	Professor
3.	Dr. S.P. Devi	Associate Professor
4.	Dr. R.K. Bali	Associate Professor
5.	Sh. Darshan Singh	Assistant Professor
6.	Sh. R.L. Bhagat	Assistant Professor

Division of Soil Science and Agricultural Chemistry

S. No	Name	Designation
1	Dr K.R. Sharma	Professor & Head
2	Dr. A.K. Bhat	Professor
3	Dr. M.P Sharma	Professor
4	Dr. A. K. Mondal	Professor
5	Dr. Vikas Sharma	Associate Professor
6	Dr. A.P. Rai	Assistant Professor
7	Dr. Renu Gupta	Assistant Professor
8	Dr. Peeyush Sharma	Assistant Professor
9	Dr. Vivak Arya	Assistant Professor

School of Biotechnology

S. No	Name	Designation
1	Dr. R.K.Salgotra	Coordinator
2	Dr. A K Singh	Assistant Professor
3	Dr. G K Rai	Assistant Professor
4	Dr. Sajad Majeed Zargar	Assistant Professor
5	Dr. Ravinder Singh	Assistant Professor

School of Agri-Business Managment

S. No	Name	Designation
1	Prof. Jyoti Kachroo	Coordinator

Dean Office

S.No.	Name	Designation
1.	Prof. S.K.Gupta	Dean (Officiating)
2	Prof. M.S.Bhadwal	Associate Dean
3	Smt. Veena Gupta	Accounts Officer

Division of Pharmacology and Toxicology

S.No.	Name	Designation
1.	Dr. Mudasir Sultana	Professor & Head
2	Dr. Rajinder Raina	Professor
3	Dr. Shahid Parwez	Assistant Professor
4	Dr. Pawan Kumar	Assistant Professor

Division of Veterinary Public Health & Epidemiology

S.No.	Name	Designation
1.	Dr. M.A.Malik	Associate Professor & Head
2	Dr. S.K.Kotwal	Professor
3	Dr.M.Rashid	Assistant Professor
4	Dr.H.K.Sharma	Assistant Professor
5.	Dr.Maninder Singh	Assistant Professor

Division of Veterinary Pathology

S.No.	Name	Designation
1.	Dr. Shagufta Azmi	Associate Professor & Head
2.	Dr. Nawab Nashiruddullah	Associate Professor
3.	Dr. Shilpa Sood	Assistant Professor
4.	Dr. Shafiqur Rahman	Assistant Professor

Division of Veterinary Animal Husbandry Extension

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

Division of Veterinary Microbiology

S.No.	Name	Designation
1.	Dr. Anil Taku	Professor & Head
2	Dr. M.A.Bhat	Associate Professor
3	Dr. Sabahat Ghazal	Assistant Professor

Division of Parasitology

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

Division of Veterinary Physiology & Biochemistry

S.No.	Name	Designation
1.	Dr. Jonali Devi	Associate Professor & Head
2.	Dr. P.S.Mahapatra	Associate Professor
3.	Dr. Jafrin Ara Ahmed	Assistant Professor
4.	Dr. Aditi Lal Koul	Assistant Professor
5.	Dr. Pratiksha Raghuwanshi	Assistant Professor
6.	Dr. Kawardeep Kour	Assistant Professor

Division of Veterinary Anatomy

S.No	Name	Designation
1.	Dr. Kamal Sarma	Associate Professor & Head
2.	Dr. Shalini Suri	Associate Professor
3.	Dr.Ashok Dangi	Assistant Professor

Division of Livestock Products Technology

S.No	Name	Designation
1.	Dr. Sunil Kumar	Associate Professor & Head
2.	Dr. Arvind Kumar	Assistant Professor
3.	Dr. Zuhaib Fayaz.Bhat	Assistant Professor
4.	Dr. Pavan Kumar	Assistant Professor

Division of Teaching Veterinary Clinical Complex

S.No.	Name	Designation
1.	Dr. J S Soodan	Professor and Head
2.	Dr. H R Bhardwaj	Associate Professor
3.	Dr. Utsav Sharma	Associate Professor
4.	Dr. Ashok Kumar	Assistant Professor
5.	Dr. Sharad Kumar	Assistant Professor
6.	Dr. R B Kushwaha	Assistant Professor

Division of Veterinary Medicine

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

Division of Livestock Production and Management

S.No	Name	Designation
1.	Dr. Asma Khan	Associate Professor
2.	Dr. Sahar Masud	Assistant Professor
3.	Dr. Depanjali Konwar	Assistant Professor

Division of Veterinary Gynecology and Obstetrics

S.No.	Name	Designation
1.	Dr. Sudershan Kumar	Associate Professor & Head
2.	Dr. M. Mutha Rao	Associate Professor
3.	Dr. Sanjay Agarwal	Assistant Professor
4.	Dr. Sudhir Kumar	Assistant Professor
5.	Dr. A.K. Pandey	Assistant Professor
6.	Dr. Nishi Pande	Assistant Professor

Division of Veterinary Surgery & Radiology

S.No.	Name	Designation
1	Dr. A.K.Gupta	Associate Prof. & Head
2	Dr. Ankur Sharma	Assistant Professor
3	Dr. D.K.Dwivedi	Assistant Professor
4	Dr. Pankaj Gupta	Assistant Professor

Division of Animal Genetics & Breeding

S.No	Name	Designation
1	Dr R K Taggar	Associate Professor & Head
2	Dr A K Das	Associate Professor
3	Dr. Nishant Kumar	Assistant Professor
4	Dr. Dhirender Kumar	Assistant Professor
5	Dr. Dibyendu Chakraborty	Assistant Professor

Division of Animal Nutrition

S. No.	Name	Designation
1	Dr Ramesh Kumar Sharma	Associate Professor & Head
2	Dr Ankur Rastogi	Assistant Professor
3	Dr Anand K. Pathak	Assistant 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	Sh.Kamlesh Bali	Junior Scientist, (Entomology)
3	Dr. Manmohan Sharma	Junior Scientist, (Plant Breeding & Genetics)
4	Dr.Vikas Sharma	Junior Scientist, Agronomy
5	Dr. Jasbir Singh Manhas	Junior Scientist, (Agricultural Extension Education)
6	Sh. Anil Bhushan	Junior Scientist, (Vegetable Science)
7	Dr.Ashok Kr.Singh	Junior Scientist, (Plant Pathology)
8	Sh.Sunil Kr. Mishra	Junior Scientist, (Agronomy)
9	Dr.M. H. Chesti	Junior Scientist, (Soil Science)
10	Dr. Anjani Kr.Singh	Junior Scientist, (Plant Breeding & Genetics)
11	Dr. Susheel Sharma	Junior Scientist, (Horticulture)
12	Dr. A.M. Aziz	Junior Scientist, (Soil Science)
13	Dr. Veena Sharma	Technical Officer, AMFU

Maize Breeding Research Sub Station, Poonch

S.No.	Name	Designation
1	Dr. A.K. Singh	Junior Scientist, (Entomology)
2	Sh. Magdeshwar Sharma	Junior Scientist, (Entomology)
3	Dr. Praveen Singh	Junior Scientist, (Plant Breeding & Genetics)

Regional Horticulture Research Sub-station, Bhaderwah

S No	Name	Designation
1.	Mr. Amit Jasrotia	Jr .Scientist, (Fruit Science)
2.	Dr.Vishal Raina	Junior Scientist, (Plant Breeding & Genetics)
3.	Mr. Brajeshwar singh	Junior Scientist, (Plant Protection)
4.	Dr. Neeraj Kotwal	Junior Scientist, (Entomology)
5.	Dr. A.C. Jha	Junior Scientist, (Plant Pathology)
6.	Dr. Kiran Kour	Junior Scientist, (Fruit Science)
7.	Mr. Manoj Kumar	Junior Scientist, (Soil Science)
8.	Dr. Rakesh Kumar	Junior Scientist, (Fruit Science)
9.	Dr. Manpreet Kour	Junior Scientist, (Agronomy)
10.	Dr. Upma Dutta	Junior Scientist, (Plant Pathology)
11.	Dr. Sanjeev Kumar	Junior Scientist, (Soil Science)

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

S.No.	Name	Designation
1.	Dr. Vijay Bahadur Singh	Junior Scientist (Plant Pathology)
2.	Sh. Vijay Kumar	Junior Scientist (Soil Science)
3.	Dr. Neeraj Gupta	Junior Scientist (Post Harvest Technology)

Dry Land Research-Sub Station Dhiansar

S.No.	Name	Designation
1.	Dr. Mahender Singh	Senior Scientist (Agronomy)
2.	Dr. Vikas Abrol	Junior Scientist (Soil-Science)
3.	Dr. Reena	Junior Scientist (Entomology)
4.	Dr. V. K. Singh	Junior Scientist (Plant Pathology)
5.	Dr. Sonika Jamwal	Junior Scientist (Plant Pathology)
6.	Dr. Jai Kapoor	Junior Scientist (Agronomy)
7.	Dr. Brinder Singh	Junior Scientist (Soil Science)
8.	Sh. Vikas Gupta	Junior Scientist (Agronomy)

Pulse Research Sub-Station Samba

S.No.	Name	Designation
1.	Dr. B.S. Jamwal	Chief Scientist (PBG)
2.	Dr. S.K.Singh	Junior Scientist (Pl. Pathology)
3.	Sh. B.N.Singh	Junior Scientist (Agronomy)

Farming Research Center (ICAR), Chatha

S.No.	Name	Designation
1.	Dr. Dileep Kachroo	Chief Scientist (Agronomy) & Head
2.	Dr. N.P. Thakur	Senior Scientist (Soils)
3.	Dr. Ashok Gupta	Senior Scientist (Agronomy)
4.	Dr. Vijay Khajuria	Junior Scientist (Agronomy)

Water Management Research Centre (ICAR), Chatha

S. No.	Name	Designation
1.	Dr. A. K. Raina	Chief Scientist & Head
2.	Er. N. K. Gupta	Senior Scientist, (Agril. Engg.)
3.	Dr. Abhijit Samanta	Senior Scientist, (Soils)
4.	Dr. Vijay Bharti	Junior Scientist, (Agronomy)

All Indian Coordinated Research Project on Rice (ICAR), Chatha

1.	Dr. Anil Gupta	Sr. Scientist, (Plant Pathology)
2.	Dr. Anuradha Saha	JuniorScientist, (Agronomy)
3.	Mr. Rajan Salalia	Junior Scientist, (Entomology)
4.	Dr. Bupesh Kumar	Junior Scientist, (PBG)

All Indian Coordinated Research Project on Wheat & Barley (ICAR), Chatha

1.	Dr. Tuhina Dey	Sr. Scientist, (PBG)
2.	Dr. M.K. Pandey	Junior Scientist (Plant Pathology)

All Indian Coordinated Research Project on Rapeseed-Mustard (ICAR), Chatha

1.	Dr. S.K. Rai	Junior Scientist, (PBG)
2.	Dr. Rajeev Sangra	Junior Scientist, (Agronomy)

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

1	Sh. Akhil Verma	Junior Scientist, (Agronomy)
2	Dr. R.S.Sudan	Junior Scientist, (PBG)

All India Co ordinated Research Project on Agrometerology (ICAR), Chatha

S.No.	Name	Designation
1.	Dr. M.K.Khushu	Chief Scientist

Krishi Vigyan Kendras

S.No	Name	Designation
KVK, R.S.Pura		
1.	Dr. Sanjay Swami	Programme Coordinator
2.	Dr. Vinod Gupta	SMS (Agriculture Extension)
3.	Dr. Pardeep K. Rai	SMS (Soil Science)
4.	Dr. Prem Kumar	SMS (Fisheries)
5.	Dr. Shyam Prasad Gupta	SMS(Horticulture)
6.	Dr. Anil Kumar Sharma	SMS(Agronomy)
7.	Dr. Daleep Koul	SMS(Plant Breeding)
KVK, Rajouri		
1.	Dr. Sanjay Kher	Programme Coordinator
2.	Dr. Abhay Kumar Sinha	SMS (Agriculture Engineering)
3.	Sh. Rakesh Sharma	SMS (Agriculture Extension)
4.	Sh. Puneet Chowdhary	SMS(Agroforestry)
5.	Dr. K.Y.Deshpandey	SMS(Animal Sciences)
KVK, Bhaderwah, Doda		
1.	Dr. R.S.Bandral	Programme Coordinator
2.	Dr. Bharat Bhushan	SMS (Extn. Education)
3.	Dr. B. Brahama	SMS(LPM)
4.	Ms. Ravneet Kour	SMS(Horticulture)
5.	Mr. Sanjay Khajuria	SMS(Agroforestry)
6.	Dr. Amit Singh Charak	SMS(Agronomy)
KVK, Reasi		
1.	Dr. Vikas Tandon	Programme Coordinator
2.	Dr. Banarsi Lal	SMS (Extn. Education)
3.	Dr. Rajesh Kumar	SMS(Horticulture)
4.	Dr. Sheetal Badyal	SMS (Home Science)
5.	Sh. Lalit Upadhaya	SMS(Agroforestry)
6.	Dr. Mandeep Singh	SMS(Animal Science)

KVK, Poonch

S.No.	Name	Designation
1.	Dr. Shahid Ahmed	Programme Coordinator
2.	Dr. Arvind Kumar Isher	SMS(Entomology)
3.	Dr. Sanjeev Kumar	SMS(Plant Breeding)
4.	Dr. Suraj Prakash	SMS (Agriculture Extension)
5.	Sh. Pawan Kumar Sharma	SMS (Economics)
KVK Kathua		
1.	Dr. Amrish Vaid	Programme Coordinator
2.	Dr. Berjesh Ajrawat	SMS (Agriculture Extension)
3.	Dr. Anamika Jamwal	SMS(Plant Protection)
4.	Dr. A. P. Singh	SMS(Soil Science)
5.	Dr. Vishal Mahajan	SMS(Agroforestry)
6.	Dr. Neeraja Sharma	SMS(Horticulture)

- **Not as per the Seniority***