SKUAST-J

14th ANNUAL REPORT

2013-14

SHER-E-KASHMIR
UNIVERSITY OF AGRICULTURAL SCIENCES & TECHNOLOGY OF JAMMU

CHATHA, JAMMU (J&K) - 180009

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

CREDIT LINE

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

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

PREFACE

It gives me immense pleasure to present the 14th Annual Report of Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu (SKUAST-J) reflecting salient achievements of the University during the year 2013-14. The University has grown remarkably since its inception and achieved many milestones in teaching, research & extension and remained front runner in Agriculture and Allied sections of the region. The efforts are on to further the cause of agricultural improvement.

The SKUAST-J is engaged in grooming professionally competent and skilled human resource in agriculture sector. The University is offering undergraduate programmes viz., B.Sc.(Hons) Agriculture, B.Sc (Hons) Biotechnology, B.V.Sc & A.H. and programmes at Master and Doctorate level in 37 and 21 disciplines, respectively, in two academic campuses. The admission to Under Graduate and Master Programmes were made through entrance examination conducted by university itself. During the year under reference, 168 students were admitted to various UG programmes, 126 to Master programmes and 58 students to Ph.D. programmes. Besides, curricular and extracurricular activities including sports and cultural activities are being encouraged. The university started a new School for Genomics, Molecular Biology and Microbiology.

Research is a significant activity of the University. The efforts put forth by SKUAST-J scientists over the past few years have enabled it to release 05 New Varieties one each in Rice, Wheat, Maize, Oilseed and Vegetable. Crop Improvement programmes are continuing and new varieties / hybrids of cereals, pulses, oilseed and commercial crops are hoped to embark upon new era of productivity in the regions during the coming years. To further augment the seed replacement rate and to enhance productivity in the State, the University produced 57.70 quintals of breeder seed, 1019 quintals of foundation seed and 1034 quintals of certified seeds of oilseeds, pulses and cereals during the year under report. Research activities on many location specific problems are being intensified with the funds received from Indian Council of Agricultural research (ICAR), the State Government and other funding agencies.

SKUAST-J has a strong and effective network of extension services with six Krishi Vigyan Kendras (KVKs) in Jammu Division disseminating latest technology knowledge and relevant skills to the farmers and extension functionaries. These units perform important tasks of assessment and refinement of technologies, organizing training programmes for farmers, extension personnel and

NGOs, undertaking diagnostic field visits, veterinary clinical camps, conducting method demonstrations, group discussions and organizing field days and kissan melas. Those are a source of mass communication bringing out popular articles, information bulletins, press notes, radio and TV programmes to enlighten the farming community on agricultural developments.

The University has been able to make strides mainly because of patronage and guidance received from the Chancellor of SKUAST-J, The Governor of Jammu & Kashmir, Padam Vibhushan Sh. N. N.Vohra, Pro-Chancellor Jenab Omar Abdullah, The Hon'ble Chief Minister of Jammu & Kashmir State and Dr. J. S.Ayyapan, Hon'ble Secretary, DARE & DG, ICAR during the year under report as well as for their whole hearted financial and technical support to the university. Special thanks are due to Sh. B. R. Sharma, Financial Commissioner, Planning & Development Department, Sh. B. B. Vyas, Principal Secretary, Finance Department and Dr.A.H.Samoon, Commissioner/Secretary, Agriculture Production Department, J&K Govt. for their cooperation and personal efforts for the betterment of the University. My thanks are due to the Statutory Officers and staff members of the University for their Cooperation in sincere efforts made for the progress of SKUAST-J.

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

Jammu

(Pradeep K. Sharma)
Vice Chancellor

CONTENTS

SKUAST-J: AN INTRODUCTION

SKUAST-J: AN INTRODUCTION

Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu (SKUAST-J) was carved out of the earstwhile SKUAST of Jammu & Kashmir State on 20th September, 1999 to cater to the needs of Jammu region for the development of region specific human resource, agricultural technology and the eventual transfer there of. Jammu region has got various agro-climates ranging from low altitude subtropical zone and intermediate temperate (mid / high) to temperate zone spread over ten districts. With each zone different microclimates exist. Hence, different strategies would be needed for speedy development of agriculture in various agro climatic situations in the region. The region has huge potential in agricultural growth, both with respect to total production and productivity per unit area. The major impediments, however, as identified include huge chuncks of waste lands as it is only about 25 per cement of taltal area of the division which has been brought under cultivation ; lack of irrigation facilities, which is confined to about 26 per cement of the total cultivated land; lower cropping intensity as over one lakh hectares i.e about 30 per cment of cultivated land is sown once only; non availability of essential inputs i.e seeds, fertilizer, plant protection chemicals in right quality at right time and very poor seed replacement rates.

In its quest for achieving sustainable development in Agriculture and allied activities university has successfully employed a three-pronged approach comprising teaching research and extension. Striving for need based technology through scientific and academic excellence and its subsequent transfer to end user farming community has remained the hallmark of the university. Towards this end the university has vigorously pursued a policy of continuously reviewing and upgrading the requisite infrastructural facilities at different faculties with well-arranged divisions and well equipped laboratories, research centres, farms and hostel facilities to students. The university library is the backbone of academic and research activities having collection of text and reference books, journals, magazines audio/video, CD-ROMS, research report etc.

The university aims are to assure prosperity of farmers and rural community through diversification, intensification and linkage of agriculture market. The university offers undergraduage and postgraduate programmes of national standards in Agricultural and Technological education. The courses and research projects have been carefully designed to offer a wide variety of high tech disciplines that are flexible and suit the dynamic nature of technology to students and research scholars. University has adopted a system of research that is flexible, innovative as well as responsive to farmers's proglems. The focus is on interdisciplinary and team approach where need based research is carried out in various disciplines at Faculty of Agriculture, Faculty of Veterinary Sciences and Animal Husbandry besides eleven Research centres located in various agro-ecological situations of Jammu region. This will go a long way in sensitizing farmers to all important quality management and devising strategies in view of new ecological and economic realities. The university has initiated efforts for internal collaboration with various national and international Institute of repute regarding floriculture, vegetable sciences, fruit science, apiculture and breeding for hybrid rice. Generation of location specific technologies and their adoption for benefit of the farming community is our priority.

Growth of population, increased purshing power and urbanization calls for increased demand of quality food and processed food products. Reduced per captia availability of arable land and irrigation water, depletion o fnatural resources, after effect of WTO agreements leading to implementstation of policies on liberalization, privatization and globalization have added to complexities of the problem. The sustainability and profitability of agriculture production environments in general and that of fragile ecologies in particular in the abak drop of declining investment in agricultural research and development

have become a cause of concern. Shrinking of job opportunities for graduates and post graduates in the prevailing teaching, research and extension sectors have necessitated the need for reorientation of agricultural education and research. In the above scenario, SKUAST-J will have to play a pivotal role in ensuring food security, making farming a profitable enterprise and protect the ecological foundation including the rich bio-diversity. Concerted efforts have also to be made for producing technically competent man power for the present and future, developing, refining technologies and its effective transfer to the farmers of various agro-climatic zones of the Jammu region through the ten Research stations / sub stations centres and six Krishi Vigyan Kendras in erstwhile six district of Jammu region and efforts are being made to create KVKs in newly created four districts. The University has an efficient extension wing in the form of scientist farmer interface running through development departments, various divisions, units, farms and KVKs.

OUR MISSION

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

MANDATE

- Advancement of education in agriculture, Animal Husbandry, Veterinary Sciences and other allied branches.
- Conduct basic, strategic and applied research in agriculture and allied sectors.
- Dissemination 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 Council

The Extension Council is responsible in respect of coordinating Extension 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

Schools

i) School of Biotechnology

ii) School of Agri Business Management

iii) School of Genomics, Molecular Biology and Microbiology

Planning Committee

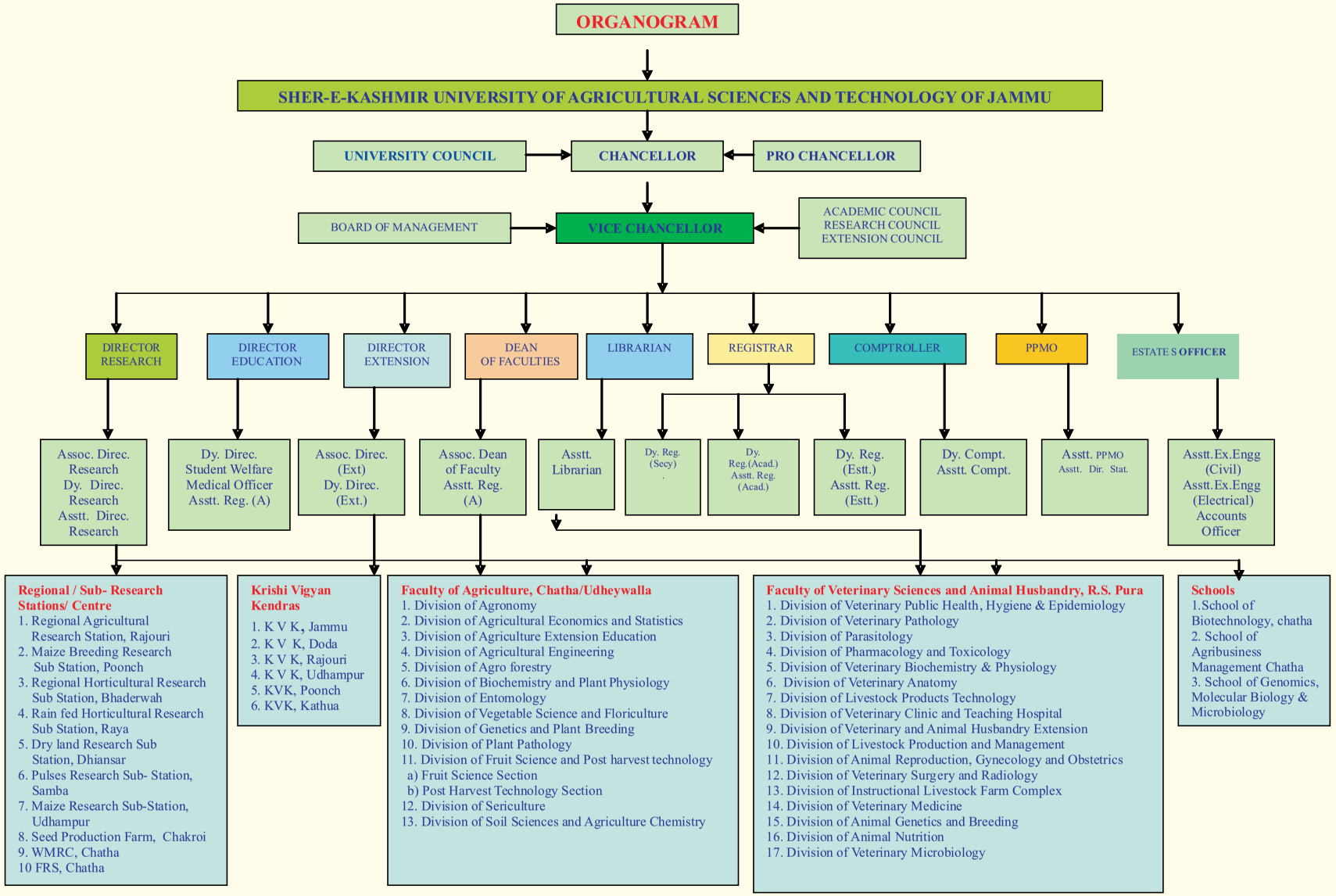
The Planning Committee advises the Board of Management in matters relating to Planning and Development of the University. It is also responsible for programme planning, monitoring and implementation of major projects of the University.

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 and development of the University, Deans with respect to academic activities and Directors for management of research and extension activities in the field of Agriculture and Veterinary Sciences, besides, Librarian assists in library affairs, 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
Regional / Sub- Research Stations/ Centre
1. Regional Agricultural Research Station, Rajouri
2. Maize Breeding Research Sub Station, Poonch
3. Regional Horticultural Research Sub Station, Bhaderwah
4. Rain fed Horticultural Research Sub Station, Raya
5. 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
3. School of Genomics, Molecular Biology & Microbiology

UNIVERSITY COUNCIL
As on 31-03- 2014

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, Horticulture, Agriculture & Floriculture, J&K Govt.	Member (Co-opted)
Dr. Pradeep K. Sharma Hon'ble Vice Chancellor, SKUAST-J	Member
Dr. Tej Partap 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-J) 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 Hon'ble Vice Chancellor, PAU, Ludhiana	Member
Dr. B.B. Gupta Registrar, SKUAST-J	Non- Member Secretary

BOARD OF MANAGEMENT

As on 31.03.2014

Dr. Pradeep K. Sharma Hon'ble Vice Chancellor, SKUAST-J	Chairman
Dr. Tej Partap, 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 Secreatry 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. B. B. Gupta Registrar, SKUAST-J	Non-Member Secretary

OFFICERS OF THE UNIVERSITY

As on 31.03.2014

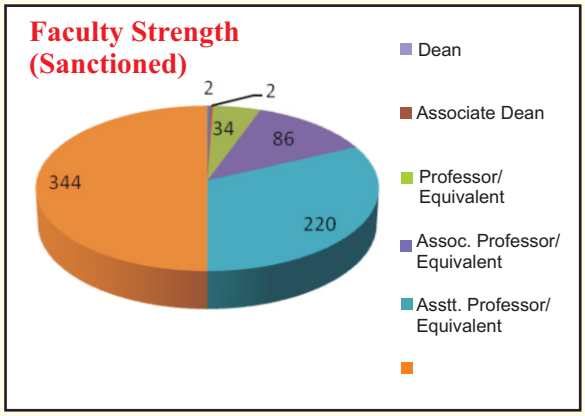
Dr. Pradeep K. Sharma	Hon'ble Vice Chancellor
Dr. K. S. Risam	Director Extension
Dr.. R. M. Bhagat	Director Education
Dr. Ajay Koul	Director Research
Dr. B. B. Gupta	Registrar
Dr. Deepak Kher	Project Planning & Monitoring Officer
Dr. S. C. Bhandari	Comptroller
Dr. J. P. Sharma	Dean, Faculty of Agriculture
Dr. S. K. Gupta	Dean, Faculty of Veterinary Sciences & AH
Dr. V. K. Razdan	Librarian
Sh. Iqbal Singh	Estates Officer

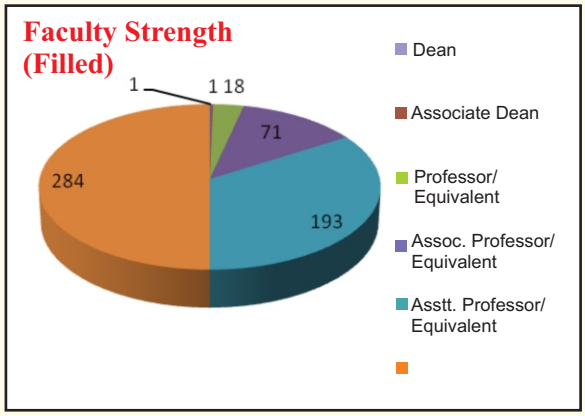
EXECUTIVE SUMMARY 1

With the generous and constant patronage of Chancellor and Pro-Chancellor; Central & State Governments, Indian Council of Agricultural Research, the University during 2013-14 under the stewardship of 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. School of Genomics, Molecular Biology and Microbiology was created and approved by the university council in its 10th Meeting held on 14th October 2013, as a part of framework for a proactive approach that enables this University to strengthen its standing as one of the world's preeminent higher educational institutions. 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 34 Professors, 86 Associate Professors and 220 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 & Master Degree programmes were made through Common Entrance Test by the University it self. Doctoral degree programme, the university itself selected the candidates on the basis of merit. As many as 168 and 126 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 18,43,24,49,16 and 4 respectively. The total number of students on roll remained 819, comprising of 348 in Agriculture, 380 in Veterinary Sciences, 91 in Biotechnology, 15 in Agri Business Management and 7 Genomics and Molecular/ Micro biology.
- 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. 3128 OPDs were attended and 56.55 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 28234 text and reference books. The library has adopted electronic cataloging using SOUL software. It annually subscribes 21 Indian journals. The University has access to about more than 3500 e-journals through CeRa consortium, CAB abstracts access to over 9 million bibliographic and full text articles related to agriculture and other sciences, CABI e-books access to about 625 CABI e-books related to agriculture and allied disciplines and EBESCO Business Source Elite+ access to 1800+ e journals related to management sciences adn other related disciplines available in computer labs of libraries and all the campuses of SKUAST-J throu NKN. LAN and CD-ROM workstation on CABCD, VETCED and FST, Internet services are also provided to the scholars and faculty. Solar power plant facilitiy with 30KwA and 20KwA are available for the libraries at Chatha and R.S.Pura, respectively.





RESEARCH

- Five new varieties viz Basmati 564 (Rice), RSP 561 (Wheat), PHM 12 (Maize)RSPN 25 (Gobi Sarsoon) and G 40 (Knol Khol) developed by the University were cleared by State Variety Release Sub-Committee.
- Two promising hybrid PHM 12 and PHM 34 developed at Poonch station have been assessed in Minikit trial and farmers participatory trial conducted by Department of Agriculture, Poonch during kharif 2013. The result showed their adoptability under farmer's practices on the basis of their yield potential in the prevailing agro climatic region.
- Two promising single cross station hybrids i.e. PHM 12 and PHM 34, at Poonch station were evaluated in IET trial through AICRP on maize at different Zones, India during kharif 2013; where PHM 12 and PHM 34 have performed superior over local as well as national check over five zones of India with zonal mean of 70.47 and 62.06 q/ha, respectively.
- Wheat varieties VL 907 and HS 507 were recommended for cultivation under rainfed conditions of Rajouri. Average Grain yield potential of VL 907 and HS 507 wheat varieties were 43.90 and 41.37 q/ha, respectively. These varieties matured in 182 and 180 days, respectively. Grain yield superiority of 15.94 and 10.87 per cent over the check VL 804 (36.90 q/ha) and HS-240 (36.87 q/ha), respectively.
- 22 accessions were used to screen out the superior accession of Shatavar (*Asparagus racemosus willd*) for sub-tropical region. Germination studies revealed highest germination percentage (53.33%) accession (1C471896). Minimum seed germination percentage (8.33%) was observed in accession 1C471924. Field evaluation of these accessions after 06 months of planting recorded highest number of tubers (56) in 1C471911. The accession 1C471924 observed minimum number of tubers (26). Accessions recorded significant variation w.r.t. tuber yield and highest tuber weight (135.21g) was observed in 1C471911 whereas, minimum (50.11 g) in case of accession 1C471899.
- Two indigenously evolved bivoltine temperate tolerant breeds were crossed with multivoltine breeds procured from Central Sericultural Research & Training Institute Berhampur, West Bengal and hybrid seed in different combinations prepared. For adverse autumn season silkworm rearing two multi x bi silkworm hybrids, OS-616 x Udhey 3 and OS-616 x Udhey 6 recorded a yield of 90.550 and 83.450 kg/100 Dfls under laboratory conditions having single cocoon weight of 2.06 and 1.82 g; shell weight 0.34 and 0.36 g and shell ratio of 16.50 and 19.78%, respectively.
- Out of 23 pole type accessions, two accessions of Pole type and four accessions of Bush type Rajmash were selected for commercial cultivation in Doda District and were further multiplied for evaluation. The yield of Pole type varieties BR 104 was 8 q/ha, Br 303 was 3.47 q/ha and of Bush type variety as solo crop: BR 39 was 14 q/ha, BR 35 was 12 q/ha, BR 37 was 9 q/ha and BR 33 was 10 q/ha.
- Thirty-six isolates of Pseudomonas fluorescens were collected from different agro-climatic zones of Jammu province, out of which 19 isolates exhibited bio-control potential against sheath blight of rice. These isolates showed plant growth promoting traits such as production of indole acetic acid (IAA), gibberlic acid, HCN and phosphate solubilization activities.

- Screening of okra germplasm collected from various sources done during summer season of 2013 showed that Varsha Uphar, Punjab-7, Seli special, VL-Bhendi-1 and Hisar Unnat were resistant towards yellow vein mosaic of okra, whereas, JBS-2, Arka Komal, VRO-3, VRO-6 and 705-1-1 were moderately resistant.
- Combination of imidacloprid as seed treatment with imidacloprid as spray and carbofuran as soil treatment proved significantly effective in suppressing the aphid and whitefly population in tomato. The highest cost benefit ratio of 1:18.04 was obtained in case of imidacloprid (seed treatment)+ imidacloprid (spray) and carbofuran (soil application) followed by imidacloprid (seed treatment) + imidacloprid (spray) [1:16.00], imidacloprid (seed treatment) and betacyfluthrin (spray) [1:15.81), carbofuran (soil application) + malathion (spray) [1: 13.48] and imidacloprid (seed treatment) + malathion (spray) [1: 11.27].
- Imidacloprid @ 4g/kg seed treatment and thiamethoxam @ 4 g/kg seed in winter maize were found effective against stem borer. The application of flubendiamide 480 SC @ 0.01% was highly effective against Helicoverpa armigera compared with Bacillus thuringiensis. While seed treatment alone with imidacloprid and thiomethoxam could reduce the pest infestation to an extent of 15.33 and 19.66 per cent, with (26.99 and 24.67%) increase in grain yield of winter maize.
- Entomophage park for conservation of natural enemies was established and 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.
- To find out the suitable size of containers and media for containerized seedling production of *Melia composita*, 04 different containers namely root trainer 300 cc (C_1), root trainer 250 cc (C_2), polybag of size 28 x 23 cm (C_3) and polybag of size 24 x 16 cm (C_4) were used. Three different potting media including Soil (M_1), Soil + Sand + FYM in the ratio 2:1:1 (M_2) and Soil + Sand + VC in the ratio 2:1:1(M_3) were also studied. Polybags of size 23x28cm and potting medium comprising of soil: sand: FYM in the ratio of 2:1:1 recorded significantly better growth and development of *Melia composita* seedlings.
- In order to standardize the effect of age of the stem cuttings and growth regulators on the growth and development of *Litsea chinensis*, experiment comprising of 02 age classes of cutting (Juvenile and mature) and 15 hormonal treatments (IAA, IBA and NAA each at 0, 500, 1000, 1500 and 2000 ppm) was conducted. The results revealed that vegetative propagation through mature stem cuttings was significantly superior over juvenile ones and the treatment of stem cuttings with NAA @ 500 ppm significantly affected the sprouting per cent, survival per cent and above ground biomass.
- Dual inoculation of pea with Rhizobium + PSB recorded highest mean seed yield (13.82 q/ha) and B:C ratio (1.75) over control, Rhizobium and PSB inoculations. Recommended dose of Phosphorus proved significantly better over control, 50 and 75% of recommended dose of P. Further, the interaction effect revealed that dual inoculation of peas with Rhizobium + PSB recorded significant increase in seed yield upto 75% of recommended dose of P, whereas, seed inoculation with PSB showed significant increase in seed yield upto 50 % of recommended dose of P.
- Additive intercropping of chickpea + mustard was found to be most remunerative as it recorded highest mean yield of chickpea (9.86 q/ha), mustard (6.82 q/ha) and chickpea equivalent yield (13.9 q/ha). The same treatment showed highest B:C ratio of 1.62 over sole chickpea (0.79) and mustard (1.17). Weed control efficiency to the tune of 77-80 % was recorded with application of either pendimethalin PE @ 1.0 kg a.i.or Fluchloralin PPI @ 1.0 kg a.i./ha which was highest than other treatment combinations.
- Additive intercropping of winter maize + potato was found to be most remunerative as it recorded highest mean yield of winter maize (35.95 q/ha), potato (191.98 q/ha) and maize equivalent yield (159.96

q/ha).However, winter maize + potato in replacement treatment showed highest B:C ratio of 2.3 over sole maize (1.9) and sole potato (1.8), it proved to be economically better and feasible for the farmers. Weed control efficiency to the tune of 76-84% was recorded with the application of either Atrazine PE @ 0.5 kg a.i./ha or Atrazine POE @ 1.5 kg a.i./ha which was highest than other treatment combinations.

- Aerobic rice variety PR-115 and Krishna Humsa sown on 15th June has been found suitable. The weed management through peritalachlor @ 400 g/ha (a.i) (4 DAS) followed by bispyribac sodium (30 g a.i./ha at 21 DAS) has proved effective in improving the weed control efficiency (78.9%) in aerobic rice.
- Application of both Zn and B increased mustard seed yield but remained at par with treatments where alone Zn @ 5 and 10 kg/ha was applied. The recommended NPKS and 10 kg Zn + 2 kg B/ ha gave highest mean seed yield (12.53 q/ha) for mustard and maize crops but remained at par with recommended NPKS + 5 kg Zn/ha (11.55 q/ha). Application of 5 kg Zn/ha along with recommended NPKS (60:30:15:20) would be more remunerative than 10 kg Zn/ha for mustard-maize cropping sequence in the soils containing low initial zinc level.
- Assessment and mapping of spatial variability of soil properties of Chatha Farm was done in an experiment. Based on grid based soil sampling and their laboratory analysis, DTPA extractable micronutrient maps were generated for the Chatha farm. Geo-statistical analysis revealed that all the studied micronutrients showed weak spatial dependence. Kriging technique was adopted for generating maps of DTPA extractable Zn, Cu and Fe, whereas Inverse distance weighting was used for Mn. Maps revealed that the Zn content was in the critical range of 0.5 to 1.0 ppm. Within these the northern tip, eastern portion in the centre and western areas exhibited relatively higher zinc content. Other micronutrients were above the critical limit.
- To study the inter-relationship of different properties of irrigation water, the correlation were worked out of different properties and the data indicates, highly significant relation of EC_{iw} with SAR_{iw} (r=0.81**) and SSP_{iw}(r=0.29**) of irrigation water; pH were also exhibited highly significant correlation with RSC_{iw} (r=0.68**). The SSP_{iw} was significantly positively correlated with SAR_{iw}(r=0.73**); EC_{iw} was evaluated with RSC_{iw}(r=28). The quality of irrigation water is key issue in irrigated agriculture in Samba district. Injudicious irrigation even with good quality water may turn the good soil in to saline or alkali soil depending upon the presence of salts. The study will be continued for one more years to authenticate the findings.
- Incorporation of colour in silkworm cocoon and silk filament studies revealed that treatment with Cresyl violet @ 0.01 % and Congo Red @ 0.01 % showed positive response. No adverse effect of dye was observed on silkworm larvae.
- Management of foliar diseases of Pea (Pisum sativum) studies revealed that Carbendazim as seed treatment and two foliar spray with Mancozeb was found most effective against powdery mildew (2.5% DI with 84.55 q/ha pod yield) and downy mildew (4.63% DI with 82.46 q/ha pod yield).
- IPNS in Pearl millet-Gobhi Sarson studies indicated that Grain yield of Pearl millet differed significantly with the application of various fertilizer doses through organic and inorganic sources. The highest grain yield of pearl millet (32.78 q/ha) was obtained through inorganic fertilizer (100% recommended NPK) during the first year (kharif 2013) of expérimentation.
- Maize crop supplied with 50% recommended NPK + 50% N FYM gave significantly highest grain yield (23.50 q/ha) which was at par with 50% recommended NPK + 50% N Crop Residue and 100% recommended NPK + $ZnSO_4$ and 100 % recommended NPK under permanent manurial trial.
- While studying Agri-horti-silvi-pastoral system models at Dhiansar station, Maize and mash crops recorded grain yield to the tune of 25.38 and 3.12 q/ha under Cereal-Cereal (maize-wheat) and Pulse-Cereal system (mash-wheat). A yield of 21.22 q/ha of Okra crop was observed in Vegetable-Vegetable system. Mixed fodder grown in the alleys of Leucaena trees under Silvi-Agri-Pastoral system is the most remunerative system as compared to all other systems which recorded the highest net returns of Rs. 30661/ha with a B:C ratio of 3.47 (kharif season). Gobi sarson crop grown in alleys of Aonla

trees under Agri-Horti-Pastoral system is the most remunerative system as compared to all other systems and recorded the highest net returns of Rs. 59480/ha with a B:C ratio of 3.53. Vegetable Peas crop under Vegetable-Vegetable system recorded the lowest net returns of Rs 28466 with a B: C ratio of 2.40. However, cropping of Gobi sarson in the alleys of Aonla trees proved to be more beneficial as the system is also providing fruits (rabi season).

- Maize-based intercropping system studies at Dhainsar station revealed that the highest maize equivalent yield (MEY) was obtained with paired rows of maize with 2 rows of groundnut (32.70 q/ha) followed by paired rows of maize with 3 rows of groundnut (29.72 q/ha) and paired rows of maize with 2 rows of cowpea (28.92 q/ha). The lowest MEY value (19.71 q/ha) was registered in sole cowpea. Paired rows of maize with 3 rows of groundnut recorded the lowest net returns of_Rs 17281/ha with B: C ratio of 1.56.
- Tillage and the nutrient management for resource conservation and improving soil quality studies at Dhiansar Station revealed that 50 % Conventional tillage (CT) + weedicide + inter culture treatment recorded the highest grain yield of 18.49 q/ha followed by 50 % CT + inter culture and CT + Inter culture with a grain yield of 17.63 and 17.28 q/ha, respectively. Among fertilizer application, the highest grain yield of 20.28 q/ha was recorded in 100% N through inorganic fertilizer followed by 50 % N through inorganic fertilizer + 50 % N through organic manure and 100 % N through inorganic fertilizer with the grain yield values of 19.54 and 14.81 q/ ha, respectively. The Maximum Energy Output value to the tune of 67425MJ/ha was obtained in 50% CT + weedicide + inter culture and the lowest (61655MJ/ha) in CT + Interculture.
- Studies on the Management of collar rot of lentil (Sclerotium rolfsii) in rainfed areas on the farmers field of Samba and Kathua Districts revealed that about about 12% crop was infected with collar rot at Samba district and 15% crop was infected with Sclerotium rolfsii at Kathua district. Test fungus (Sclerotium rolfsii) was isolated from the infected samples collected from the farmers' field.
- Studies on plant parasitic nematodes and soils borne fungi infesting dryland crops of Jammu indicated that with the application of carbofuran, vermicompost and poultry manure in combination significantly increased plant growth and decreased the nematode population over control. 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.
- Propagation studies on walnut reveal that the maximum plant height (70 cm), stem diameter (1.2 cm), no. of leaves (17), root length (13 cm), no. of secondary root (15) and success percent (36%) was recorded with cleft grafting followed by tongue grafting where plant height (64 cm), diameter (0.9 cm), no. of leaves (15), root length (12.6 cm), number of secondary roots (14) and percent success (34%) was recorded.
- Studies on the Integrated management of tomato wilt disease caused by Fusarium sp. Lycopersici indicated that among different treatment combinations; 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 12.33% which gave disease control of wilt 69.83% over the control 40.88% and there by resulting in 95.81% increase in yield as compared to check.
- Assesment of losses due to important diseases of pea (Pisum sativum L.) and their management in hills of Doda showed that disease incidence of Ascochyta blight varied from 25 to 45% whereas the incidence of disease powdery mildew was 30 to 50 per cent. Results showed that treatment hexaconazol (0.1%) was the most effective in which the severity of ascochyta blight (9.5%) and powdery mildew (7.83%) which gave disease control of Ascochyta blight (76.25%) and powdery mildew 77.94% over the check 40% and 35.5% of the respective diseases and thereby resulting in 134..61% increase yield of pea (variety Arkel)as compared to check.
- Epidemiological Studies of Powdery mildew of mango revealed that weather parameters, i.e. maximum and minimum temperature were positively correlated with the development of powdery mildew with the correlation value of 0.72 and 0.64, respectively. Relative humidity (morning) had significant positive correlation (0.69) with

disease development. However, rainfall had negative correlation (-0.42) with development of powdery mildew.

- An IFS 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. In overall IFS model of 1.5 ha realized gross return of Rs. 220829/- from all enterprises by investing of Rs. 132777/- with achieving B:C ratio of 1.66 during the year 2012-13. The highest profit in terms of B:C ratio 2.46 was recorded in fodder block followed by high value seasonal vegetable crop grown under horticulture block of 3000 m^2 and local basmati 370 particular crops during this year. Moreover this IFS model could also generate employment to the family members, besides providing neat and clean (air, soil and water pollution free) environment to the society as well as sustaining or improving s oil physical chemical and biological property.
- Organic farming package for high value crops with cropping sequence like rice-potato-French-bean is being developed for the last 4 years and found that the highest grain yield (34.71 q/ha) of rice (Pusa Basmati 1121) was recorded under organic treatment where different organic sources each equivalent to 1/3rd of N through FYM + Vermi compost + non edible cake was applied with agronomical practices for weed and pest control. Similarly during rabi the maximum yield of Potato (136.55 q/ha) and French bean (veg. purpose) 28.02 q/ha in summer was also recorded in the same treatment with highest REY of 113.0 q/ha. However the soil organic content, available N, P and K was also improved under organic treatments.
- 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.
- Comparative anti-nociceptive efficacy of carprofen and meloxicam in ovario-hysterectomies dogs indicated that both the drugs, carprofen and meloxicam, were effective in controlling post-operative pain, but Carprofen was more potent than meloxicam in controlling the post-operative pain arising due to ovariohysterectomy.
- Atropine-xylazine-ketamine provided surgical plane of anaesthesia with prolonged sedation, adequate muscle relaxation, and excellent analgesia. The induction and recovery were smooth. Atropine-acepromazine-ketamine did not result in surgical plane of anaesthesia.
- Studies on the Quality attributes of chevon and chicken nuggets substituted with fish meat undertaken to utilize fish meat in improving chevon and chicken nuggets by fish meat substitution. Incorporation of 7% refined vegetable oil, 5% refined wheat flour and 1.5% sodium chloride (Sucrose-0.5 g, Potassium chloride-0.7 g and Citric acid-0.3 g) was found to be optimum for the preparation of low-sodium nuggets. The low-sodium chicken nuggets were optimized to be cooked at internal temperature of 94±2^{0}C whereas chevon nuggets at 100 ± 2^{0}C. Chevon and chicken nuggets at the rate of 50% of fish meat substitution were found to be most optimum for preparation of fish substituted nuggets. Substitution of chevon and chicken meat with fish meat resulted in significantly ($P<0.05$) lower fat percent, however significantly ($P<0.05$) higher in emulsion stability, cooking yield, protein and moisture content. During refrigerated storage (4±1ºC), of developed designer chevon and chicken nuggets with substituted fish meat at the rate of 50% in chevon and 50% in chicken were found to be acceptable up to 14 days on the basis of physico-chemical, sensory and microbiological parameters. The use of fish meat in meat products offers processors the opportunity to improve the nutritional and health qualities of their products. This substitution could permit functionality to our designer product without affecting sensory attributes.
- Quality attributes of low sodium fish balls fortified with various combinations of flours and nisin was undertaken to optimize the basic formulation and processing conditions for the preparation of low-sodium fish balls. Three different combinations of cereal and pulse based flours namely rice flour with kidney bean flour, corn flour with peanut flour and barley flour with pea flour at three different levels

viz. 25:75, 50:50 and 75:25 were incorporated for the preparation of fish balls and were compared with fish balls prepared by incorporating 10% refined wheat flour (control). The best variants of these flour combinations viz. 50:50 rice flour with kidney bean flour, 75:25 corn flour with peanut flour and 25:75 barley flour with pea flour showed significantly higher cooking yield and emulsion stability and had significantly higher ($p<0.05$) overall acceptability than fish balls prepared by incorporating other flour combinations as well as refined wheat flour (control). The three best variants of flour combinations were selected for storage studies and were divided into two groups; one treated with nisin and another without nisin. During storage, the physico-chemical parameters like thiobarbituric acid value and free fatty acid content as well as the microbiological parameters like total plate counts, psychrotrophic counts, coliform counts and yeast and mould counts increased significantly ($p<0.05$) from day 0 up to 21st day of storage.

- Studies on the development of designer chevon cutlets was undertaken to optimize the basic formulation and processing conditions for the preparation of chevon cutlets. Twice mincing, incorporation of 5% shredded potato and 3% of crushed ice was found to be optimum for preparation of chevon cutlets on the basis of different physico-chemical and sensory parameters. Incorporation of Oat quaker, Barley flour and Jowar flour @ 4, 4 and 6%, respectively were found to be optimum for preparation of chevon cutlets. Replacement of chevon cutlets with Oat quaker, Barley flour and Jowar flour resulted in lower moisture, protein, fat and rusk pick up percent, however higher in dietary fibre, ash and cooking yield percent. Among the optimum levels of Oat quaker, Barley flour and Jowar flour, incorporation of 6% Jowar flour was adjudged best for preparation of chevon cutlets. During storage, TBA value increased with increase in storage period.
- Studies on hygienic quality of milk with special reference to zoonotically important pathogen reveals that on analysis of 200 milk samples (100 cows and 100 goats) by Modified California Mastitis Test, subclinical mastitis was detected in 41% and 20% of cows and goats, respectively. S.aureus was found to be the predominant organism. Further Culture Sensitivity Test revealed gentamicin and enrofloxacin to be the effective antibiotics against isolates.
- In order to study Seroprevalence on brucellosis in animals and humans a total of 57 serum samples comprising of 37 sheep, 13 cattle, 3 dogs and 4 human samples were collected and subjected to Rose Bengal Plate Test and Standard Tube Agglutination test for diagnosis of brucellosis. A total of 5 (3 sheep and 2 goats) and 6 samples (4 sheep and 2 goats) were found positive for brucellosis by RBPT and STAT, respectively. None of the samples of dogs and humans was found positive by RBPT and STAT.
- For Studying Hygienic Status of Retail Poultry Outlets in Jammu with special reference to zoonotically important bacteria a total of 75 raw chicken samples and 75 poultry cloacal swabs were analyzed for Staphylococcus aureus and Methicillin resistant S. aureus (MRSA). 18.7% of chicken and 22.7% cloacal swabs were positive for S. aureus. 9.3% of chicken and 12% cloacal swabs were positive for MRSA.
- The prevalence of Staphylococcus aureus and MRSA among milk, pus, nasal, environment and clinical samples was studied. Out of 150, 59 (39.33%) samples yielded S. aureus of which, 30 (20%) were MRSA. Prevalence of S. aureus in milk was 34/65 comprising 15 (44.1%) MRSA. Prevalence of S. aureus in pus and nasal swabs in human samples was 7/15 (46.7%) and 11/15 (73.3%); respectively while in animal pus and nasal swabs prevalence of S. aureus was 13/15 (86.7%) and 8/15 (53.3%), respectively. From 39 positive S. aureus from clinical samples, 12 (30.76%) were MRSA. Among environment samples, prevalence of S. aureus was 16/30 (53.33%).
- Clinico-epidemiological studies on canine vector borne diseases (CVBD) in Jammu were conducted during July, 2012 to June, 2013. Out of 220 canine cases presented to different clinics for various ailments / routine health check-up, 172 (7.81%) cases suspectedly suffering from vector borne diseases. Overall 22.09% prevalence of Ehrlichiosis recorded.

EXTENSION

- 1821 farmers/farm women and rural youth were imparted training through 55 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. 120 scientists participated in different seminars/symposia/workshops at state/national level.
- The transfer of technology has been carried out through Krishi Vigyan Kendras and the involvement of subject matter resources personals from the Faculty of Agriculture and Faculty of Veterinary Sciences and Animal Husbandry. A programme "Village Visit and Stay with Farmers" proved very effective. The scientists working at different research stations too participated in various extension activities.

Publications

- Among publications, the university brought out University Newsletter, various technical bulletins, Brochures and folders for dissemination to farmers, stakeholders and resource personnel. As many as 525 publications including book chapters / bulletins / manuals/ research papers etc. published by the scientists in various journals of repute.

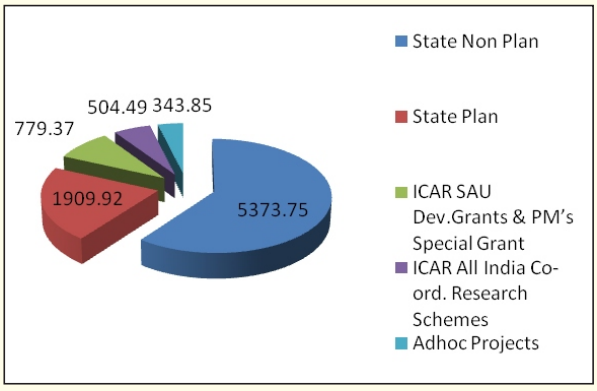
Other Important University Activities

- 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, Extension Council were held accordingly.

Sh. N. N. Vohra, Hon'ble Chancellor SKUAST-J and Governor J&K state addressing 10th 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 14th Research Council Meeting



University operated the total budget of Rs 8911.38 lakhs during the year 2013-14.

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 different climatic zones of J&K state boasts for the richness of microbial diversity, still unexploited for the benefit of farmers and agri-ecosystem. No measures have been taken to explore, estimate, record, and conserve microbial diversity. Realizing the scope of subject and its relevance to the state, School of Genomics, Molecular Biology and Microbiology was created and approved by the university council in its 10th Meeting held on 14th October 2013, as a part of framework for a proactive approach that enables this University to strengthen its standing as one of the world's preeminent higher educational institutions. The school is presently running PG programme in the disciplines of Microbiology. The school offers students to choose from a variety of specializations, in tandem with a growing demand for qualified microbiologist and shall act as nerve centre for budding student entrepreneurs.

2.1 Academic programmes run by the university:

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

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

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

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

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

2.3 Faculty Spectrum

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

Posts	Sanctioned
Dean	2
Associate Dean	2
Professor / Equivalent	31
Associate Professor / Equivalent	71
Asstt. Professor/ Equivalent	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 2013-14 were 66, 28 and 76 respectively. The number of students admitted to M.Sc (Ag.) and Ph.D (Ag.) programme were 55 and 35 respectively in different divisions. In Veterinary faculty 43 MVSc and 11 Ph.D students were admitted during the academic session of 2013-14. In M.Sc Biotechnology and Ph.D Biotechnology programme 6 and 5 students were admitted. In Masters degree programme of Agribusiness Management and Genomics and Molecular Biology/ Microbiology 15 and 07 No. students were admitted respectively. The total strength of the students on roll in Post Graduate and undergraduate Degree programme were 308 and 511 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 2013		II year 2012		III year 2011		IV year 2010		V year 2009			
			M	F	M	F	M	F	M	F	M	F	M	F
1	Agriculture Agriculture	B.Sc. (Hons.)	30	36	20	26	16	17	16	09	-	-	82	88
		B.Sc. (Hons.) Biotechnology	02	24	—	19	—	19	—	09	-	-	02	71
2	Veterinary Sciences & Animal Husbandry	B.V.Sc. & A.H.	48	28	23	26	28	8	28	17	31	21	158	110

2.6 Post Graduate Programme

S.No.	Name of Faculty	Master's Programme				Sub Total		Ph.D. Programme						Sub Total		G.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	Agriculture	39	16	24	25	63	41	16	19	11	07	11	10	38	36	101	77
2	Veterinary Sciences & Animal Husbandry	29	14	29	20	58	34	09	02	03	—-	05	01	17	03	75	37
3	School of Biotechnology	—	06	02	04	02	10	—	05	—	—	—	01	—	06	02	16
4	School of Agri. Business Management	11	04	—	—	11	04	—	—	—	—	—	—	—	—	11	04
5	School of Genomics and Molecular Biology/ Microbiology	02	05	—	—	02	05	—	—	—	—	—	—	—	—	02	05

2.7 Faculty wise Admission (2013-14)

S.No.	Divisions	Master's Degree	Doctoral Degree
	Agriculture		
1	Agronomy	06	03
2	Entomology	11	03
3	Agril. Extension Education	05	03
4	Agricultural Economics	01	02
5	Vegetable Science	04	01
6	Forestry	01	03
7	PHT/Food Science & Technology	04	06
8	Fruit Science	04	04
9	Soil Science & Agricultural Chemistry	03	02
10	Biochemistry and Plant Physiology	05	02
11	Genetics and Plant Breeding	03	04
12	Plant Pathology	08	01
13	Floriculture & Landscape Architecture	01	—-
14	Sericulture	01	01
15	Statistics	01	02
16	Biotechnology	—-	05
	Total	**58**	**37**
	Veterinary Sciences & Animal Husbandry		
1	Animal Nutrition	04	01
2	Veterinary Public Health & Epidemiology	04	02
3	Veterinary Pharmacology & Toxicology	02	—-
4	Veterinary Medicine	05	03
5	Veterinary Pathology	02	01
6	Animal Genetics & Breeding	03	—
7	Veterinary Gynaecology and Obstetrics	03	01
8	Veterinary Surgery & Radiology	05	02
9	Veterinary Parasitology	04	01
10	Veterinary Microbiology	02	—
11	Veterinary Anatomy	02	01
12	Veterinary physiology and Biochemistry	01	02
13	Live stock Production and Management	—	—-
14	Livestock Products Technology	03	01
15	Animal Husbandry Extension	04	01
	Total	**44**	**16**
	Schools		
1	Biotechnology	06	05
2	Agri. Business Management	15	--
3	Genomics and Molecular Biology/ Microbiology	07	--
	Total	**28**	**05**

2.8 Number of Students who completed degree programmes (2013-14)

S.No.	Degree	No. of Students	
		Male	Female
	Post Graduate		
1	Ph.D. (Agriculture)	08	08
2	Ph.D. (Veterinary)	02	02
3	M.Sc. (Agriculture)	15	09
4	M.V.Sc.	37	12
5	M.Sc (Biotechnology)		
	Under Graduate		
1	B.Sc. (Agriculture)	11	07
2	B.V.Sc. & A.H.	31	12

2.9 Thesis accepted (01-04-2013 to 31-03-2014):

M.Sc (Ag.) and allied Sciences

S. No.	Name	Regd. No.	Discipline	Major Advisor	Title of the thesis	Degree
1.	Manzar Masood	J-08-M-133	Agril. Extension Education	Dr. P.S. Salathia	A study on role of *Pinus gerardiana* in livelihood of people of Paddar Valley of Kishtwar District of J&K	M.Sc.(Ag)
2.	Gurjit Singh	J-09-M-163	Agronomy	Dr. A.S.Bali	Effect of Nitrogen and Vermicompost levels on the growth, yield and quality of baby corm (Zea mays L.) cultivars	M.Sc.(Ag)
3.	Ashan ul Haq	J-09-M-180	Plant Breeding & Genetics	Dr. B.B.Gupta	Morphological, Physico-chemical and Molecular Characterization of Rice (Oryza sativa L.) cultivars	M.Sc.(Ag)
4.	Rayees Ahmad Lone	J-09-M-181	Plant Breeding & Genetics	Dr. Tuhina Dey	Evaluation and characterization of winter wheat (*Triticum aestivum* L.) germplasm for resistance to stripe rust (*Puccinia striiformis* WESTEND. f. sp. tritici	M.Sc.(Ag)
5.	Zakiya Banoo	J-09-M-185	Soil Science	Dr. Renu Gupta	Enzyme and nutrient activity in Rhizospehere and bulk soil of *Withania somnifera* (L.) Dunal	M.Sc. (Ag)
6.	Suruchi Mahajan	J-09-M-186	Biochemistry	Dr. Moni Gupta	Biochemical characterization of *Trichoderma* spp. Isolated from soils of Jammu	M.Sc.(Ag)
7.	Zahid Ahmad	J-10-M-198	Entomology	Dr. V.Kaul	Management aof red spider mite on brinjal (*Solanum melongena* L.)	M.Sc.(Ag)
8.	K.Mohd.Ilyas	J-10-M-203	Fruit Science	Dr. Akash Sharma	Growth and survival of kinnow plants as influenced by different types of potting material and propagation media	M.Sc.(Ag)
9.	Habibullah	J-10-M-205	Soil Science & Agril Chemistry	Dr. Vikas Sharma	Assessment and mapping of spatial variability of some soil properties of Chatha farm	M.Sc.(Ag)
10.	Jyoty Angotra	J-10-M-206	Sericulture	Dr. Ajay Koul	Phytomorphology and nutrient dynamics of mulberry leaf	M.Sc. (Ag)
11.	Arti Heer	J-10-M-209	Biochemistry	Dr. Sanjay Guleria	Studies on antioxidant and antifungal properties of the essential oil and extracts from Cinnamomum tamala (Buch.-Ham.) T.Nees & C.H. Eberm and determination of their phytochemical constituents by GC-MS and HPLC	M.Sc. (Ag)
12.	Jagdeep Singh	J-10-M-210	Forestry	Dr. S.K.Gupta	Studies on above ground biomass production and carbon stock in *Populus deltoids* Barter	M.Sc. (Ag)
13.	Jainar Ram	J-10-M-211	Forestry	Dr. K.K.Sood	Effect of plant container size and potting media on the growth and development of *Oroxylum indicum* Vent. seedlings	M.Sc. (Ag)
14.	Chandan Kumar	J-10-M-213	Agril Economics	Dr.S.P.Singh	Production and marketing of mushroom cultivation in Jammu District of J&K State	M.Sc.(Ag)
15.	Rucku Gupta	J-11-M-216	Fruit Science	Dr. Arti Sharma	Survival and growth performance of litchi airlayers as influenced by containers and rooting media	M.Sc.(Ag)
16.	Sohnika Rani	J-11-M-217	Fruit Science	Dr. Akash Sharma	Propagation studies in Guava (*Psidium guajava* L.) cv. L-49 under Jammu Sub-tropics	M.Sc.(Ag)
17.	Aamir Raza	J-11-M-222	Agroforestry	Dr. N.S.Raina	Effect of growth regulators on *Litsea chinensis* Lam. cuttings	M.Sc. (Ag)
18.	Sonika Sharma	J-11-M-224	Entomology	Dr. Kuldeep Srivastava	Base line susceptibility of Spodoptera litura (Fab.) to some fungicides and newer insecticides	M.Sc.(Ag)
19.	Ramandeep Kour	J-11-M-225	Entomology	Dr. R.K.Gupta	Interaction between larval endoparasitoids and Nucleopolyhedrovirus in Spilarctia oblique Walk	M.Sc.(Ag)
20.	Sunnia Gorka	J-11-M-230	Vegetable Science	Dr. Sanjeev Kumar	Genetic divergence studies for yield and quality traits in chilli (*Capisicum annum* L.)	M.Sc. (Ag)
21.	Sampat	J-11-M-232	Vegetable Science	Dr. Sandeep Chopra	Influence of herbicidal weed management on growth and productivity of garlic (*Allium sativum* L.)	M.Sc.(Ag)
22.	Rajinder Kr. Sharma	J-11-M-233	Floriculture & Landscape Architecture	Dr. R.K.Pandey	Crop regulation through pinching and plant growth regulators in African Marigold (*Tagetes erecta* L.)	M.Sc.(Ag)
23.	Priya Kumari	J-11-M-237	Biochemistry	Dr. S.A.Mallick	Biochemical studies on the effect of drought stress and alternaria blight infection on mustard genotypes	M.Sc. (Ag)
24.	Banti Kumar	J-11-M-238	Statistics	Dr. Manish Kumar	An Analysis of Indian Agricultural Workers -A Ridge Regression Approach	M.Sc. (Ag)
25.	Yassar Arafat	J-11-M-239	Sericulture	Dr. Kalu Ram	Evaluation of multi x bi silkworm (Bombyx mori L.) hybrids for autumn season	M.Sc. (Ag)

Ph. D. (Ag.)

S. No.	Name of the Student	Regd. No.	Discipline	Name of Major Advisor	Title of the Thesis	Degree
1	Monica Reshi	J-08-D-105-A	Food Sc. & Tech.	Dr. Anju Bhat	Processing of Potato (Solanum Tuberosum) CVS for value addition	Ph.D. (Ag)
2	Paramjeet Kour	J-08-D-96-A	Agronomy	Dr. Anil Kumar	"Effect of Weed Management Practices on Growth, Yield and Weed Dynamics of Winter Maize (*Zea m ays L.*) + Potato (*Solanum tubersum L* .) Intercropping System in Sub-Tropical Region of Jammu"	Ph.D. (Ag)
3	Ranjeet Kour	J-08-D-107-A	Agronomy	Dr. B.C. Sharma	"Influence of Weed Management Practices on the Productivity of Chickpea *(Cicer arietinum L.)* + Musta rd *(Brassica juncea L.)* intercropping under Sub -Tropical conditions of Jammu & Kashmir"	Ph.D. (Ag)
4	Inderjeet Sharma	J-06-D-57-A	Vegetable Science	Dr. Arun Kumar Gupta	"Effect of Integrated Nutrient Management on Growth and Seed Yield of OKRA *(Abelmoschus esculentus (L.) Moench)"*	Ph.D. (Ag)
5	Magdeshwar Sharma	J-07-D-77-A	Entomology	Dr. R.M. Bhagat	"Management of Emerging Key Species of Grasshoppers in Jammu."	Ph.D. (Ag)
6	Huma Sehar	J-09-D-113-A	Agricultural Economics	Dr. Jyoti Kachroo	"Productivity and Sustainability Measurements of Cropping System in Jammu"	Ph.D. (Ag)
7	Sajad Ahmad Ganie	J-09-D-108-A	Entomology	Dr. V. Koul	"Management of Pulse Beetle *(Callosobrushus chinesis, L., Coleoptera:Bruchidae)* through Botanicals on Chickpea"	Ph.D. (Ag)
8	Parveen Kumar	J-07-D-81-A	Agricultural Extension Education	Dr. M.S. Nain	"A Study of the Farming Systems in *Kandi* Area of Jammu Region"	Ph.D. (Ag)
9	Kamlesh Bali	J-07-D-75-A	Entomology	Dr. R.K. Gupta	"Biological Control of *Parthenium Hysterophorus L.:* Post Release Ecological Impact by Introduced Beetle, *Zygogramma Bicolorata* Pallister in J&K:	Ph.D. (Ag)
10	Brajeshwar Singh	J-05-D-43-A	Plant Pathology	Dr. C.S. Kalha	"Studies on Karnal Bunt of Wheat caused by *Tilletia indica* (MITRA) Mundkur"	Ph.D. (Ag)
11	Bindiya Sharma	J-09-D-111-A	Food Science & Technology	Dr. Anju Bhat	"Standardization and Evaluation of Maize based Convenience Foods"	Ph.D. (Ag)
12	Rakesh Kumar Khajuria	J-07-D-94-A	Vegetable Science	Dr. J.P. Sharma	"Genetic divergence in ORKA *(Abelmoschus esculentus L. Moench)* for Reproductive Traits	Ph.D. (Ag)
13	Parmeet Kour	J-08-D-95-A	Genetics & Plant Breeding	Dr. S.K. Mondal	"Genetic studies of Yield and Quality Tratis in Durum Wheat *(Triticum durum Desf.)*	Ph.D. (Ag)
14	Yogesh Kumar	J-06-D-69-A	Agricultural Extension Education	Dr. G.R. Bhagat	"Multi Dimensional Study on Production and Ma nagement System of Apiculture Farming in Jammu Region"	Ph.D. (Ag)
15	Gaganpreet Kour	J-08-D-103-A	Fruit Science	Dr. V.K. Wali	"Studies on impact of Climate and Irrigation and Management on Growth and Quality of Commercially important Cultivars of Peach (*Prunus per sica L.)* under Jammu Sub-Tropics	Ph.D. (Ag)
16	Mudasir Iqbal	J-09-D-114-A	Agricultural Economics	Dr. Jyoti Kachroo	"Economic Contribution of Farming System Components towards Livelihood Security in Jammu Region"	Ph.D. (Ag)

M.Sc. Biotechnology

S. No.	Name	Regd. No.	Discipline	Major Advisor	Title of the thesis	Degree
1.	Gunjit Kaur	J-11-MB-01	Biotechnology	Dr. Ravinder Singh	Molecular characterization of yellow rust resistance gene Yr 18 among Indian bread wheat cultivars	M.Sc. (Biotechnology)
2.	Navi Kr. Bamotra	J-11-MB-02	Biotechnology	Dr. A.K.Singh	Anther culture response of Basmati genotypes and their hybrids	M.Sc. (Biotechnology)
3.	Preeti Kumari	J-11-MB-03	Biotechnology	Dr. A.K.Singh	Studies on anther culture response in different *Brassica* genotypes	M.Sc. (Biotechnology)
4.	Nancy Gupta	J-11-MB-04	Biotechnology	Dr. S.M.Zargar	Molecular assessment of genetic variation in Indian mustard (*Brassica juncea* L.)	M.Sc. (Biotechnology)
5.	Rajni Choudhary	J-11-MB-05	Biotechnology	Dr. G.K.Rai	Assessment of Genetic Diversity in *Brassica* Species using Biochemical Markers	M.Sc. (Biotechnology)

M. V. Sc.

S.No.	Name	Regd. No.	Discipline	Major Advisor	Title of the thesis	Degree
1.	Sandeep Kumar	J-08-MV-60	Vety. Clinical Medicine & Jurisprudence	Dr. Kafil Hussain	Clinico-therapeutic studies on canine otitis externa	M.V.Sc.
2.	Muzaffer Khan	J-10-MV-167	Animal Nutrition	Dr. A.K.Pathak	Effect of condensed tannins enriched densified complete feed on nutrient utilization and performance of *Haemonchus contortus* infected goats	M.V.Sc.
3.	Heena Sharma	J-10-MV-184	Vety. Animal Husbandry Extension	Dr. M.S. Bhadwal	Backyard poultry rearing in Jammu district of Jammu and Kashmir state	M.V.Sc.
4.	Yasir Waheed Qureshi	J-10-MV-198	Veterinary Microbiology	Dr. Anil Taku	Prevalence of Johne's disease in cattle in Jammu	M.V.Sc.
5.	Sandeep Pandita	J-10-MV-191	Vety Pharmaco-logy & Toxicology	Dr. Shahid Prawez	Toxico-Biochemical alternations & oxidative stress induced by repeated administration of lead and Cyhalothrin in goats	M.V.Sc
6.	Bhanu Kirti Khajuria	J-10-MV-194	Vety. Epidemiology & Preventive Medicine	Dr. Mohd. Ashraf Malik	Seroprevelance of brucellosis in large ruminents of Jammu	M.V.Sc.
7.	Imtiyaz Ahmad Reshi	J-10-MV-199	Vety. Clinical Medicine	Dr. Rajiv Singh	Clinico-therapeutic studies on bovine fasciolosis	M.V. Sc.
8.	Kacho Mehdi Khan	J-10-MV-209	Animal Genetics and Breeding	Dr. Nishant Kumar	Phenotypic Characterization and Evaluation of local sheep at Kargil District of Jammu & Kashmir	M.V.Sc.
9.	Ishfaq Hassan Bhat	J-10-MV-210	Veterinary Physiology	Dr. Jonali Devi	Study of changes in haemato-biochemical parameters during different lactations in Toggenberg goats	M.V.Sc.
10.	Gagandeep Singh	J-10-MV-219	Vety. Epide. & Preventive Medicine	Dr. Rajeev Singh	Epidemiuological studies on haemonchosis in small ruminents and anthelmintic evaluation of local herbs	MVSc.
11.	Adil Masood Khateed	J-10-MV-211	Vety. Animal Husbandry Extn. Education	Dr. M.S. Bhadwal	Indigenous technical knowledge among patoralists for the treatment of animal diseases in Doda district of Jammu and Kashmir	MVSc
12.	Idrees Arafath	J-11-MV-238	Vety. Surgery & Radiology	Dr. A.K. Gupta	Clinical studies on ocular affections in animals	M.V.Sc.
13.	Navdeep Kour	J-11-MV-243	Vety. Pathology	Dr. S. Rahman	Studies on cadmium induced neurotoxicity in wistar rats	M.V.Sc.
14.	Ishfaq Ahmad	J-11-MV-224	Animal Nutrition	Dr. R.K. Sharma	Utilization of lime treatment live Cake (Olea auropaea) as a component of complete feed in goats	M.V.Sc.
15.	Bilal Ahmad Malla	J-11-MV-226	Animal Nutrition	Dr. Ankur Rastogi	Effect of feeding kinnow mandarin (citrus nobilus lour x citrus deliciosa tenora) fruit waste silage on performance of goats.	MVSc.
16.	Surya Narayan Bhatt	J-10-MV-208	Animal Genetics & Breeding	Dr. A,K, Das	Molecular characterization of Bakarwal and local sheep breed (purky) by RAPD-PCR techniques	M.V.Sc.
17.	Sumeet Kour	J-11- MV-273	Livestock Production Management	Dr. Jonali Devi	Influence of thermal stress on haemato -biochemical parameters in relation to thyroid activity in goats	MVSc.
18.	Allah Rakha Char	J-09-MV-140	Vety Surgery & Radiology	Dr. M.S. Bhadwal	Studies on Xylazine ketamine anaesthesia in adult mules working at high altitudes	M.V.Sc
19.	Rizwan Zargar	J-11-MV-240	Vety. Biochemistry	Dr. Pratiksha Raghuwanshi	Ameliorating and protective effect of seabuckthorn (Hippophae rham-noides) leaf extract on lead induced oxidative stress in wistar rats	M.V.Sc.
20.	Pallavi Khajruia	J-11-MV-239	Vety Biochemistry	Dr. Pratiksha Raghuwanshi	Effect of seabuckthorn (Hippophae rhamnoides) leaf extract on diabetes induced biochemical and antioxidant alterations in wistar rat	M.V.Sc.
21.	Ashwani Kumar	J-10-MV-202	Animal Reproduction, Gynaec-ology and Obstetrics	Dr. Utsav Sharma	Studies on treatment of buffaloes with an extended postpartum anestrus interval	M.V.Sc.
22.	Amit Kumar Khajuira	J-11-MV-236	Vety Surgery & Radiology	Dr. M.S. Bhadwal	Comparative anti-nociceptive efficacy of carprofen and meloxicam in ovario-hysterectomized dogs	M.V.Sc
23.	Varun Khajuira	J-10-MV-220	Vety Parasitology	Dr. Rajesh Godra	Prevelence and acricide resistance in ticks of bovines of Jammu District	M.V.Sc.
24.	Mohd. Yousuf Dar	J-11-MV-250	Vety. Anatomy	Dr. Kamal Sarma	Anatomical Studies on prenatal development of the tongue in goat (*Capra hircus*)	M.V.Sc.
25.	Farhat Hussain	J-11-MV-228	Vety. Gynaecology and Obstetrics	Dr. Utsav Sharma	Clinical studies on Pyometra in Bitches	M.V.Sc.
26.	Adil Majid Bhat	J-11-MV-263	Vety Clinical Medicine & Jurisprudence	Dr.J.S. Soodan	Prevelance, Oxidative stress and therapeutic studies on bovine mastitis at drying off	M.V.Sc.
27.	Makhmoor Ah. Bhat	J-10-MV-213	Vety. Pharmacology & Toxicology	Dr. Shahid Prawez	Study on effect of free redical seavenger aminoguanidine on sub-acute amikacin toxicity in wistar-rats	M.V.Sc.
28.	Manpreet Singh	J-11-MV-261	Vety Microbiology	Dr. Pradeep Sawant	Molecular detection of Rhodococus equi inequines and their environment in Jammu & Kashmir	M.V.Sc.
29.	Deepanshu Bhardwaj	J-11-MV-246	Livestock Products Technology	Dr. Arvind Kumar	Quality attributes of chevon and chicken nuggets substituted with fish meat	M.V.Sc.

30.	Virampal Singh	J-11-MV-267	Vety Clinical Medicine & Jurisprudence	Dr. Rajiv Singh	Studies on metabolic profile and oxidative stress during pregnancy and lactation in beetal goats	M.V.Sc
31.	Rashmi Sagar	J-11-MV-271	Vety Pharmacology & Toxicology	Dr. Mudasir Sultana	Pharmacokinetics and dosage regimen of cefquinome in healthy and febrile goats	M.V.Sc.
32.	Vishav Pratap Singh	J-11-MV-255	Animal Genetics & Breeding	Dr. R.K. Taggar	KRT gene polymorphism and its association with wool traits in Rambouillet sheep	M.V.Sc
33.	Sheikh Mohd.	J-10-MV-216	Vety. Surgery & Radiology	Dr. R.B. Khushwaha	Studies on long bone fracture management by intramedullary pinning along with hydroxyapatite implant with or without bone marrow transplant in dogs	M.V.Sc.
34.	Lateed Ahmad Ganie	J-11-MV-247	Livestock Products & Technology	Dr. Arvind Kumar	Quality attributes of low-sodium fish balls fortified with various combinations of flours and nisin	M.V.Sc.
35.	Sahrish Chirag	J-11-MV-269	Vety. Pharmacology & Toxicology	Dr. P.K. Verma	Haematobiochemical changes and oxidative stress induced by sub acute exposure of dichlorvos and copper alone and in combination in wistar rats and subsequent ameliorative changes with vitamin C	M.V.Sc.
36.	Arshad Hussain Mir	J-11-MV-270	Vety Pharmacology & Toxicology	Dr. Mudasir Sultana	Toxic interaction of tefluthrin & aluminium in wistar rats and its modulation by ?-lipoic acid	M.V.Sc.
37.	Pramod Kumar Singh	J-11-MV-249	Livestock Products & Technology	Dr. Sunil Kumar	Studies on the development of designer chevon cutlets	M.V.Sc.
38.	Nishchal Dutta	J-11-MV-244	Vety. Pathology	Dr. Shafiqur Rahman	Etio-pathomorphological studies on lung disorders in sheep and goats in Jammu	M.V.Sc.
39.	Himalini	J-11-MV-264	Vety Clinical Medicine & Jurisprudence	Dr. S.K. Gupta	Studies on Diagnosis and Therapeutic Management of Dogs suffering with cardiovascular diseases	M.V.Sc
40.	Dawoud Aamir	J-11-MV-232	Vety Gynaecology & Obstetrics	Dr. Sharad Kumar	Effect of enzymatic Anti-Oxidants in soya milk extender on buffalo sperm quality following cryopreservation	M.V.S.c
41.	Gourav Kumar	J-11-MV-223	Vety. Epidemiology & Preventive Medicine	Dr. V.S. Wazir	Clinico-Epidemiological studies on vector borne diseases of canines in Jammu	M.V.Sc.
42.	Sajad Ahmad Dar	J-11-MV-229	Animal Reproduction & Obstetrics	Dr. Waquar A.A. Razzaque	Effect of glutamine and cyteine-hydrochloride on crossbred bull sperm quality in soya milk extender	M.V.Sc.
43.	Aafreen Wahid Ganai	J-11-MV-275	Vety Public Health & Epidemiology	Dr. S.K. Kotwal	Studies on Methicillin Resistant Staphylococcus Auresus from diverse sources	M.V.Sc.
44.	Sy. Waseem Bari	J-11-MV-221	Vety. Epidemiology & Preventive Medicine	Dr. M.A. Malik	Studies on Epidemiology of salmonellosis in poultry in Jammu	M.V.S.c
45.	Gourav Sharma	J-10-MV-170	Livestock Production & Management	Dr. Asma Khan	Effect of Paddy straw and pine leaves as bedding material on the performance of broiler chicks	M.V.Sc
46.	Ankush Arora	J-11-MV-242	Vety. Biochemistry	Dr. Aditi Lal Koul	Ameliorating and protective effect of sea buckthorn (Hippophae rhamnoides) Leaf Extract on Copper induced oxidative stress in wistar rats	M.V.Sc.
47.	Savita Chib	J-11-MV-251	Livestock Production and Management	Dr. Sahar Masud	Study on the impact of livestock manure on water quality, growth and bacterial pathogens in catla catla	M.V.Sc.
48.	Sandeep Kour	J-11-MV-253	Livestock Production and Management	Dr. Sahar Masud	Study on the effects of livestock manure and inorganic fertilizer on growth performance and meat quality of Cyprinus carpio	M.V.Sc.
49.	Umar Yusuf	J-09-MV-142	Vety Public Health & Epidemiology	Dr. S.K. Kotwal	Prevalence studies of Bacillus cereus in milk and milk products	M.V.Sc.
50.	Asma Hamid	J-09-MV-155	Vety Pathology	Dr. Shagufta Azmi	A study on the spontaneously occurring neoplasms amongst canines in Jammu	M.V.S.c

Ph.D (Vet.)

S. No.	Name	Regd. No.	Discipline	Major Advisor	Title of the thesis	Degree
1.	Abha Tikoo	J-08-D-14-V	Veterinary Clinical Medicine and Jurisprudence	Dr. J.S. Soodan	Molecular Characterization, Clinico - Biochemical Alterations and Therapeutic Management in Bovine Colibacillosis	Ph.D (Vety)
2.	Mohd. Ashraf Malik	J-06-D-06-V	Veterinary Public Health	Dr. S.K. Kotwal	"Studies on *Salmonella* Species isolated from Poultry and Human Diarrheic Cases"	Ph.D (Vety)
3.	Sania Naseem	J-09-D-22-V	Veterinary Pharmacology & Toxicology	Dr. Mudasir Sultana	"Toxico-Biochemical and Reproductive Abnormalities induced by Repeated Oral Administration of Metalaxyl in Wistar Rats"	Ph.D (Vety)
4.	Vikas Mahajan	J-09-D-24-V	Animal Genetics & Breeding	Dr. A.K. Das	"Kap Gene Polymorphism and its Association with Wool Traits in Rambouillet Sheep"	Ph.D (Vety)

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.
- 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.

- 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 R. S. Pura.
- A conference hall with capacity of 400 plus and mini halls with capacity of 60 persons is available at R. S. 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

- To promote Cultural and Social interest amongst the students, two days' cultural programme "Krishi Utsav 2014" was organized during 25-26 March, 2014 at the Faculty of Agriculture (FoA) Main Campus, Chatha of SKUAST-Jammu. Large number of UG and PG students participated in various events such as Mehandi Designing, Dramatics, Dance, Quiz, Shipwreck, Painting, Rangoli, Singing, Poetry, etc. conducted under the Utsav. Prof. Pradeep K. Sharma, Vice Chancellor of the University was the Chief Guest on the inaugural function of the event.

Dr. Pardeep K. Sharma, Vice-Chancellor enlighting the lamps on the inauguration of Krishi Utsav 2014

Ladhaki Students performing Dance during Krishi Utsav 2014

- Inter faculty sports Meet held at R.S.Pura Campus from 17th to 20th, May 2013 in which students of FVSc&AH, R.S.Pura and FOA Chatha were completed in various

games/events like cricket , volleyball, Table Tennis athletic etc.


Inter Faculty Sports Meet at R.S.Pura and Chatha

2.11 Participation in Inter-University competitions:

- Students of FVSc&AH R.S.Pura, SKUAST-J represented the University in open Badminton Tournament organized by J&K Police at Gulshan Ground Jammu.
- The cultural troupe of SKUAST-Jammu brought laurels by winning the overall runners trophy in 19th All India Inter University Youth Festival "Reverie Renaissance 2014" held at National Dairy Research Institute, Karnal (Haryana). The team bagged winner awards in singing (folk solo, folk duet), dance (classical solo, classical duet, classical group, western solo, western duet), hotch potch and runner awards in singing (folk solo, folk group), dance (western solo, folk solo, folk group), choreography, mime, fashion show, essay writing and story writing. Miss Rizem Kour of SKUAST-J was awarded best performer of the event award i.e "Dr. Ashwani Sharma Memorial Award".

Winning runners trophy in All India Inter University Youth Festival

- A cricket match was played between teaching staff of FVSc&AH and FOA, Chatha on 21st May, 2013 at R.S.Pura, Campus.

- A cricket match was played between teaching and non teaching staff on 23rd May,2013 at R.S.Pura, Campus.

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. 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	3128
2	Students Treated	1769
3	Staff Treated	1359
4	Hostlers	1166
5	Non-Hostellers	603
6	Medical Cases	2783
7	Surgical Cases	345
8	Male Patients	2190
9	Female Patients	938
10	Patient Referred	23
11	Emergencies Handled	206
12	Indoors	61
13	Lab Tests	149
14	Physiotherapy	236 Sessions
15	Dental OPD	246 sittings

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 Rawe Programme

The last Rural Agriculture Work Experience (RAWE) programme was offered in the first semester of 2013-14 to the final year students of B.Sc Agriculture, batch 2010 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 2013-14. The students were paid a stipend of Rs. 1500 each per month for 6 months amounting to Rs. 1,80,000.

2.17 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 2013-14, 52 students have successfully completed their internship programme in B.V.Sc & AH. The expenditure involved for one student for six months is Rs 10,800/- and total expendutre was Rs 5,61,600/-.

Students performing practical at Rural Agriculture Work Experience (RAWE)

2.18 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	22	5170	90	21150
University Library, R.S.Pura	15	4250	6	1480
Total	**37**	**9420**	**96**	**22630**

Books Collection

Library	Books
Central Library, Chatha	21857*
University Library, R. S.Pura	6377*
Total	**28234***

*Includes Gratis Books, Book Bank Books , Books transferred to R.S.Pura Library,& Dir., APD, Books written off , cost recovered etc.

Online Databases/e-Journals/e-books Collection

Central Library, Chatha and University Library, R.S.Pura

CeRA (Consortium for e-Resources in Agriculture): access to about 3500+ e-journals through exclusive VSAT Facility available in Computer Labs of Libraries and NKN Internet connectivity available in all the campuses of

New Additions

Campus	Books (Issues/Number)	Journals Ph.D/M.Sc/MV.Sc	Thesis	Reports	Newsletter	Gratis Books	ST
Central Library, Chatha	1410	70	138	52	126	20	—
University Library, R.S.Pura	437	45	50	—	—	6	—
Total	**1847**	**115**	**188**	**52**	**126**	**26**	

Journal Subscription (Print)

Campus	Journals		Total
	Indian	Foreign	
Central Library, Chatha	18	-	18
University Library, R.S.Pura	3	-	3
Total	**21**	**-**	**21**

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	9820	48346	58166*
University Library, R.S. Pura	—-	6771	6771*
Total	9820	55117	64937*

* includes official Print outs/Photostat, Wastage, Service-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	9869	360	—	—	52921	—	63150
University Library, R.S. Pura	4706	80	—	—	6771	—	11557
Total	**14575**	**440**	**—**	**—**	**59692**	**—**	**74707**

Other Services provided

Campus	News Clippings	Internet	Journals online	CD ROM services	Miscellaneous (Documentation Service)
Central Library, Chatha	Yes	Yes	Yes	Yes (3500+ e-journals through CeRA, EBESCO Database, CAB Direct, CABI e-books)	Yes (On-demand)
University Library, R.S. Pura	—	Yes	Yes	Yes (3500+ e-journals through CeRA, EBESCO Database, CAB Direct, CABI e-books)	Yes (On-demand)

ONLINE LIBRARY

Central Library, Chatha

Functioning with twenty (20) computers for accessing about 3500+ e-journals & CAB Direct through CeRA Consortium, EBESCO database, CABI e-Books and other web resources available through internet by the Students, Faculty and staff at Central Library, FOA, Chatha

SOLAR POWER PLANT

Central Library, Chatha

Solar Power Plant of **30 KwA** capacity is functioning at Central Library, Chatha exclusively for the Library building of FOA, SKUAST-J, Chatha.

University Library, R.S.Pura

Functioning with ten (10) computers for accessing about 3500+ e-journals & CAB Direct through CeRA Consortium, EBESCO database, CABI e-Books and other web resources available through internet by the Students, Faculty and staff at University Library, FVSc&AH, R.S.Pura.

University Library, R.S.Pura

Solar Power Plant of **20 KwA** capacity is functioning at Central Library, Chatha exclusively for the Library building of FVSc&AH, SKUAST-J, R.S.Pura.

Training provided to Library Professionals:

S.No.	Name	Title	Date	Place
1	Mrs. Shashi Prabha, Asstt. Librarian, Chatha	Three weeks Refresher course (RC) in Library and Information Science (LIS) organized by Academic Staff College, University of Jammu	17-2-2014 to 09-03-2014	UGC Academic Staff College, University of Jammu, Jammu
2	Mr. Leela Dhar Mangi,	Three weeks Refresher course (RC) in Library and Information Science (LIS) organized by Academic Staff College, University of Jammu	17-2-2014 to 09-03-2014	UGC Academic Staff College, University of Jammu, Jammu

Training provided to Library Users:

S.No.	Organizer	Title	Participants	Timing	Year	Place
1	Central Library, SKUAST-Jammu, Chatha	Orientation Programme pertaining to use of CeRA and Library resources for the students of PGS-501	110	11:00 AM – 1:00 PM	2013-14	Central Library, Chatha
2	Central Library, Chatha SKUAST-Jammu,	User education programme regarding how to use e-resources available through Consortium of e-Resources in Agriculture (CeRA)	108	2:00 PM – 5:00 PM	2013-14	Central Library, Chatha

Library Membership

Types of Members	Central Library, FOA, Chatha	University Library, FVSc&AH, R.S. Pura
Faculty & Staff	230	75
Ph.D	100	06
M.Sc	153	28
UG	200	301
Total	**683**	**410**

Besides the above information, the Libraries of SKUAST-J also subscribed to Newspapers and Magazines, the detail of which is given as under:

Library	Newspapers	Magazines
Central Library, Chatha	12	15
University Library, R.S.Pura	4	14
Total	**16**	**29**

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

1. Varietal development programme

Basmati 564

The state varietal release sub-committee has released a new variety of Rice- Basmati 564 in its meeting for general cultivation in the state.

- A promising basmati strain having grains at par with that of Basmati 370 besides having good aroma.
- Yield potential of 35-40 q/ha, which is 15-18 % more than Basmati 370.
- Matures 15 days earlier as compared to Basmati 370.
- Resistant to lodging and other biotic stresses.
- Quality parameters studied at Directorate of Rice Research (DRR), Hyderabad showed that this variety had high milling (69.10%) coupled with high head rice recovery (HRR) (60.65%). It had long slender grain and soft cooking quality. In addition, it had got intermediate amylose content (23.55%).

Basmati 564

Basmati 1509

- Indian Agriculture Research Institute (IARI), New Delhi has released a high yielding early maturing Basmati variety Basmati 1509 which may also fit well in the mid hill ecology of Jammu Province.

Basmati 1509

- It has semi-dwarf plant stature (95-100 cm), 120 days seed to seed maturity and average yield of 41.4 q/ha.
- This genotype has advantage of 20 days earliness, non-shattering and non-lodging habit.
- Quality wise, this genotype posses aromatic extra long slender grains (8.41 mm) with very occasional grain chalkiness, very good kernel length after cooking (19.1 mm), desirable ASV (7.0) and intermediate amylose content (21.24%).
- Performance of the said variety is being tested in Districts Rajouri, Kathua (lower hills of Bani), Reasi, Udhampur and Poonch for ascertaining the performance of the variety at farmers field as well as its suitability for mid hill ecology of Jammu Province through Deptt. of Agriculture.

B. Wheat

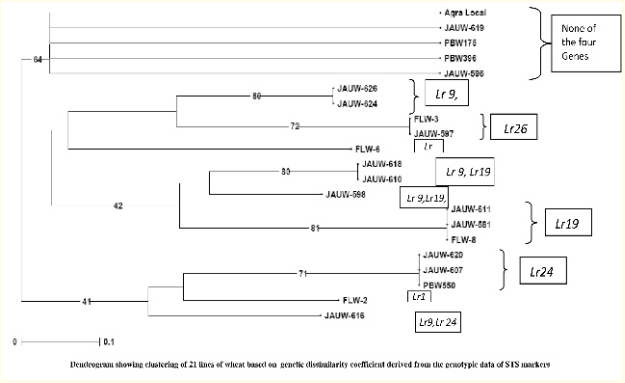
RSP 561

The state varietal release sub-committee has released a new variety of wheat RSP 561 in its for general cultivation in the state.

RSP 561

- Recommended for Plains and mid hills of Jammu- Timely sown irrigated conditions
- Yield superiority over the checks and the qualifying varieties in AICW & BIP trials and local multi-location trials. This variety recorded average yield of 50 q/ha in coordinated testing.
- Moderately resistant to all three rusts (yellow/stripe, leaf and stem rust).
- Excellent grain characters and chapati making quality.
- Possess terminal thermal tolerance in the context of global climate change.
- Multiple Rust resistance genes Lr 26 + 23 + (Leaf rust), Yr 9 + (yellow rust) and Sr 31 + (stem rust) have been found after seedling resistance test against prevalent pathotypes of wheat.
- High iron, zinc and manganese content in grain than the check.

Wheat Germplasm Evaluation for leaf rust Clustering of advanced breeding lines based on Lr genes (Lr9, Lr19, Lr24 & Lr26) was done.



Dendrogram showing clustering of 21 lines of wheat based on genetic dissimilarity coefficient derived from the genotypic data of STS markers

C. Rapeseed- Mustard

- The variety has been tested in all India coordinated trials under AICRP on rapeseed-mustard and recorded highest seed yield (15.95 q/ha) and shown 10% superiority over the check variety GSL-1. The variety was also tested continuously for four years and recorded 11.70% higher yield over the check variety.

RSPN 25

- Contains 39% oil content.
- Moderately resistant to aphid and Alternaria blight and contains comparatively less erucic acid than check variety.
- Matures in140-150 days and average yield is 12-15 q/ha

D. Maize

Maize Hybrid PHM 12

The state varietal release sub-committee has released a new variety of Maize Hybrid PHM 12 in its meeting held on 11-10-2013 for general cultivation in the state.

- A single cross hybrid; one of its parents was developed from local germplasm, so it is highly adoptable in prevailing agro-climatic condition.


PHM 12

- Female parent of the hybrid is high yielding genotype which is most desired characteristics for low cost hybrid seed production.
- Distinguishable through its morphological features such as small leaf angle, straight leaf attitude, canico-cylindrical ear shape and semi flint yellow grain type.
- Yield performance in multi locational trial conducted by SKUAST-J at four research stations of district Poonch, Jammu, Rajouri and Udhampur during four consequent years from 2009 to 2012 was 62.43 q/ha during kharif 2011 over locations. The hybrid maintained their yield superiority over the best local check Kanchan-517 during the years with highest in 13.47% at Poonch and 27.81% over the locations.
- Well tested at farmers' field under minikit trials and Farmers Participatory Trial conducted by State Department of Agriculture, Govt. of J&K, where the hybrid performed 40-50 q/ha which is 30-67% higher than the traditional cultivars of farmers variety.
- Moderately resistant to prevailing diseases i.e. Turcicum Leaf Blight and Maydis Leaf Blight. The hybrid is also resistant to maize stem borer (MSB) and blister beetle.
- It has high shelling i.e 85.64, with average cob length of 20.75 cm and good test weight 334.6 g.

Maize Hybrid development programme

- Around 40 inbred lines are maintained and tested in different cross combinations for development of single cross hybrids.
- Multilocational evaluation of newly developed maize hybrids.
- Performance of newly developed single cross maize hybrids.
- Fifteen maize hybrids comprising newly developed single cross hybrids and hybrid checks were evaluated at three locations viz., Poonch, Udhampur and Chatha during kharif 2013. These locations represent plains to mid hill ecology of Jammu region. A newly developed white grain single cross hybrid UDMH-112 (58.87 q/ha) was top performing

hybrid and manifested 10.65% grain yield superiority over white hybrid check (52.60 q/ha). It was followed by yellow hybrid PHM-40 (58.72 q/ha) and UDMH-101 (57.39 q/ha) which displayed 8.95 and 6.84% grain yield superiority over yellow hybrid check.

E. Common Bean

Nutrigenomics and transcriptomics for identification of genes for Zinc (Zn) and Iron (Fe) and protein content in common bean (Phaseolus vulgaris L.) (DST funded project)

- Morphological data has been collected for ~200 common bean lines and analysed statistically.
- ~150 genotypes sent for Zn and Fe estimation.
- ~37 primers synthesized for genotyping work
- ~100 DNA samples from common bean genotypes sent for SSR genotyping

3.1.2 Vegetable Science and Floriculture

A. Vegetable Breeding

Identification and development of stable quality genotypes in vegetables and Ornamentals crops


G-40)

Variety released

The state varietal release sub-committee has released a new variety of Knolkhol (Brassica oleracea L. var gongyloides) variety SJKK-01(G-40) in its meeting held on 11-10-2013 for general cultivation in the state.

- Knobs globular.
- Green in colour
- Ready for harvesting in 40-45 DAT
- G-40 (SJKK-01)
- Average yield of 350-400 q/ha.
- Average yield of 252.4 q/ha recorded in AICRP trials conducted at 7 centres

Variety Developed & nominated for national trials

Vegetable varieties in Cherry tomato (SJCT-01), Radish White (CR-45) SJWR-01, Radish Red (SJRR-01), Okra (Seli Special) SJB-02, developed by the division has been nominated for testing under All India Coordinated Research Project during 2014-15.


Cherry tomato (SJCT-01)


Radish (White) (SJWR-01)


Radish (Red) (SJRR-01)


Okra (Seli special) SJB-02

Varieties under development

Other varieties in fenugreek (Kasuri Supreme), Coriander (Khushboo), Beet leaf (C-13) etc are being tested at various stations of the university and Department of Agriculture, Jammu for their release.

Identification and introduction of varieties/hybrids

Vegetables

- Tomato: Kuber Geeta, Karan, Sonali, Maharishi, NS-2525 and US-3383
- Brinjal: Chaiya and Sandhiya
- Chillies: CH-1
- Bittergourd: Palee and US 475
- Cucumber: NS-404 and Malini
- Bottlegourd: Anokhi, MHBG-8 and US-161
- Okra: Super Kranti and Komal
- Cauliflower: Barkha
- Cabbage: Green Flash
- Radish: Mahy-22

Ornamentals

Promising cultivars of Tuberose (Rajnigandha)

- Suvasini
- Prajwal
- Vaibhav
- Shringar
- Nirantara
- Calcuttia Single


Nirankara


Prajwal

- Calcuttia Double

Out of seven varieties two varieties, Prajwal & Nirantara outperformed all the other varieties evaluated under sub tropical conditions Jammu

B. Vegetable Production

I. Production of vegetables under protected conditions

Cultivation of suitable varieties of tomato, capsicum and cucumber during winters under low

Production of Tomato, Capsicum and Cucumber Under Protection

cost polyhouse conditions have been standardized for their early availability in the markets.

II. Refinement and development of climate resilient technologies

1. In tomato, two types of cultivation namely conventional and broad ridge-deep furrow covered with silver coloured mulching sheet were studied. It was found that mulching of broad ridge had a tremendous impact on controlling weed growth, fruit quality, disease infestation, and moisture conservation as compared to conventional planting. It was also recorded that cropping period of hybrids reduced comparatively in mulching method but the appearance of sunscald was more.

Capsicum and tomato production under climate resilient techniques

2. In brinjal, different spacings i.e., 1, 2 and 3 m between the rows, keeping 1 m spacing between plants were studied and medium spacing of 1 x 2 m was found the best for proper growth and development of the plant in later stages.
3. In cabbage, plant spacing of 50 x 50 cm (P x P and R x R) was found the best for yield and its attributing traits.
4. Inchillies, raised bed covered by mulch showed immense check on weeds, avoid wilting by reducing water requirement of the plants and also reduce labour on weeding/hoeing operations.

Brinjal and cabbage crop under various plant geometries

training technique in bitterguard

5. In bitter-gourd, training on jute/specially designed wires tightened on ordinary wooden poles showed remarkable impact on fruit yield and quality. It showed less or no effect of excess rains on plant overall growth. This method also required low water regime as compared to conventional method of ground trailing of the plants.

III. Demonstration of rare/exotic vegetable crops

To diversify the vegetable cultivation, various exotic and rare vegetables have been introduced and their package of practices under Jammu plains is being formulated.

Broccoli

Lettuce-green

Lettuce-Red

Swiss chard

IV. Vegetable seed/seeding production

During 2013-14, the division produced 5.0 q of seed particularly of okra, beet leaf, coriander, fenugreek, broccoli, knolkhol etc. Apart from it, 1.5 lakh seedlings of various hybrids and OP varieties were also produced and distributed among the farmers during various training programmes.

3.1.3 Fruit Science

High Density orcharding of mango and guava in Jammu sub-tropics

- ❖ In Guava, training programmes on Canopy management/After care of high density orchard of guava and its demonstration at both the locations have been conducted where 100 nos. of participants (Orchardists, officials from Deptt. of Horticulture) were benefitted.
- ❖ In Mango, training programmes on Canopy management/After care of high density orchard of mango and its demonstration have been conducted where 55 nos. of participants (Orchardists, officials from Deptt. of Horticulture) were benefitted.


Demonstration of shoot pruning of high density mango plants at farmers' field


Demonstration of shoot pruning of high density mango plants at farmers' field

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

- ❖ Surveyed the areas of diversity of crab apple, winter pear, pomegranate, hill banana, and wild grape in Rajouri, Poonch, Bhaderwah and Kishtwar districts of Jammu Province. Collected the fruit samples of hill banana from Sadhyal, Bindi, Muradpur and Gambhir Brahamana, Sunderbani, Nowshera, Muradpur, Bhambla areas of district Rajouri and Mendhar, Surankote etc. areas of district Poonch.
- ❖ The qualitative and quantitative characteristics of Hill Banana showed maximum fruit weight (210-265 g), fruit length (134.0-156.0 mm), fruit diameter (41.68-51.55 mm), pulp weight (148.55-178.0 g), peel weight (62.10-87.50 g) and Total Soluble Solids (19.40-24.50oB). The locations of desi papaya, wild olive, Fig, wild apricot etc are identified. The plantation of grape, winter pear, papaya and pomegranate has been ear marked for further studies.


Hill Banana


Wild Grapes


Winter Pear

Determination of quality and harvest maturity for commercially grown fruit crops in Jammu subtropics

- ❖ The physico-chemical studies of strawberry cv. Chandler was carried out during the year 2013 and physico-chemical analysis of peach has been carried out.
- ❖ During 2013-14, analysis of physico-chemical traits of mango, aonla, guava, peach and strawberry used for maturity standards were carried out summary of which is given below:

Standardized Maturity Indices of Different Fruit Crops

Fruit Crops	Standardized Maturity harvest
Guava	· Guava should be harvested when it attain greenish-yellow colour with TSS 7.80-10.86oBrix (different cultivars) in the month of December-January.
	· During this stage fruit is firm, properly mature and most liked by consumer in Jammu region
Aonla	· Pale green colour, fruit with TSS 8-13obrix (in different cultivars) ascorbic acid 490-632.43 mg/100g recommended for harvesting.
	· Fruit harvested during last week of December to January should be prefered.
Mango	· Last week of June should be optimum time for mango harvesting under Jammu conditions.
	· Fruit with TSS 17.45-

20.76oBrix, colour light yellow to deep yellow depending on cultivars.

Peach
- Last week of April is optimum harvesting time for peach, except Shan-e-Punjab in which fruit should be harvested during third week of May.
- Fruit colour: golden yellow or red depending on cultivars.

Strawberry
- Strawberry should be harvested in 1st week of April.
- TSS 7.10 obrix

Development of aonla based cropping system for Jammu subtropics.

❖ Identification of the farmer fields in Akhnoor and Samba districts was done in consultation with the Directorate of Horticulture, Jammu for laying experimental trials of aonla intercropping.

Marigold Crop inter- cropped with aonla

Pea intercropped with aonla

❖ Two year old aonla orchard of Sh. Sham lal, village Leharian of District Akhnoor was selected for intercropping.

❖ Marigold crop inter- cropped with aonla

Pea intercropped with aonla

Selected aonla orchard was intercropped with tomato, peas, onion and marigold so as to identify the best crop combination.

Indigenous mango germplasm selection

Selections made from local sucking types of mangoes from Jammu Division

Quality Traits

- Time of flower Initiation: 3rd week of February
- Number of fruits per tree: 492.76
- Fruit set per cent: 14.26 per cent
- Yield: 30-35 kg/tree
- Fruit Weight : 65.46 g
- Fruit Size(LxB) : 5.26 x 4.24 cm
- Pulp weight: 36.24 g
- Stone weight: 12.76 g
- Total Soluble solids : 19.12oB
- Total Sugars : 15.18 per cent
- Floral Malformation: 15.51 per cent

Quality Traits

- Time of flower Initiation: 3rd week of February.
- Number of fruits per tree : 397.81
- Fruit set per cent : 13.76 per cent
- Yield : 60-65 kg/tree
- Fruit Weight :144.23 g
- Fruit Size (L x B): 7.57 x 5.54 cm
- Pulp weight : 88.39 g
- Stone weight : 26.62 g
- Total Soluble solids : 17.59oB
- Total Sugars : 14.79 per cent
- Floral Malformation : 7.52 per cent

Quality Traits

- Time of flower Initiation: 3rd week of February.
- Number of fruits per tree: 481.88
- Fruit set per cent: 13.54 per cent
- Yield: 50-60 kg/tree
- Fruit Weight : 117.68 g
- Fruit Size(LxB): 7.14 x 5.29 cm
- Pulp weight: 69.79 g
- Stone weight: 22.49 g
- Total Soluble solids: 17.61oB
- Total Sugars: 14.21 per cent
- Floral Malformation: 8.92 per cent

Quality Traits

- Time of flower Initiation: 3rd week of February.
- Number of fruits per tree: 890.23
- Fruit set per cent: 12.71 per cent
- Yield: 50-60 kg/tree
- Fruit Weight : 65.91 g
- Fruit Size (L x B): 5.46 x 4.44 cm
- Pulp weight: 32.34 g
- Stone weight: 18.52 g
- Total Soluble solids: 18.21oB
- Total Sugars: 14.59 per cent
- Floral Malformation: 11.21 per cent

Quality Traits

- Time of flower Initiation: 3rd week of February.
- Number of fruits per tree: 446.75
- Fruit set per cent: 14.66 per cent
- Yield: 80.85 kg/tree
- Fruit Weight : 176.82 g
- Fruit Size (L x B): 7.11 x 6.23 cm
- Pulp weight: 92.72 g
- Stone weight: 27.58 g
- Total Soluble solids: 18.91oB
- Total Sugars: 14.68 per cent
- Floral Malformation: 7.23 per cent

Indigenous walnut germplasm selection

Quality Traits

- Oil Content (%): 57.98
- Moisture Content (%): 4.72
- Nut Weight(g):15.62
- Kernel Colour: Light Kernel Colour

- Kernel Weight(g): 6.81
- Kernel Recovery (%): 54.30
- Shell Thickness (mm): 1.88
- Lipid profile (%)
- Palmilic Acid: 3.95, Linoleic Acid: 49.54, Oleic Acid: 41.06, Stearic acid: 2.20.
- Vitamins (mg/100g)
- Vitamin C: 1.15, Vitamin B1: 11.92
- Vitamin B6: 76.2,Vitamin B9: 18.8
- Vitamin B2: 14.50
- Metals (ppm): Ca: 714.8, Mg: 2362.5, Zn: 29.39, Cu: 17.4, Mn: 23.9

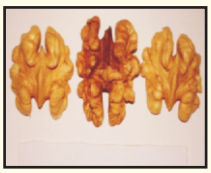
Quality Traits

- Oil Content (%): 60.12
- Moisture Content (%): 3.94
- Nut Weight (g): 15.46
- Kernel Colour: Satisfactory Kernel Colour

- Kernel Weight (g): 7.23
- Kernel Recovery (%): 53.49
- Shell Thickness (mm): 2.09
- Lipid profile
- Palmilic Acid: 5.61, Linoleic Acid: 50.86, Oleic Acid: 41.32, Stearic Acid: 1.97
- Vitamins (mg/100g)
- Vitamin C: 1.15, Vitamin B1: 11.92 Vitamin B6: 76.2, Vitamin B9: 18.8 Vitamin B2: 14.50
- Metals (ppm): Ca: 524.5, Mg: 2180.7, Zn: 29.39, Cu: 9.1, Mn: 17.2

Quality Traits

- Oil Content (%): 54.12
- Moisture Content (%): 8.21
- Nut Weight (g): 15.69
- Kernel Colour: Light Kernel Colour



- Kernel Weight (g): 6.52
- Kernel Recovery (%): 57.51
- Shell Thicknes (mm): 2.77
- Lipid profile (%)
- Palmilic Acid: 4.25, Linoleic Acid: 57.16, Oleic Acid: 34.17, Stearic Acid: 1.34
- Vitamins (mg/100g)
- Vitamin C: 0.99, Vitamin B1: 18.67, Vitamin B6: 66.49, Vitamin B9: 9.67, Vitamin B2: 15.17
- Metals (ppm): Ca: 690.9, Mg: 2819.4, Zn: 42.8, Cu: 4.9, Mn: 23.9

Quality Traits

- Oil Content (%): 58.75
- Moisture Content (%): 4.07
- Nut Weight (g): 12.8
- Kernel Colour: Light Kernel Colour

- Kernel Weight (g): 5.53
- Kernel Recovery (%): 55.89
- Shell Thickness (mm): 2.10
- Lipid profile (%)
- Palmilic Acid: 5.25, Linoleic Acid: 56.76, Oleic Acid: 35.27, Stearic Acid: 2.50
- Vitamins (mg/100g)
- Vitamin C: 1.07, Vitamin B1: 8.41, Vitamin B6: 80.20, Vitamin B9: 23.61,Vitamin B2: 41.53
- Metals (ppm): Ca: 769.2, Mg: 2075.3, Zn: 23.6, Cu: 12.1, Mn: 15.1

Quality Traits

- Oil Content (%): 60.00
- Moisture Content (%): 3.91
- Nut Weight (g): 13.82
- Kernel Colour: Satisfactory Kernel Colour

- Kernel Weight (g): 5.76
- Kernel Recovery (%): 59.19
- Shell Thickness (mm): 1.96
- Lipid profile (%)
- Palmilic Acid: 4.60, Linoleic Acid: 57.10, Oleic Acid: 36.15, Stearo Acid: 2.01
- Vitamins (mg/100g)
- Vitamin C: 1.17, Vitamin B1: 9.33, Vitamin B6: 92.19, Vitamin B9: 24.07, Vitamin B2: 946.94
- Metals (ppm): Ca: 812.1, Mg: 2444.1, Zn: 31.7, Cu: 19.2, Mn: 19.8

Quality Traits

- Oil Content (%): 57.62
- Moisture Content (%): 4.24
- Nut Weight (g): 14.23
- Kernel Colour: Light Kernel Colour

- Kernel Weight (g): 5.76
- Kernel Recovery (%): 58.94
- Shell Thickness (mm): 2.12
- Lipid profile (%)
- Palmilicacid: 3.27, Linoleic acid: 58.29, Oleic acid: 37.19, Stearo acid: 1.26
- Vitamins (mg/100g)
- Vitamin C: 0.35, Vitamin B1: 11.16, Vitamin B6: 91.54, Vitamin B9: 20.76, Vitamin B2: 23.26
- Metals (ppm): Ca: 714.5, Mg: 2603.7, Zn: 23.9, Cu: 21.7, Mn: 7.3

3.1.4 Post Harvest Technology

Effect of different concentrations of enzymes on recovery of juice from bael fruit

Fully ripe fresh bael fruit without any visible defect was procured from RHRSS, Raya. The fruit was broken and pulp was scooped out with the help of stainless steel spoon. The scooped pulp was homogenized and was treated with different concentrations of pectinase enzyme (0, 1, 1.5, 2.0 & 2.5 mg/75 g of pulp and an equal amount of water) and was kept undisturbed for overnight. Juice was filtered through 4 fold muslin cloth and was assessed for T.S.S, acidity, pH and β-carotene. The best lot of juice was obtained using 2% of pectinase enzyme which was utilized for the development of wine.

Development of Wine from bael fruit

A method was standardized for developing wine from bael fruit. For the development of wine first Yeast starter culture was prepared following the standard procedure. After this 5 lts. of juice was taken in a fermentation flask, Total soluble solids and acidity of this juice was adjusted to 24° Brix and 0.5% using sugar syrup and jaggery of 70° brix and citric acid respectively. The must was supplemented with 0.1 % diammonium hydrogen phosphate (DAHP), 100 ppm potassium metabisulphite (KMS) and 5% already prepared starter culture and incubated at 28 ± 2°C. The fermented must was filtered and pasteurized at 60°C for 20 min. The developed wine was analysed for total soluble solids, acidity, pH, total phenols, proteins, anti oxidant activity, microbial count, anti microbial activity and minerals. It was also assessed organoleptically. The statistical analysis of the data is in progress.

Scooping of pulp

Pulp with seed

Prepared pulp

Fermentation

Racking

Bael Wine

Innovative approach of active packaging and its effect on quality attributes of different fruits

Pear fruits (cultivar Bagugosha) were treated

Pear

Controlled & Treated Fruit

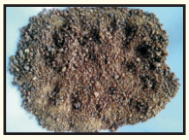
with chlorine solution (200 ppm for 10 min) for disinfection. The treated fruits were air dried and packed in LDPE and PP bags with ethylene and oxygen absorbers (200cc/kg fruit). One lot was kept without packing as control. The packed and control fruits were kept under refrigerated conditions for further study. The physico-chemical analysis was carried out at 15 days interval. The statistical analysis is in progress.

Evaluation of minor fruits from Jammu region for assessing the anti oxidant activity

Minor fruits viz. aonla, ber, jamun and wild pomegranate were dried and powdered. The powdered fruits were evaluated for antioxidant

Powdered ber

Powdered Aonla (Grated)

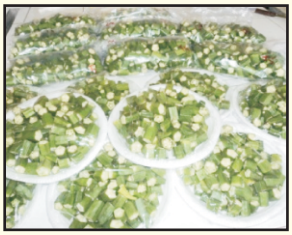


Powdered Aonla (Blanched)

activity using DPPH assay. It was found that anola powder obtained from blanched and grated fruits showed highest content of vitamin C (419.2mg/100g) and (382.14mg/100g) respectively followed by ber and anardana powders having values as 47.03mg/100g and 3.98mg/100g respectively. The lowest C content of 0.98mg/100g was observed in Jamun seed powder.

The anitradical efficiency of Jamun seed powder was found to be maximum (50.63ug/ml) followed by anola blanched and greated powders having antiradical efficiency as 40 ug/ml and 22.8 ug/ml respectively. While as the lowest anitradical

Okra



Packed Okra

efficiency was observed in jamun fruits powder. (1.19ug/ml) followed by ber fruit powder(1.25ug/ml) and anaradana powder (2.08ug/ml).

Physical and chemical changes in freshly cut minimally processed vegetables during refrigerated storage

The okra was divided into two lots and one lot was treated with chlorine dip (100 ppm for 3 min) and the other with ascorbic acid dip (1% solution for 2 min) followed by air drying. The dried okra was cut and packed in PP bags and in trays covered with cling film. The processed okra was stored under refrigerated conditions. The experiment is in progress. The physico-chemical analysis was carried out at 7 days interval.

3.1.5 Plant Pathology

Integrated management of plant diseases with biocontrol as a major component

- Thirty-six isolates of Pseudomonas fluorescens were collected from different agro-climatic zones of Jammu province, out of which 19 isolates exhibited bio-control potential against sheath blight of rice. These isolates showed plant growth promoting traits such as production of indole acetic acid (IAA), gibberlic acid, HCN and phosphate solubilization activities.
- About 650 kg of bio-control agent (Trichoderma viride & T. harzianum) formulation was distributed among the vegetable growers of different districts of Jammu province.

Management of yellow vein mosaic of okra (Abelmoschus esculentus L.)

- Screening of okra germplasm collected from various sources done during summer season of 2013 showed that Varsha Uphar, Punjab-7, Seli special, VL-Bhendi-1 and Hisar Unnat were resistant towards yellow vein mosaic of okra, whereas, JBS-2, Arka Komal, VRO-3, VRO-6 and 705-1-1 were moderately resistant.

Yield losses and management of blast and brown leaf spot of rice in Jammu sub-tropics

- During extensive surveys conducted during kharif 2012-13 it was observed that maximum disease severity range from 22.5-45.0% in case of brown leaf spot and 10.3-25.0% in case of rice blast.
- Azoxystrobin @ 0.1% proved most effective against blast with 85.7% disease control followed by Tricyclazole @ 0.06% (75.7% disease control). In case of brown leaf spot, azoxystrobin proved most effective with 77.7% disease control, followed by propiconazole (71.8%) at 0.1 per cent.

3.1.6 Entomology

IPM modules for the management of major insect-pests of tomato

❖ Combination of imidacloprid as seed treatment with imidacloprid as spray and carbofuran as soil treatment proved significantly effective in suppressing the aphid and whitefly population. The highest cost benefit ratio of 1:18.04 was obtained in case of imidacloprid (seed treatment)+ imidacloprid (spray) and carbofuran (soil application) followed by imidacloprid (seed treatment) + imidacloprid (spray) [1:16.00], imidacloprid (seed treatment) and betacyfluthrin (spray) [1:15.81), carbofuran (soil application) + malathion (spray) [1: 13.48] and imidacloprid (seed treatment) + malathion (spray) [1: 11.27].

IPM modules for the management of insect-pests associated with winter maize

❖ Imidacloprid @ 4g/kg seed treatment and thiamethoxam @ 4 g/kg seed were found effective against stem borer. The application of flubendiamide 480 SC @ 0.01% was highly effective against Helicoverpa armigera compared with Bacillus thuringiensis. While seed treatment alone with imidacloprid and thiomethoxam could reduce the pest infestation to an extent of 15.33 and 19.66 per cent, with (26.99 and 24.67%) increase in grain yield.

IPM modules in cruciferous vegetables

❖ Biointensive pest management modules involving use of biocontrol agents and pheromone traps have been developed. The pesticides sprays have come down from twelve to two (need based).

Entomophage Park Findings:

❖ The division has established 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.

Honeybee diseases

❖ Survey of different apiaries of Apis mellifera and Apis cerana in different parts of Jammu Division revealed the high incidence of mites,

EFB in *Apis mellifera*

Sac brood virus disease in *A. mellifera*

Sac brood virus disease in *A. cerana*

Wasp menance in *Apis*

EFB, sac brood leads to mortality of bees in severe form during the months of February - March/April. The predatory wasps Vespa velutina, V. orientalis , V. cincta, V. basali and V. mandarinia. The V. velutina and V. basalis were recorded as major enemies of A. mellifera. The maximum wasp attack was observed from July-September. The maximum wasp incidence was in morning (9.00-11.00 am). The greater wax moth infestation increased progressively from and acquired its peak in month of August-September.

3.1.7 Agroforestry

Standardization of nursery technology of Multi-purpose Tree Species

Melia composite

❖ To find out the suitable size of containers and media for containerized seedling production of *Melia composita*, 04 different containers namely root trainer 300 cc (C1), root trainer 250 cc (C2), polybag of size 28 x 23 cm (C3) and polybag of size 24 x 16 cm (C4) were used. Three different potting media including Soil (M1), Soil + Sand + FYM in the ratio 2:1:1 (M2) and Soil + Sand + VC in the ratio 2:1:1(M3) were also studied. Polybags of size 23x28cm and potting medium comprising of soil: sand: FYM in the ratio of 2:1:1 recorded significantly better growth and development of Melia composita seedlings.

Litsea chinensis

❖ In order to standardize the effect of age of the stem cuttings and growth regulators on the growth and development of *Litsea chinensis*, experiment comprising of 02 age classes of cutting (Juvenile and mature) and 15 hormonal treatments (IAA, IBA and NAA each at 0, 500, 1000, 1500 and 2000 ppm) was conducted. The results revealed that vegetative propagation through mature stem cuttings was significantly superior over juvenile ones and the treatment of stem cuttings with NAA @ 500 ppm significantly affected the sprouting per cent, survival per cent and above ground biomass.

Conservation, Production and Sustainable Management of Shatavar (Asparagus racemosus Willd)

❖ Experiments were laid out as per the approved objectives of the adhoc research project funded by National Medicinal Plant Board. 22 accessions were used to screen out the superior accession for sub-tropical region. Germination studies revealed highest germination percentage (53.33%) was registered in accession (1C471896) followed by 1C471903 (50.72%), 1C471901 (46.66%), 1C471896 (43.33%) and 1C471900 (41.66%). Minimum seed germination percentage (8.33%) was observed in accession 1C471924, whereas IC471923 and IC 471909 also recorded lower seed germination


Seeds of Asparagus racemosus


Asparagus racemosus


A view of the field trail of in Asparagus accessions

Variation in tuber growth

percentages of 11.66 per cent and 15.20 per cent, respectively.

Field evaluation of these accessions after 06 months of planting recorded highest number of tubers (56) in 1C471911 followed by 1C471920 and 1C471922. The accession 1C471924 observed minimum number of tubers (26). Accessions recorded significant variation w.r.t. tuber yield and highest tuber weight (135.21g) was observed in 1C471911 whereas, minimum (50.11 g) in case of accession 1C471899.

3.1.8 Agronomy

Production practice of sugarcane based crop sequence

❖ Berseem fodder (Oct.)-Sugarcane (Feb.)-ratoon was found to be superior to sugarcane-ratoon sequence. Berseem fodder (Oct.)-Sugarcane (Feb.)-ratoon gave the average cane equivalent yield (2157.81 q/ha) and net return (Rs 227152/ha) and B:C ratio (3.35) over sugarcane-ratoon sequence during both the cycle of crop sequence respectively.

Among the different planting methods of sugarcane tested during both the cycles, ring pit method produced the highest average cane equivalent yield (2062.7 q/ha), net return (Rs 213518/ha) and B:C ratio (3.14) over flat method. Ring pit method of sugarcane gave on an average 124 q/ha extra yield advantage over flat method of sugarcane.

Production technology for linseed in maize based cropping sequence

❖ Different varieties at different sowing times were tried and optimum sowing time for linseed is 20th October with a fertilizer dose of 50:30:20 kg/ha of N:P:K. Variety LC 2063 has been found the most suitable.

Biofertilizers and phosphorus levels on growth and yield of Field pea

❖ Dual inoculation of pea with Rhizobium + PSB recorded highest mean seed yield (13.82 q/ha) and B:C ratio (1.75) over control, Rhizobium and PSB inoculations.

Recommended dose of Phosphorus proved significantly better over control, 50 and 75% of recommended dose of P. Further, the interaction effect revealed that dual inoculation of peas with Rhizobium + PSB recorded significant increase in seed yield upto 75% of recommended dose of P, whereas, seed inoculation with PSB showed significant increase in seed yield upto 50 % of recommended dose of P.

Application of micronutrients (Zn & B) in mustard-maize cropping sequence

❖ Application of both Zn and B increased mustard seed yield but remained at par with treatments where alone Zn @ 5 and 10 kg/ha was applied. The recommended NPKS and 10 kg Zn + 2 kg B/ha gave highest mean seed yield (12.53 q/ha) for mustard and maize crops but remained at par with recommended NPKS + 5 kg Zn/ha (11.55 q/ha).

Application of 5 kg Zn/ha along with

recommended NPKS (60:30:15:20) would be more remunerative than 10 kg Zn/ha for mustard-maize cropping sequence in the soils containing low initial zinc level.

Weed management in chickpea-mustard intercropping system

❖ Additive intercropping of chickpea + mustard was found to be most remunerative as it recorded highest mean yield of chickpea (9.86 q/ha), mustard (6.82 q/ha) and chickpea equivalent yield (13.9 q/ha). The same treatment showed highest B:C ratio of 1.62 over sole chickpea (0.79) and mustard (1.17).

Weed control efficiency to the tune of 77-80 % was recorded with application of either pendimethalin PE @ 1.0 kg a.i.or Fluchloralin PPI @ 1.0 kg a.i./ha which was highest than other treatment combinations.

Weed management in winter maize-potato intercropping system

❖ Additive intercropping of winter maize + potato was found to be most remunerative as it recorded highest mean yield of winter maize (35.95 q/ha), potato (191.98 q/ha) and maize equivalent yield (159.96 q/ha).However, winter maize + potato in replacement treatment showed highest B:C ratio of 2.3 over sole maize (1.9) and sole potato (1.8), it proved to be economically better and feasible for the farmers.

Weed control efficiency to the tune of 76-84% was recorded with the application of either Atrazine PE @ 0.5 kg a.i./ha or Atrazine POE @ 1.5 kg a.i./ha which was highest than other treatment combinations.

Different sowing dates and weed control in rice under aerobic conditions

❖ Aerobic rice variety PR-115 and Krishna Humsa sown on 15th June has been found suitable. The weed management through peritalachlor @ 400 g/ha (a.i) (4 DAS) followed by bispyribac sodium (30 g a.i./ha at 21 DAS) has proved effective in improving the weed control efficiency (78.9%) in aerobic rice.

3.1.9 Agrometeorology

All India Coordinated Research Project on Agrometeorology

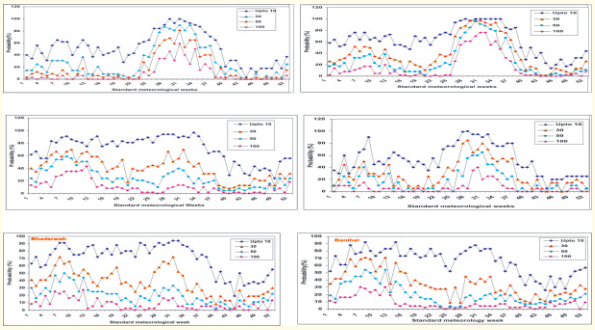
Agroclimatic Characterization

❖ Weekly rainfall probability analysis across different climatic zones of Jammu province were carried out for purpose of planning and sowing of different crops under different agro- climatic regions of Jammu.

I) Weekly Rainfall Probabilities of Jammu & Katra (Low altitude sub-tropical zone).

ii) Weekly Rainfall Probabilities of Batote & Rajouri (Low altitude sub-tropical temperate zone).

iii) Weekly Rainfall Probabilities of Bhaderwah & Banihal (Mid to high altitude temperate zone).



❖ Historical analysis of meteorological drought of six locations viz. Jammu, Katra, Bhaderwah, Banihal, Batote and Rajouri were carried out in which Batote witnessed highest percentage of drought free years (59%) followed by Katra (53%), Bhaderwah (50%), Rajouri (50%), Jammu (47%) and Banihal (45%), respectively.

Crop weather relationship in maize

❖ Maize experiment (Kanchan-517) was conducted during kharif 2013 with four different irrigation regimes (viz I1 : IW/CPE ratio = 0.50, I2 : IW/CPE ratio = 0.55, I3 : IW/CPE ratio = 0.60, I4 : Rainfed) and the results revealed that maize crop by and large do not require any irrigation in its peak growth and development periods falling in the months of July and August, however, some water is needed during early part of the crop as pre-sowing irrigation in June and at latter stages in September. Hence, keeping in view the normal rainfall and evaporation pattern of this zone there appears to be hardly any need to resort to irrigation maize crop during kharif in Jammu sub-tropics.

Crop weather relationship in mustard

❖ During rabi 2013-14 mustard experiment was laid out under three crop growing environments with two cultivars NPJ-112 and NRCDR-2. The results revealed that early sown mustard crop

(D1) accumulated more thermal, Photothermal and Heliothermal heat units as compared to normal (D2) and late sown (D3) crops. The cultivar NRCDR-2 accumulated more heat units as compared to NPJ-112 sown under all the different cropping environments.

- Heat use efficiency (HUE) of two mustard cultivars viz., NPJ-112 and NRCDR-2 grown under three crop growing environments showed that cv NRCDR-2 recorded highest HUE under early sown conditions which decreased with subsequent delay in sowing.

Crop weather relationship in Wheat

- The wheat experiment was laid out during rabi 2013-14 under four crop growing environments with three varieties viz HD-2967, Raj-3077 and RSP-561. The results revealed that early sown wheat accumulated higher thermal (2015), photothermal (22813) and heliothermal units (12246) followed by second (1933, 22123 & 12050), third (1809, 21401 & 11092) and fourth (1791, 20703 & 10120) crop environments, in the descending order of magnitude, respectively. Among the cultivars, RSP-561 accumulated less of all these units (1848, 21138 & 9983) as compared to Raj-3077 (1873, 21551 & 11297) and HD-2967 (1941, 22367 & 12296) under all the crop growing environments.
- The correlation of seed yield of wheat and most of weather parameters during initial stages significantly influenced the yield either positively or negatively and the association of all weather parameters with yield was highest as compared to other phenological stages, thus showing the importance of weather parameters during these stages.

Crop Growth Model

Testing and validation of Campbell and Diaz model in wheat crop during rabi 2013-14 under sub-tropical conditions of Jammu revealed that the model is able to simulate dry matter production reasonably good as the R2–value is more than 90% in Ist, 2nd & 3rd crop growing environments and 80% in 4th crop growing environment.

Integrated Agro Advisory Services, AMFU, Chatha

The bi-weekly crop weather bulletin were issued regularly for the farmers of Jammu sub-tropics (Jammu, Parts of Kathua and Reasi) as advisory with regards to sowing, irrigation application fertilizers and spraying of pesticides on the basis of weather forecast received from India Meteorological Department, Srinagar. The same was also disseminated through press, electronic media and line departments. In addition to that the Agro Advisory bulletins were also uploaded in website of India Meteorological Department imd.agrimet.gov.in.

Weather Forecasts and Agro Advisories published in different Newspapers

- The Agromet Research centre organized five farmers' awareness programmes in three districts of Jammu region during the year 2013-14 to appraise the farmers about the climate change and the likely effects of such changes on the crops and the possible measures to cope up with such situations. The major focus of such programmes was to educate the farmers for taking utmost care in choosing the various agriculture related ventures and their enterprises especially the crops and their varieties keeping in view their location specific adaptabilities under the prevailing climatic variability.
- Registered this centre with SMS portal of Ministry of Agriculture, Govt. of India for direct delivery of weather forecast based Agro-advisories (Weather bulletins) to the end users and in this endeavor at present about 2500 farmers have been registered.

3.1.10 Soil Science & Agricultural Chemistry

Management of Sulphur and Molybdenum nutrition in Chickpea

A field experiment of Chickpea (cv. Ganganagar 469) was conducted on the effect of S and Mo in university farm, Chatha to determine the optimum dose of S and Mo requirement. It was observed that quality in terms of protein and nitrogen content as well as significant increase in chickpea seed yield with 0.5 and 40.0 kg/ha Mo and S application through soil, respectively. Chickpea yield was ranged from 824-1480 kg/ha.

Spatial variability of micronutrients in soils of Chatha Farm

Assessment and mapping of spatial variability of soil properties of Chatha Farm was done in an experiment. Based on grid based soil sampling

and their laboratory analysis, DTPA extractable micronutrient maps were generated for the Chatha farm. Geo-statistical analysis revealed that all the studied micronutrients showed weak spatial dependence. Kriging technique was adopted for generating maps of DTPA extractable Zn, Cu and Fe, whereas Inverse distance weighting was used for Mn. Maps revealed that the Zn content was in the critical range of 0.5 to 1.0 ppm. Within these the northern tip, eastern portion in the centre and western areas exhibited relatively higher zinc content. Other micronutrients were above the critical limit.

Effect of Sulphur and Boron Nutrition on uptake and yield of Indian mustard:

A field experiment was initiated in rabi season of 2012-13 on mustard crop (variety RSPR-01) with four levels of Sulphur (S) viz 0, 15, 30 and 45 kg Sulphur per hectare and 3 levels of Boron (B) viz 0, 1.5 and 3 kg Boron per hectare. The crop was harvested in the month of April and grain yield was obtained. It was observed that application of sulphur at the rate of 45 kg/ha increased the grain yield significantly over all the levels of sulphur application except 30 kg S/ha. The grain yield increased by 30 % under Sulphur level of 45 kg/ha as compared to control. Boron application @ 1.5 & 3.0 kg/ha caused successive and significant increase in grain yield of mustard as compared to control. Boron application @ 3 kg/ha increased the grain yield by 40% over control.

Evaluation of quality of irrigation water in District Samba

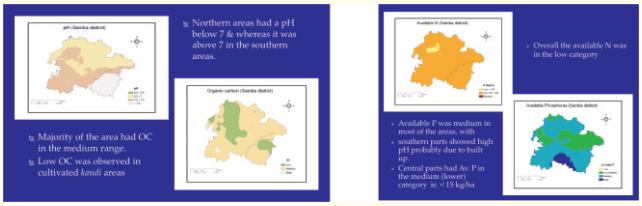
To study the inter-relationship of different properties of irrigation water, the correlation were worked out of different properties of irrigation water like ECiw, pHiw, RSCiw, SSPiw, and the data indicates, highly significant relation of ECiw with SARiw (r=0.81**) and SSPiw(r=0.29**) of irrigation water; pH were also exhibited highly significant correlation with RSCiw (r=0.68**).The SSPiw was significantly positively correlated with SARiw(r=0.73**); ECiw was evaluated with RSCiw(r=28). The quality of irrigation water is key issue in irrigated agriculture in Samba district. Injudicious irrigation even with good quality water may turn the good soil in to saline or alkali soil depending upon the presence of salts. The study will be continued for one more years to authenticate the findings.

Development of GIS based digital Soil Fertility maps of Samba district

3.1.11 Biochemistry & Plant Physiology

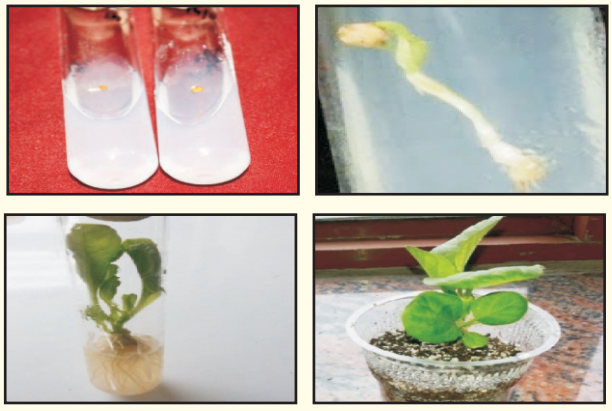
Androgenesis Mediated Introgression of Fruit and Shoot Borer (Leucinodes orbonalis) Resistant Genes into Cultivated Eggplant (Solanum melongena).

Development of wide hybrids of brinjal by embryo rescue



Embryo rescue of the hybrids developed by crossing cultivated genotypes wit wild in reciprocal fashion was started in the month of August, 2013, when there was successful setting of the hybrid fruits. The fruits were harvested after 5, 10, 15, 20, 25 and 30 days after pollination for embryo rescue. The immature ovules were excised from these fruits and inoculated in the media prepared using different levels of auxins and cytokinnins. The ovules which were excised from the hybrid fruits after 25 and 30 DAP responded very well with the emergence of embryo after 15 days of inoculation. The completely formed plantlets were transferred to pre sterilized mixture of perlite: cocopeat: vermiculite (1:1:1) in pots. After hardening these plants were transferred in the bigger pots. These plants are in flowering stage.

Fig.(A-D): Regeneration studies in brinjal from hypocotyl A)



Emeregence of embryo from the seeds. B) fully developed seedlings C) emergence of roots on the root regeneration medium D) Fully developed plant kept for hardening.

3.1.12 Sericulture

Introduction, conservation and evaluation of mulberry germplasm

Under this project, 52 varieties of mulberry germplasm are maintained. During the period under report 10 popular mulberry varieties were studied for phytomorphology and nutrient parameters. After 60 days of sprouting the fresh leaf weight content for 100 leaves was maximum in mulberry variety Tr4 (225 g) followed by mulberry variety S-1608 recording 172 g per 100 leaves. Chlorophyll content was maximum in mulberry variety S1708 (SPAD value 45.40) and minimum in variety V-1 (SPAD value 36.90). The nitrogen content in leaf after 60 days of sprouting ranged between 3.42 (% dry wt.) in variety V-1 to 4.50 (% dry wt.) in variety S1608 while as leaf protein content which forms an important parameter for quality cocoon formation was maximum in variety S-1531 (20.26 % dry wt.) .

Introduction and evaluation of silkworm germplasm

A silkworm germplasm comprising of 14 races is under maintenance. These races are used for conducting different experiments related to silkworm by scientists and students.

Evolution of autumn specific breeds /hybrids

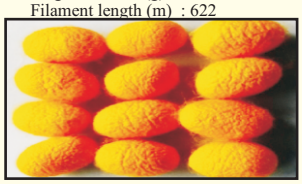
Two indigenously evolved bivoltine temperate tolerant breeds were crossed with multivoltine breeds procured from Central Sericultural Research & Training Institute Berhampur, West Bengal and hybrid seed in different combinations prepared.

For adverse autumn season silkworm rearing two multi x bi silkworm hybrids, OS-616 x Udhey 3 and OS-616 x Udhey 6 recorded a yield of 90.550 and 83.450 kg/100 Dfls under laboratory conditions having single cocoon weight of 2.06 and 1.82 g; shell weight 0.34 and 0.36 g and shell ratio of 16.50 and 19.78%, respectively.

Larval Marking: Marked
Weight of ten mature Larvae (g): 42.41
Total larval life (D: H): 23:00

Fecundity : 525
Single cocoon wt. (g) : 2.06
Single shell wt. (g) : 0.34
Filament length (m) : 622

Larval Marking: Marked
Weight of 10 mature Larvae (g): 38.38
Total larval life (D: H): 23:04



Fecundity : 502
Single cocoon wt.(g) : 1.82
Single shell wt. (g): 0.36
Filament length (m): 7

Heterotic multi x bi hybrid: OS-616 x Udhey-3
Heterotic multi x bi hybrid: OS-616 x Udhey-6

Evaluation of spring specific silkworm breeds / hybrids.

Multi-locational rearing trial of indigenous hybrid Po3 x ND5 was completed by National Race Authorization Committee of Central Silk Board, Banglore. As per the performance report of two years pooled data, the evolved hybrid ranked at IIIrd position in Northern India.

Incorporation of colour in silkworm cocoon and silk filament.

Two trials of this experiment were conducted. Treatment with Cresyl violet @ 0.01 % and Congo Red @ 0.01 % showed positive response. No adverse effect of dye was observed on silkworm larvae.

3.1.13 Agricultural Extension Education

Impact Evaluation of the Government Intervention in Procurement of Wheat

- Productivity of wheat in the irrigated wheat belt of Jammu division is higher by 40-70% than the revenue department crop cut estimates from Therefore, recommendations given to the government of J&K were i) The crop cut surveys need to be monitored for ensuring reliability and ii) Agriculture production department should ensure the supervision of crop cuts. Iii. The revenue department should upload on the official website, the list of farmers with phone numbers in whose field crop cuts are conducted. Wheat varieties HD 2967 and PBW 621 have increased the wheat productivity in Jammu, therefore, these varieties are recommended for wider cultivation.
- Number of irrigations and seed replacement cause a variation of 22.6% in productivity. Therefore, i. Minor irrigation facilities should be increased. ii. Irrigation canals should not be closed during the critical stage of wheat production. iii. Seed replacement rate should be increased. MOP also impacted the wheat productivity in Jammu district, especially Marh area.

- Small landholding farming does not provide economic security to the farm households. Therefore, for only 26% households farming are the sole/main occupation.

3.1.14 Agricultural Economics & Statistics

Strengthening Statistical Computing for NARS under NAIP Component-I

- SAS and its components have already been installed at Computer Lab. of Faculty of Agriculture, Chatha for strengthening statistical analysis of research data for scientists and PG students of this university. Scientists have also been deputed from FoA and F.V.Sc. & A.H. for attending the trainings regarding SAS-software.
- Recently two scientists have attended trainings regarding SAS-software at NDRI Karnal.
- The request has also been made to CCPI, NDRI Karnal for organizing training at SKUAST-Jammu on SAS-software.

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

- The literature regarding vegetable crops has been collected and the schedule for the collection of primary data has already been prepared.
- Three districts of Jammu division, namely, Jammu, Udhampur and Samba have been taken on the basis of the highest area under the vegetables.
- The survey work for the same has been started and data collection for the Jammu district is completed.
- The compilation and analysis of the already collected data from the selected blocks viz., Bhalwal, Marh and Satwari of Jammu district is under process.

3.1.15 Agricultural Engineering

Development and Evaluation of Automatic Timer Based V S D for Sprinkler System

- VSD has been designed for electrical motor compatible with stepped timer compatible
- Soil samples have been taken from different sites of Jammu for preparing guidelines on VSD for sprinkler system.


Designed VSD for sprinkler irrigation system

Design and development of a tractor operated soil compaction measurement device

Prototype of the machine is in almost in final stage and soil samples have been collected from different locations of University farm Chatha for analysis of soil compaction.

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

The modification in existing subsoiler has been done and an increase of 13.1% in yield of wheat was found by the method in which soil loosening and fertilizer application was done by modified subsoiler + rotavator application in comparison to method in which disk plough + disk harrow + rotavator were used and fertilizer application done by broadcasting (control method).

Development and Evaluation of Power Tiller Operated Maize Planter

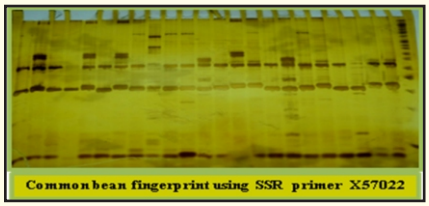
- The linear dimension and Spherecity of ten maize varieties were studied. The average length, width and thickness was 11.38, 8.45 & 4.20 mm, respectively with an average Spherecity of 0.65.
- Based on these, the broader specification of the various components of planter was finalized.
- The Research Engineer, Government Agricultural Engineering Workshop, Talab Tillo was approached with the finalized specification of the proposed planter.
- The fabrication work is in final stage.

Design and Demonstration of Zero Energy Cool Chamber

LC Natural ECC and LC Forced (Solar power) ECC have been designed and fabricated. Both the structures (Natural ECC and Forced ECC) are being evaluated for demonstration by different parameters at unloaded & loaded condition.

3.1.15 School of Biotechnology

Banding patter of common bean genotype Characterization of common bean germplasm:



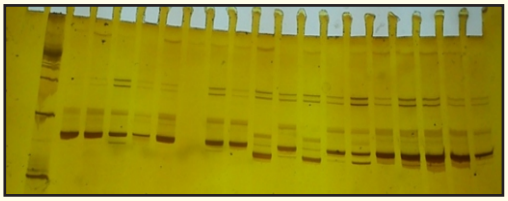
Banding patter of common bean genotype

During 2013-14, 51 genotypes of common bean that were collected from foot hills of Himalayan region have been characterized using RAPD and SSR markers. The comparative analysis of RAPD and SSR based characterization distinguished the genotypes at genetic level with high precision. As such 51 common bean genotypes have been characterized at molecular level.

Association mapping in bread wheat: A total of 227 wheat varieties were used for the development of a core-set for conducting association mapping for terminal heat stress in bread wheat. For this, two simple sequence repeats (SSRs) markers per wheat chromosome are used for molecular analysis. For identification of marker-trait association for terminal heat stress, core set was evaluated for thousand grain weight and spike length under normal (control) and late sowing conditions.

The polymorphic banding pattern detected by BR_A07_23288577 SSR marker among different Brassica juncea genotypes

Functionality and transferability of SSRs: The functionality and transferability of Brassica rapa SSRs was carried out on Brassica juncea. A total of 20 genomic and three EST-SSRs were used for the amplification of Brassica juncea. Out of 20 SSRs, four were non-functional as they did not show any amplification on Brassica juncea genotypes while the other 16 primers were amplified PCR products of desired size in Brassica juncea therefore showing high levels of functionality and transferability (Fig. 2). Out of 16 functional primers, five primers detected polymorphism the remaining eleven were monomorphic. All three EST-SSRs were also functional and transferable on Brassica juncea. The study concluded that the genomic



The polymorphic banding pattern detected by BR_A07_23288577 SSR marker among different Brassica juncea genotypes

information of Brassica rapa can be an important resource for marker development in Brassica juncea. Due to high level of transferability of SSRs, the knowledge gained from Brassica rapa can be used for the improvement of Brassica juncea.

In silico mining of Brassica rapa genome: An in silico restriction enzyme analysis of Brassica rapa genome lead to identification of nearly 30,000 fragments likely to have restriction site for MseI and SacI at their ends. This information obtained from progenitor genome will be used for preparation of genomic DNA libraries for double digest restriction-enzyme associated DNA sequencing (ddRAD seq) for discovery of SNPs in the allopolyploid species, Brassica juncea.

3.2 Research Stations/sub-stations / Centres

3.2.1 Regional Agricultural Research Station, Rajouri

Rain water harvesting and its demonstration for supplemental benefits 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 Doongi, vegetable at Ladote and fruit crops at Dhangri. Dug out ponds were constructed on 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, HS 375, HS 490, HS 507, VL 738, VL 804, VL 829, VL 832, VL 849, VL 892, VL 907, HP 249, HPW 251, HBL 704, UP 2645 and VLB 115.

All India Coordinated Rice Improvement Project

Results of the experiments regularly submitted to the concerned Directorate (Directorate of Rice Research, Hyderabad) 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 VL30916.

Research/Recommendations

- Wheat varieties VL 907 and HS 507 were recommended for cultivation under rainfed conditions of Rajouri.
- Average Grain yield potential of VL 907 and HS 507 wheat varieties were 43.90 and 41.37 q/ha, respectively.
- These varieties matured in 182 and 180 days, respectively.

  Grain yield superiority of 15.94 and 10.87 per cent over the check VL 804 (36.90 q/ha) and HS-240 (36.87 q/ha), respectively

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 2013-14, 10 FLDs, funded by Directorate of Wheat Research (DWR), Karnal and covering an area of 5.0 ha, have been laid in Rajouri district for popularizing high yielding wheat variety VL-907 in the area with recommended package and practices.

Management of foliar diseases of Pea (Pisum sativum)

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

3.2.2 Dryland Research Sub-Station, Dhiansar

IPNS in Pearl millet-Gobhi Sarson

Grain yield of Pearl millet differed significantly with the application of various fertilizer doses through organic and inorganic sources. The highest grain yield of pearl millet (32.78 q/ha) was obtained through inorganic fertilizer (100% recommended NPK) during the first year (kharif 2013) of expérimentation.

Integrated Nutrient Management

Maize crop supplied with 50% recommended NPK + 50% N FYM gave significantly highest grain yield (23.50 q/ha) which was at par with 50% recommended NPK + 50% N Crop Residue and 100% recommended NPK + ZnSO4 and 100 % recommended NPK under permanent manurial trial.

Agri-horti-silvi-pastoral system models

Maize and mash crops recorded grain yield to the tune of 25.38 and 3.12 q/ha under Cereal-Cereal (maize-wheat) and Pulse-Cereal system (mash-wheat). A yield of 21.22 q/ha of Okra crop was observed in Vegetable-Vegetable system. Mixed fodder grown in the alleys of Leucaena trees under Silvi-Agri-Pastoral system is the most remunerative system as compared to all other systems which recorded the highest net returns of Rs. 30661/ha with a B:C ratio of 3.47 (kharif season).

Gobi sarson crop grown in alleys of Aonla trees under Agri-Horti-Pastoral system is the most remunerative system as compared to all other systems and recorded the highest net returns of Rs. 59480/ha with a B:C ratio of 3.53. Vegetable Peas crop under Vegetable-Vegetable system recorded the lowest net returns of Rs 28466 with a B:C ratio of 2.40. However, cropping of Gobi sarson in the alleys of Aonla trees proved to be more beneficial as the system is also providing fruits (rabi season).

Aonala

Maize-based intercropping system

The highest maize equivalent yield (MEY) was obtained with paired rows of maize with 2 rows of groundnut (32.70 q/ha) followed by paired rows of maize with 3 rows of groundnut (29.72 q/ha) and paired rows of maize with 2 rows of cowpea (28.92 q/ha). The lowest MEY value (19.71 q/ha) was registered in sole cowpea. Paired rows of maize with 3 rows of groundnut recorded the lowest net returns of Rs 17281/ha with B: C ratio of 1.56.

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

50 % Conventional tillage (CT) + weedicide + inter culture recorded the highest grain yield of 18.49 q/ha followed by 50 % CT + inter culture and CT + Inter culture with a grain yield of 17.63 and 17.28 q/ha, respectively. Among fertilizer application, the highest grain yield of 20.28 q/ha was recorded in 100% N through inorganic fertilizer followed by 50% % N through inorganic fertilizer + 50 % N through organic manure and 100 % N through inorganic fertilizer with the grain yield values of 19.54 and 14.81 q/ ha, respectively. The Maximum Energy Output value to the tune of 67425MJ/ha was obtained in 50% CT + weedicide + inter culture and the lowest (61655MJ/ha) in CT + Interculture.

Management of collar rot of lentil (Sclerotium rolfsii) in rainfed areas

Survey of collar rot of lentil was conducted on the farmer's field of Samba and Kathua Districts. About 12% crop was infected with collar rot at Samba district and 15% crop was infected with Sclerotium rolfsii at Kathua district. Test fungus (Sclerotium rolfsii) was isolated from the infected samples collected from the farmers' field.

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

Application of carbofuran, vermicompost and poultry manure in combination significantly increased plant growth and decreased the nematode population over control. 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.

3.2.3 Maize Breeding Research Sub-Station, Poonch

· Study for identification of promising inbred lines and their cross combinations were carried out through line x tester analysis during kharif 2013 and more than 200 cross have been attempted under the matting design during the year. The hybrids thus produced will be evaluated for their GCA and SCA alongwith their parents in 2014.

· Station hybrid evaluation trial consist of 33 hybrids (both white and yellow) generated during kharif 2012 at this station was conducted in kharif 2013 to identify the promising hybrids.

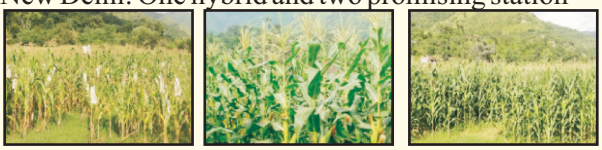
· Two promising single cross station hybrids i.e. PHM 12 and PHM 34, were evaluated in IET trial through AICRP on maize at different Zones, India during kharif 2013 where PHM 12 and PHM 34 have performed superior over local as well as national check over five zones of India with zonal mean of 70.47 and 62.06 q/ha, respectively.

Two promising hybrid PHM 12 and PHM 34 developed at this station, have been assessed in Minikit trial and farmers participatory trial conducted by Department of Agriculture, Poonch during kharif 2013. The result showed their adoptability under farmer's practices on the basis of their yield potential in the prevailing agro climatic region.

Significant research achievements

· PHM 12-A single cross maize hybrid variety has been developed and recommended for release for Jammu province through State Varietal Release Sub-Committee meeting conducted by State Seed Sub-Committee for Agriculture and Horticulture crops, Govt. of J&K. Co-Convenor, State Seed Sub-Committee-J&K-Chapter-Kashmir.

· Registration of genetic stock under NBPGR, New Delhi: One hybrid and two promising station



PHM 12-A

inbred lines have been registered at National Bureau of Plant Genetic Resources, New Delhi under IC no 599576, 599577 and 599578, respectively.

3.2.4 Regional Horticulture Research Sub-station, Bhaderwah

Establishment of Additional Rootstock and Bud-Wood Banks and Virus Indexing Facilities and Their Large Scale Multiplication

The bud-wood bank of different fruit crops, established at Regional Horticultural Research Sub-Station, Bhaderwah are being maintained for bud-wood production which include apple, pear, plum, peach, nectarine, apricot, almond and walnut.

Bud Wood Bank establishment:

Apple: New bud wood bank of apple has been established and is being maintained. It comprises of Starkrimson, LalAmbri, Golden Delicious, Red Delicious, Red Chief, Mollies Delicious, Royal Delicious, CITH apple Lodh-1, Silver Spur, Vance Delicious, Red Fuji, Red Gold, Red Spur, Oregon Spur, Jona Gold, Coop-IV, Vasta Bella and Anna varieties of apple.

Strawberry: Chandler, Douglas, Heera, Festival, Camerosa, Ophra, Vemorina, Kimberley varieties were planted for runner production.

Kiwifruit: Abbott, Monty, Hayward and Tomuri cultivars of Kiwi fruit planted.

Apple Nursery Block

MM-106 Apple Clonal Rootstock Block

Walnut Nursery Block

MM-111 Apple Clonal Rootstock Block

Strawberry Collection Rootstock Block

M9 Apple Clonal Block

Rootstock Bank Establishment:

Besides seedling rootstocks, clonal rootstocks of Apple viz., M-9, MM-106 and MM-111 have been planted in stool beds and will be multiplied through mound layering.

Network Project on Outreach of Technologies on Temperate Fruits

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

Apple cultivars Oregon Spur, Red Chief, Red Fuji, Starkrimson, Royal Delicious, Red Delicious, and Lal Ambri on MM-106 rootstock of apple have been planted at a spacing of 2.5 x 2.5 m. The data on plant survival, plant height, girth, spread and flowering fruit set was recorded for all the cultivars. After three years of planting, flowering was observed in Oregon Spur, Red Fuji, Starkrimson and Lal Ambri.

Medium density orcharding for higher almond productivity

Under this sub-project, 07 cultivars of almond viz., Non-pariel, Merced, Primorskii, Pranyaz, Waris, Shalimar and Makhdoom and were planted at a spacing of 4 x 4 m. The growth and flowering characteristics are being recorded.

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

Standard cultivar of apple namely Red Delicious and dwarf cultivar of apple namely Starkrimson on clonal rootstock of apple MM-106 and MM-111 were planted at spacing of 2.5 x 2.5 m for Modified Central Leader System, 1.5 x 2.5 m for Spindle Bush System, 1.5 x 3.0 m for Trellis system, 1.5 x 2.5 m for Head and Spread system, 0.75 x 1.5 m for Vertical Axis, 1.5 x 3.0 m for Cordon System of training during 2012-13.

Multi-location testing of elite walnut genotypes under medium density

Five genotypes of walnut namely, CITH-01, CITH-02, CITH-03, CITH-04 and CITH-05 planted at a spacing of 6 x 6 m are being evaluated.

Multi-location testing of elite apricot genotypes under medium density

Three genotypes of apricot namely CITH-01, CITH-02 and CITH-03 are being evaluated.

Survey and mapping of major pest and disease of temperate fruits

In apple, scab first appeared in mid April and was severe in July. Powdery mildew severity remained high during April-May. Alternaria leaf spot was observed during August-September. Infestation of mites was observed in apple starting last week of June and remained till August. Sanjose scale of apple appeared in April and remained till September.

- Leaf spot/shot hole of almond first appeared in May and highest severity was observed in June. Leaf curl in almond was firstly observed in May and remained till August-September. Almond blight was first observed during July and its severity remained high during the month of August 2012. Gummosis and perennial canker of almond started appearing in April and

severity was highest during August-September. Among insect pests of almond, leaf curling aphid appeared first during April-May and its infestation was highest during June. Mite infestation was also observed in almond remained there till September.

- In walnut leaf blotch started appearing in June and its severity was highest during August-September, 2012. Walnut weevil appeared in April and its severity was highest during July-August.
- In apricot, incidence of leaf curl and powdery mildew was observed during April and March, respectively and remained high during August and May, 2012, respectively for both the diseases.
- Peach leaf curl and powdery mildew was observed during April-May and March, respectively. The severity of both the diseases was maximum during August and June-July, respectively. Among insects of peach, aphid infestation was observed during April-May.
- Pear scab was observed during July, whereas leaf spot of pear was observed during May-June, 2012.
- In cherry, leaf spot and shot hole were observed during May and June, respectively.
- Strawberry leaf spot was observed in the month of May and its severity was highest during July-August.

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

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 of 5 m, annual extension growth of 65 cm, plant canopy N-S 116 cm & E-W 116 cm, and plant volume of 23.7 m3was observed in Lal Ambri. Late fruit maturity (2nd week of October), highest fruit weight (211 g), fruit length (7.1 x 7.2 cm), fruit firmness (5.5l b/kg) and highest TSS (13.30Brix) was also recorded in Lal Ambri. However, fruit pH 4.8 and fruit acidity (0.40%) was lowest in Lal Ambri cultivar. Whereas, early flowering (8th April) and date of full bloom (17th April) was observed in Starkrimson cultivar. The highest fruit yield 8 kg was recorded in H29 cultivar.

Pear: Bartlett, Flemish Beauty, Kashmir Nakh,

Apple in full bloom

Bees visiting apple flowers

Mollie's Delicious

Golden Delicious

MotiDandi, Starkrimson, Max Red Bartlett, Red Bartlett, Punjab soft, Punjab Nectrain, Punjab Golden, Punjab Beauty varieties are being evaluated. The maximum plant height (3.95 m), annual extension growth (38 cm), no. of primary branches (06 no.) and secondary branches (12 no.) were registered in Kashmir Nakh. Amongst 11 cultivars only Flemish beauty has flowered and set fruits.

Introduction, evaluation and selection of stone fruits for commercial cultivation in Doda District

Among 8 peach cultivars (Elberta, July Elberta, Red Heaven, Flordasun, Glow Heaven, Scarlet Pearl, Fire Prince and Paradelux), Elberta gave

Elberta peach

Frontier plum

Santa Rosa plum

maximum yield, fruit weight, size and sugar content followed July Elberta and Red Heaven. Out of 9 cultivars of plum (Santa Rosa, Mariposa, Tarrol, Florida 1-2, Ruby Sweet, Frontier, Red Beauty, Satluj Purple and Black Amber) Frontier plum had maximum fruit weight, size, firmness, total soluble solids and total sugars followed by Mariposa plum. However maximum yield was recorded in Santa Rosa plum.

Propagation studies on walnut

The maximum plant height (70 cm), stem diameter (1.2 cm), no. of leaves (17), root length (13 cm), no. of secondary root (15) and success percent

(36%) was recorded with cleft grafting followed by tongue grafting where plant height (64 cm), diameter (0.9 cm), no. of leaves (15), root length (12.6 cm), number of secondary roots (14) and percent success (34%) was recorded.

Integrated management of tomato wilt disease caused by Fusarium sp. lycopersici

Among different treatment combinations; 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 12.33% which gave disease control of wilt 69.83% over the control 40.88% and there by resulting in 95.81% increase in yield as compared to check.

Assesment of losses due to important diseases of pea (Pisum sativum L.) and their management in hills of Doda

Disease incidence of Ascochyta blight varied from 25 to 45% whereas the incidence of disease powdery mildew was 30 to 50 per cent. Results showed that treatment hexaconazol (0.1%) was the most effective in which the severity of ascochyta blight (9.5%) and powdery mildew (7.83%) which gave disease control of Ascochyta blight (76.25%) and powdery mildew 77.94% over the check 40% and 35.5% of the respective diseases and thereby resulting in 134..61% increase yield of pea (variety Arkel)as compared to check.

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

Out of 23 pole type accessions, two accessions have been selected and four accessions of Bush type Rajmash have been selected. The selected accessions were multiplied for evaluation at Sartangal farm. The yield of Pole type varieties BR 104 was 8 q/ha, Br 303 was 3.47 q/ha and of Bush type variety as solo crop: BR 39 was 14 q/ha, BR 35 was 12 q/ha, BR 37 was 9 q/ha and BR 33 was 10 q/ha.

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

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

Survey was conducted during flowering stage of mango orchard in different areas of Jammu for occurrence and incidence of powdery mildew. The disease ranged to the tune of 4.5-48.5 per cent. Maximum incidence (46.0%) was recorded in village Janglote in district Kathua. It was followed by Badhori (42.5%) and Guraslathia (37.8%) powdery mildew incidence. It was also recorded that older and desi mango trees were more susceptible against powdery mildew.

Epidemiological Studies of Powdery mildew of mango

Weather parameters, i.e. maximum temperature (0C), minimum temperature (0C), relative humidity morning (%), relative humidity evening (%), rainfall (mm), dew point temperature morning (0C) and dew point temperature evening (0C) influenced the powdery mildew. One year data revealed that weather parameters, i.e. maximum and minimum temperature were positively correlated with the development of powdery mildew with the correlation value of 0.72 and 0.64, respectively. Relative humidity (morning) had significant positive correlation (0.69) with disease development. However, rainfall had negative correlation (-0.42) with development of powdery mildew.

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

The seeds of different citrus root-stock; i.e. Zatti khatti, Cleoptra mandarin, Sweet lime, Karan Jambhiri, Rangpur lime, Karna khatta, Carrizo, Galgal were introduced from Fruit Research Station, Abohar (PAU) and also selected from rainfed areas to standardize the suitable root stock for kinnow propagation. The seeds were sown in poly bags and proper care is going on.

Exploitation of Under-utilized fruits of kandi areas of Jammu region through value addition for human resource development

Different training programmes were conducted

Value addition in custard apple

Preparation of Bael Preserve

Importance of under-utilized fruits

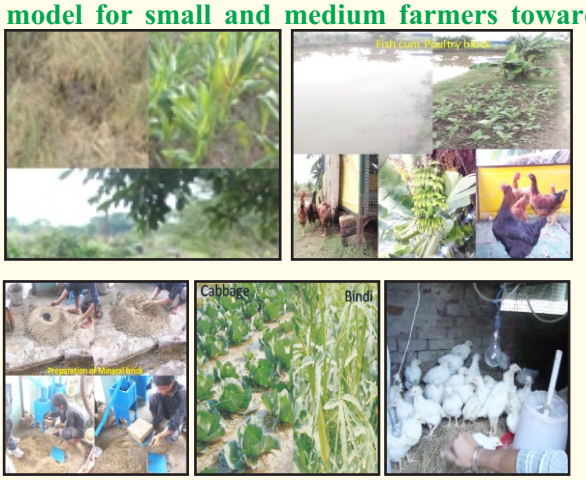
Value addition in Aonla

Preparation of Aonla Ladoo

in the villages of Samba, Kathua and Jammu districts, i.e. Sangwal (Value addition in custard apple), Bara (Preparation of Aonla ladoo), Raya (Importance of under-utilized fruits), Garhi-kot bhalwal (Value-addition in Aonla) and Badhori (Preparation of Bael Preserve) of kandi areas. The participants were very much interested for learning and satisfied with the new techniques of value addition of these fruits. They were accentuated to start their own house-hold units by starting these types of value addition techniques to make these fruits available throughout the year

3.2.6 Farming System Research Centre

Development and validation of On-Station Integrated Farming System (IFS) Research model for small and medium farmers towards livelihood security



An IFS 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. In overall IFS model of 1.5 ha realized gross return of Rs. 220829/- from all enterprises by investing of Rs. 132777/- with achieving B:C ratio of 1.66 during the year 2012-13. The highest profit in terms of B:C ratio 2.46 was recorded in fodder block followed by high value seasonal vegetable crop grown under horticulture block of 3000 m2 and local basmati 370 particular crops during this year. Moreover this IFS model could also generate employment to the family members, besides providing neat and clean (air, soil and water pollution free) environment to the society as well as sustaining or improving s oil physical chemical and biological property.

Development of organic farming package for system based high value crops

Organic farming package for high value crops with cropping sequence like rice-potato-French-bean is being developed for the last 4 years and found that the highest grain yield (34.71 q/ha) of rice (Pusa Basmati 1121) was recorded under organic treatment

where different organic sources each equivalent to 1/3rd of N through FYM + Vermi compost + non edible cake was applied with agronomical practices for weed and pest control. Similarly during rabi the maximum yield of Potato (136.55 q/ha) and French bean (veg. purpose) 28.02 q/ha in summer was also recorded in the same treatment with highest REY of 113.0 q/ha. However the soil organic content, available N, P and K was also improved under organic treatments.

General view of Rice-Potato-French bean grown under organic treatment

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

27 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 under irrigated condition of Jammu region.

Diversification and intensification of need based alternative cropping system.

The diversified cropping system like rice-marigold-French-bean, rice-Brocolli-Mash and rice-garlic-cowpea are the better choice for obtaining

higher REY, net return and B:C ratio as compared to existing rice based system under irrigated condition of Jammu region under rice based intensification, the highest yield of Paddy var. Jaya (52.91 q/ha) was recorded followed by PC-19 (46.66 q/ha) and IET-1410 (45.83 q/ha) respectively. While soil organic carbon content was build up to 14% over initial value under Rice-Potato-Maize + Green gram system followed by Rice- Berseem and Rice-Garlic-Cowpea.

Response of nutrient (N, P & K) in predominant cropping system (On-Farm)

Application of recommended dose of N, P K and ZnSO4 @ 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 + ZnSO4) 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 compared to rest of the treatments.

Long term Fertility Exterm-
29th Year (Rice-Wheat) System

Diversification/Intensification of existing Cropping System (On-Farm)

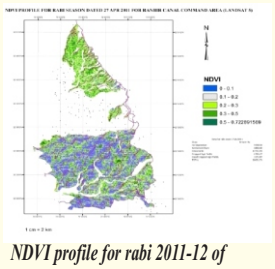
Rice-Potato-Onion was found to be the most promising cropping sequences under Rice-Wheat followed by Rice-Garlic. This sequence gave maximum system rice equivalent yield (REY) and Net return. However under Maize-Wheat system, Maize + Okra-Potato-Onion recorded maximum MEY, Net return and system profitability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

3.2.7 Water Management Research Centre

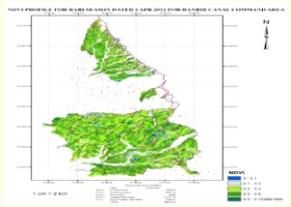
Benchmarking Ranbir canal command area (38623 ha) of Jammu region for Performance Indicators of Wheat crop through RS and GIS Technique

- Study area falls within irrigated belt but due to canal closure during rabi period (middle November to 13th April), wheat crop in Ranbir canal command is rain dependent and water productivity of wheat at disaggregated level of canal explicitly depends on uniform distribution and amount of rainfall received during any given year.
- The water requirement for effective (15000 ha) of wheat crop during three stages i.e CRI, maximum- tillering and booting stage is 119.9, 62.8 and 105.8 mm, respectively to ensure minimum (1) irrigation of 60 mm each during critical stages of wheat.
- Other performance indicators like variation in rainfall amount to the extent of 30 to 40%, the NDVI of wheat i.e crop condition and coverage dips from 0.5 to 0.1 thus adversely affects wheat productivity within 60% CCA of the entire command particularly from middle to tail reach area i.e D-10 to D-17.
- The maximum estimated potential for development of ground water for the study area is to the extent of 1798.5 ha-m and need to be supplied during three stages of wheat crop in view of canal closure. This shall upscale water productivity of rice-wheat sequence in general and wheat production in particular within the entire Ranbir canal command of Jammu.

Optimization of land and water resources within distributary (D-5) of Tawi-Lift canal command area (506 ha) falling within Jammu district.



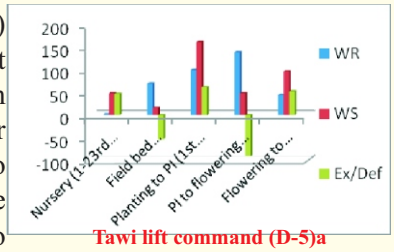
NDVI profile for rabi 2011-12 of Ranbir canal command area of Jammu



NDVI profile for rabi 2012-13 of Ranbir canal command area of Jammu

- To control water logging within villages like Tarore Rakh, Najwal Kheri and Karyal falling under command of Tawi lift irrigation, the irrigation supplies of the canal must be kept at minimum hydraulic flow/diverted to other distributaries during 1st to 23rd June (Nursery

period) followed by 1st July to 8th September (planting to panicle initiation) to save water and narrow the gap between supply and demand of irrigation for rice crop.



Tawi lift command (D-5)a

- To compensate the deficit scenario of water supply for rice crop to the tune of 91.5 & 161.0 ha-m respectively during field bed preparation from 24th to 30th June followed by pinnacle initiation to flowering stage period of rice from 9th to 30th September within command area of 505.6 ha. The stake holders must install shallow tube-wells with participatory mode of farmers and supply the same in the shape of conjunctive use of water for improving water productivity of Rice crop in the study area.

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

- Leveling index (LI) of 3.25 cm is determined on the basis of average variation in grades within farmer fields of Ranbir command, correspondingly is the indicator for the farmers of the area to maintain the range of (LI) from 3 to 4 cm suitable for the area.


Rice crop under laser leveled plots at Ratian village

- Laser leveled plots puddle with rotavator in rice and with double discing-rotavator operation followed by seed drill sowing in wheat improved rice yield by 25 and 19% in wheat as compared to farmer practice.
- WUE in rice-wheat sequence is up-scaled to 11.6 kg/ha-mm as compared to 8.3 kg/ha-mm in traditional leveled plots of farmer fields.
- There is additional net returns of Rs.46983/ha after incurring expenditure of Rs.6500/ha over farmer practice.
- B:C ratio improved to 3.35 as compared to 2.88 (farmer practice)

The stake-holders of Jammu must promote laser leveling practice within farmers' fields of irrigated area; thereby improve the water productivity from 0.83 to 1.2 kg/m3 i.e 44% over conventional method within 76472 CCA in rice-wheat sequence of Ranbir canal command area.

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

- As the farmers falling within Command Area feel vulnerable for practicing zero tillage method of sowing wheat for its impact on succeeding rice crop cultivation in the same plots. The results indicate non-significant effect on yield of rice crop plots followed after Zero tilled or conventional raised wheat in the same plots

- Amongst different establishment methods and irrigation regimes it is recommended that farmers may adopt practice of direct seeded wet sown rice over common practice like transplanting within head reaches of command area. Although the water use efficiency may decrease by 8% but benefit cost ratio shall increase by 49 per cent.

- The stake holders may continue to practice technique of transplanting rice, within middle-tail reach (deficit irrigation pockets of Ranbir canal) within farmers said command area achieving maximum WUE of 2.58 Kg/ha-mm.

Application of irrigation water i.e 5 DADPW (6th day) gave yield of 43.46 q/ha with maximum WUE of 2.49 kg/ha-mm with the benefit cost ratio of 2.00.

3.2.8 Pulses Research Sub-Station, Samba

AICRP on Chickpea: Six experiments were conducted under this project and best entries:

1. Chickpea AVT-2 (Desi): Best entries PBG-5 (925 kg/ha), GPF-2 (925 kg/ha), GL 27104 (905 kg/ha), GNG-1958 (795 kg/ha) and DCP 92-3 (749 kg/ha).
2. Chickpea IVT (D): Best Entries: H 09-96 (1059 kg/ha), H 09-90 (1007 kg/ha), DKG 972 (954 kg/ha) and GNG-469 (903 kg/ha).
3. Chickpea AVT-1 (R.F): Best entries: CSJ 730 (1276 kg/ha), CSJ 515 (1077 kg/ha), IPC 07-09 (990 kg/ha) and GNG-469 (816 kg/ha).

4. Chickpea IVT (R.F.): Best entries: BG-3036 (955 kg/ha), RKG-11-301 (764 kg/ha), BDNG-2003-1 (642 kg/ha), GL-28186 (625 kg/ha) and RSG-888 (594 kg/ha).
5. Chickpea AVT-1 (Kabuli): Best entries: HK-4 (427 kg/ha), HK-08-231 (339 kg/ha) and BG-1053 (289 kg/ha).
6. Chickpea IVT (Kabuli): Best entries: HK-4 (549 kg/ha), IPCK 2009-164 (472 kg/ha) and BG-1053 (399 kg/ha).

AICRP on MULLaRP:

S.No	Experiment	Entries tested	Seed yield range (kg/ha) of entries tested
1	Lentil IVT (S.S)	22	750-500
2	Lentil IVT (L.S)	23	852-375
3	LentilAVT-2+AVT-1(S.S)	10	588-500
4	Lentil		
	AVT-1 (L.S)	05	634-477

Chickpea Breeding Programme:

- F4 bulks population eight parental of MAGIC chickpea lines was sown and more than four hundred single plant selections were done.
- 477 single plant progenies of nine single crosses and 193 single plant progenies of five three way crosses were grown and selections made from them.

Maintenance breeding

Moongbean Initial Varietal Trial:

19 new entries were tested along with three check varieties. Four test entries proved superior to best check IPM 02-3 with a seed yield of 507 kg/ha and these were Pusa 1371 (618 kg/ha) CZM-K-1 (563 kg/ha), PM 9-06 (531 kg/ha), and FM 2328 (514 kg/ha) which were 21.89, 11.05, 4.73 and 1.38% superior in seed yield respectively. Sixteen test entries proved superior in seed yield to second best check ML-818 by 1.61 to 42.40 per cent.

Urdbean Initial Varietal Trial:

17 new entries were tested along with three checks. Only one test entry IPU 10-26 proved superior by 2.58 % to best check Pant U-31 while as it was 34.59% superior to second best check Uttara. One more test entry IU 02-1 proved 3.58% superior to only second best check Uttara.

Moongbean/Urdbean breeding programme

Urdbean: 16 progeny rows of F5 generation of two crosses were harvested successfully

Moongbean: 221 progeny rows of F5 generation of six crosses were harvested successfully -63 progeny rows of F6 generation of five crosses were harvested successfully.

B) Agronomy

Agronomic evaluation of AVT 2 genotypes under rainfed conditions:

Among the different chickpea genotypes, the genotype GJG 0809 recorded significantly higher seed yield of 1044.02 kg/ha over all other genotypes. Statistically, similar seed yield of chickpea was observed with genotypes GL 27104 (960.54 kg/ha) and PBG-5 (918.26 kg/ ha). The lowest seed yield was recorded with genotype PBG-1 (826.52 kg/ha). However, the date of sowing effected the seed yield of chickpea the normal sown crop of chickpea recorded significantly higher seed yield of chickpea (969.86 kg/ha) over delayed sown crop (885.65 kg/ha).

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

Conventional tillage supplemented with the application of nutrients of 5 t/ha FYM along with half of the recommended dose of fertilizers and also when two hand weedings were given to both maize and chickpea crop recorded significantly higher grain yield of maize and chickpea than reduced tillage supplemented with same treatments. Conventional tillage recorded higher grain yield of maize (2240 kg/ha) and chickpea grain yield (1205.19 kg/ha), half of the nutrient supplementation through RDF when applied through fertilizers and rest with 5 t/ha FYM proved better in recording grain yield of maize (2178.80 kg/ha) and chickpea grain yield (1193.06 kg/ha). However, the weed control through manual weeding registered higher grain yield of maize (2282.50 kg/ha) and chickpea (1171.06 kg/ha) in Maize-Chickpea cropping system. The results on chickpea equivalent yield also showed similar trends in yield production as that observed in case of mono crops of chickpea and maize. Significantly higher system equivalent yield of chickpea was observed with conventional tillage (two harrowing + planking) (2244.74 kg/ha) over

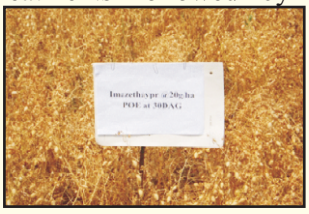
reduced tillage (one harrowing + planking) (1947.89 kg/ha). The per cent increase in chickpea equivalent yield in conventional tillage, FYM @ 5 t/ha + half RDF and twice manual weeding was to the tune of 15.40, 7.96 and 13.67 per cent over reduced tillage, RDF and use of recommended herbicide (Pendimethalin @ 1.0 kg a.i./ha).

Phosphorus and sulphur management in Kharif Cereal/Oilseed-chickpea (Chickpea-Til - Chickpea-Sesamum (Til)

The application of 5 t/ha FYM recorded higher grain yield of sesamum (704.73 kg/ha) in kharif and chickpea (916.06 kg/ha) in rabi. Similarly, when supplemented with 60 kg/ha phosphorus and 20 kg/ha sulphur the sesamum grain yield (739.51 kg/ha with 60 kg P2O5 and 693.43 kg/ha in 20 kg/ha S application) and chickpea grain yield (947.93 kg/ha with 60 kg P2O5 and 898.61 kg/ha with 20 kg/ha S application) over 0 t/ha FYM along with 30 and 0 kg/ha of P and S. Five t/ha FYM registered significantly higher chickpea equivalent yield of 1973.14 kg/ha whereas 60 kg/ha phosphorus recorded higher chickpea equivalent yield of 2048.40 kg/ha whereas the application of 20 kg/ha of sulphur recorded 1938.75 kg/ha of chickpea equivalent yield over no application of FYM (1828.42 kg/ha), phosphorus (1617.97 kg/ha) and sulphur (1862.81 kg/ha). The per cent increase of 5t/ha FYM application, 60 kg/ha P2O5 and 20 kg/ha sulphur was to the tune of 7.91, 27.15 and 4.08 over no application of FYM, Phosphorus and Sulphur.

Evaluation of time and dosage of Imazethapyr herbicides in chickpea

Among the herbicidal treatments the application of Imazethapyr @ 20 g/ha at 30 DAG registered significantly higher seed yield of chickpea (1597.00 kg/ha) over all other treatments followed by Imazethapyr @ 20 g/ha at 20 DAG which was second highest yield recorded treatment. The lowest seed yield of chickpea was recorded with treatment Pendimethalin (@ 0.75-1.0 kg a.i./ha) PE + 1 HW at 25-30 DAS recording 642.97 kg/ha seed yield.



Bio-efficacy of different herbicides for broad spectrum weeds management in chickpea

Among the various weed control treatments application of Pendimethalin 30 EC formulation + Imazethypr 2 % (Ready mix combination @ 1.0 kg/ha) + 1 HW at 30-35 DAS recorded significantly higher seed yield of chickpea (1319.46 kg/ha). Pendimethalin 30 EC formulation + Imazethypr 2 % (Ready mix combination @ 1.0 kg/ha) was the second highest seed yield recorded herbicidal treatment with chickpea seed yield of 1093.10 kg/ha. However, the lowest seed yield of chickpea (422.23 kg/ha) recorded with one hoeing /weeding at 30-35 DAS.

Significant observation noted during the course of investigation that the appearance of railway creeper weed is not found in the plots where Pendimethalin 30 EC formulation + Imazethypr 2 % (Ready mix combination @ 1.0 kg/ha) was used however, it was observed in all the plot where rest of the herbicides were used. Moreover, this is very important information as the appearance of this weed generally seen in between end of February to March and its spread is so fast in the chickpea fields that it is almost impossible to control this weed at this point of time as the crop is approaching towards its maturity stage.

C) Pathology:

I) Evaluation of IVT, AVT-1 and AVT-2 (desi, kabuli, rainfed and late sown) entries against Wilt and Ascochyta blight disease

174 entries consisting of IVT, AVT-1 and AVT-2 were evaluated in wilt sick plots. Mortality ranging from 8.01 to 81.75% was recorded, whereas, in susceptible check, L-550, it was 93% and in resistant check (JG-315) 7.92%, during rabi 2012-13. DKG-972, PG0120, PG0100, CSJ513 and GJG0904 showed wilt resistant reaction with mortality of 7.0, 6.7, 8.3, 8.0 and 8.0 %, respectively. The seed of these resistant entries is being multiplied during current rabi season in wilt sick plot. Entries RSG-888 and IPC07-09 showed highly

susceptible reaction against Ascochyta blight disease.

ii) Evaluation of chickpea germplasm and advance breeding materials against wilt disease

Out of 38 chickpea germplasm lines screened for wilt resistance, four entries viz. IPC09-41, IPC 09-44, IPC 09-148 and IPC09-24 were found resistance to wilt.

iii) Integrated management for wilt disease

Minimum wilt incidence (9.6%) was recorded in the treatment combination of Trichoderma harzianum (Pusa 5 SD) @ 4 g + Carboxin + Thiram (Vitavax power @ 1 g a.i./kg, seed treatment with Trichoderma harzianum (Pusa 5 SD) @ 4 g + Carboxin + Thiram (Vitavax power @ 1 g /kg was found effective in boosting the yield.

AICRP on chickpea-Plant Breeding Coordinated Trials

1. IVT (Desi): Out of 32 entries, C-219 and C-248 were found resistant against wilt complex disease.
2. IVT (Kabuli): Out of 19 entries, only C-712 was found resistant against wilt complex disease.
3. AVT-1 (Kabuli): None of the entries, out of none, was found resistant against wilt disease.
4. IVT (Dwarf) Field pea: Out of 16 entries, FP10-167 and FP10-170 were found highly resistant against rust. Powdery mildew incidence was also noticed in FP 10-185 and FP10-173.

MULLaRP Plant Breeding Coordinated Trials

1. IVT Urdbean: Out of 23 entries, KU-11-672 was found resistant against MungbeanYMV disease.
2. IVT Mungbean: Out of 24 entries, including local check ML-818, only KM-11-576 and ML-818 were found moderately resistant against MYMV disease.

SEED PRODUCTION

Summary

Field Crops	(In Quintals)
Particulars	Achievements
Nucleus Seed	12.00
Breeder Seed	57.70
Foundation Seed	1018.84
Certified Seed/	
Truthfully labelled Seed	1034.09
Total	2112.63
Planting material	
(fruit plants in Nos)	152000.00
Vegetable Seed	
(Breeder seed) (in Kg)	547.44

DETAILED REPORT 2013-14

(In Quintals)

Particulars	Achievements
A. Paddy	
Nucleus Seed	——————-
Breeder Seed	7.7
Foundation Seed	526.99
Certified Seed/Truthfully labelled Seed	115.09
B. **Wheat**	
Nucleus Seed	12.0
Breeder Seed	50.0
Foundation Seed	491.0
Certified Seed/ Truthfully labelled Seed	919.0
C. Pulses (Mungbean, Lentil and Urdbean	
Nucleus Seed	——
Breeder Seed	0.01
Foundation Seed	0.75
Certified Seed/Truthfully labelled Seed	———
D. Oilseeds	
Nucleus Seed	0.10
Breeder Seed	0.39
Foundation Seed	———-
Certified Seed/Truthfully labelled Seed	———

Fruit Crops	Physical Target for 2013-14	Achievements
Budded/Grafted/Layered/Plants		
Pomegranate	2000	2000
Guava	2500	2500
Citrus	4000	4000
Aonla	2500	2500
Litchi	1500	2000
Mango	3000	3000
Phalsa	2000	2000
Peach	1500	2000
Pear	2000	2000
Plum	1000	1000
Bael/ Jamun/ Monkey Fruit/ Custard Apple/Jack fruit /karonda	1000	4000
Grape	2000	-
Strawberry (Farmers Field)	125000	125000
Total	**150000**	**152000**

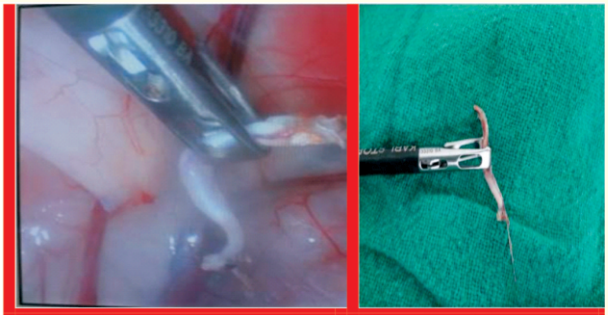
Vegetables	Breeder Seed (kg)
Okra (Varsha Uphaar)	50.00
Seli Special/SJO-01	50.00
Bottle Gourd (CBG 50/SJBG-01)	1.00
CBG 51/SJBG-02	1.00
Bitter Gourd (CBT/SJBT-01)	0.20
Pumpkin (Local/SJP-01)	0.10
Knol Khol (G-40/SJKK-01)	85.00
Broccoli (Early green/SJBC-01)	25.00
Spinch beet (C-13/SJSB-01)	120.00
Fenugreek (Kasuri Supreme/SJF-01)	90.00
Coriander (Khushboo/SJCo-01)	85.00
Radish (SJRW-01)	14.0
SJRR-01	0.50
Broad bean Local	15.00
PotatoKufri Badshah and Kufri Pukhraj	11.14
Total	**547.44**

3.3 VETERINARY SCIENCES & ANIMAL HUSBANDRY

3.3.1 Surgery & Radiology

i) Comparative anti-nociceptive efficacy of carprofen and meloxicam in ovario-hysterectomies dogs

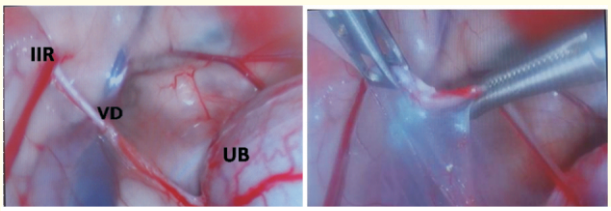
The result of study indicated that both the drugs, **carprofenn and meloxicam,** were effective in controlling post-operative pain, but Carprofen was more potent than meloxicam in controlling the post-operative pain arising due to ovariohysterectomy.



A piece of vas deferens after cutting at two points 2-3 cms apart

Piece of vas deferens removed

ii) Evaluation of xylazine and acepromazine as premedicants to ketamine anaesthesia in dogs insufflated with CO_2 during laparoscopic vasectomy



Laparoscopic view of left vas deferens (VD)

IIR-Internal inguinal ring, UB- Urinary bladder

Atropine-xylazine-ketamine provided surgical plane of anaesthesia with prolonged sedation, adequate muscle relaxation, and excellent analgesia. The induction and recovery were smooth. Atropine-acepromazine-ketamine did not result in surgical plane of anaesthesia.

3.3.2 Veterinary Physiology & Biochemistry

Haemato-biochemical parameters in Toggenberg goats during different lactations

The investigation was undertaken to study some haematological, biochemical and hormonal parameters during different stages in different lactations in Toggenberg goats. These included control group, consisting of dry goats and group I, II, III and IV containing goats in 1st, 2nd, 3rd and 4th lactation period. Further each lactation period was divided into early, mid and late stage. Blood samples were collected at one month interval in all the groups. Samples collected in first two months was considered as early stage, 3rd and 4th months are considered as mid and 5th and 6th months as late lactation stage. Samples were analyzed by using analytical kits and conventional methods for various parameters. Haemoglobin, TEC, erytrocytic indices and TLC showed decreasing trend form early to late stage. PCV percentage at early stage was significantly higher ($P<0.05$) as compared to the values of late lactation in group I, II and IV. Significantly higher neutrophil percentage was recorded in early and mid stage, whereas, lymphocyte percentage was higher during late lactation. Total protein, glucose, urea, AST, ALT and calcium levels showed an increasing whereas cortisol level showed decreasing trend from early to late stage. ALP activities were significantly higher at mid and late stages in group I, whereas in other groups the activities were significantly higher at late as compared to early stage. Significantly lower ($P<0.05$) concentration of total, HDL and LDL cholesterol were observed in mid lactation. Hb, PCV, TEC levels were lower, whereas, significantly higher ($P<0.05$) TLC was found in lactation as compared to dry stage. Percentage of neutrophils was significantly higher while lymphocyte percentage significantly lower in lactating goats. Significantly lower MCV levels were found in groups I, II and III as compared to control group; on the other hand, MCH value was significantly higher in 2nd and 3rd lactation and MCHC higher in all lactating groups as compared to other groups. Total protein, glucose, urea and enzyme levels were found higher, while significantly lower total, HDL and LDL cholesterol and calcium concentration observed in lactating goats. Cortisol level was significantly higher in lactating goats.

Antidiabetic and antioxidant effects of Seabuckthorn (*Hippophae rhamnoides*) leaf extract in diabetic induced wistar rat

Study was conducted to evaluate the effects of Seabuckthorn leaf extract (SLE) on diabetes induced

oxidative stress. Thirty-two adult male wistar rats were divided into four groups namely CON, SCO, DCO, and DSL. Diabetes was induced in rats by use of Streptozotocin @ 50 mg/kg body weight in DCO and DSL group. SLE was administered orally @ 100mg/kg body weight for 40 days to SCO and DSL groups. CON served as the negative control. Blood samples were collected from experimental animal on zero, 20th and 40th days of trial to analyze various biochemical and oxidative stress markers. At the end of trial, rats were killed and different organs were collected and weighed and oxidative stress markers were analyzed in hepatic tissue. STZ injection resulted in severe oxidative stress in DCO group, which was evident as significant negative effect on all the biochemical, enzymatic and oxidative stress parameters in blood as well as in hepatic tissues. However, treatment with SLE resulted in marked improvement in all the parameters and alleviating biochemical and antioxidant alterations induced by diabetes in Wistar rats. It can be concluded that aqueous extract of SLE appears to have antidiabetic and antihyperglycemic effect.

Ameliorating and protective effect of Seabuckthorn (*Hippophae rhamnoides*) leaf extract in lead induced oxidative stress in wistar rats

Study was conducted to evaluate the protective and ameliorative effects of Seabuckthorn leaf extract (SLE) on lead induced oxidative stress. Thirty-six adult male Wistar rats were divided into five groups namely CON, LCO, SCO, SPR and SAM. Rats were subjected to lead acetate as 250 ppm solution in drinking water for the duration of 60 days in LCO and SPR group and for initial 45 days in SAM group. SLE was administered orally @ 100mg/kg body weight for 60 days to SCO and SPR groups and for last 15 days in SAM group. CON served as the negative control. Blood samples were collected from experimental animal on zero, 45th and 60th days of trial to analyze various hematological, biochemical and oxidative stress markers. At the end of trial, rats were killed and different organs were collected and weighed and oxidative stress markers were analyzed in hepatic tissue. Lead acetate caused severe toxicity in LCO group, which was evident as significant negative effect in most of the hematological, biochemical, enzymatic and oxidative stress parameters in blood as well as in hepatic tissues. However, these effects were not evident in SPR group, where mean values of many parameters were comparable to CON, thereby suggesting effective role of SLE as protectant against lead toxicity. Mean values of most of the studied parameters for animals in SAM group were between LCO and SPR groups, indicating partial ameliorative effect of SLE over lead toxicity. However SLE was comparatively less efficient in giving protection against lead induced depression in Hb levels as the values were comparable in lead treated as well as in SLE treated groups. It can be concluded that aqueous extract of SLE appears to exert protective and ameliorative effect over lead induced oxidative stress and related secondary effects in Wistar rats.

Influence of thermal stress on haemato-biochemical parameters in Beetal and Toggenberg goats

Research works on Seabuckthorn in wister rats

The influence of thermal stress (heat and cold stress) on haemato-biochemical and hormonal parameters in relation to thyroid activity in Beetal and Toggenberg goats were studied. A total of 36 healthy adult (2-4 years of age) female Beetal (n=18) and Toggenberg (n=18) goats were selected. Blood samples were collected and analyzed for different parameters by using analytical kits and conventional method. For the season and breed interaction, significantly higher concentrations of Hb, total protein, cholesterol, enzymes (ALT, AST and ALP) and hormones (T_3, T_4 and cortisol) were found in Toggenberg breed of goat in all seasons. Significantly higher ($P<0.01$) levels of Hb, PCV, total protein, albumin, BUN, ALP, AST levels were

found during summer as compared to autumn and winter seasons. The concentration of glucose, cholesterol and ALT were significantly higher (P<0.01) in winter season. Thyroid hormones were significantly higher in winter, whereas cortisol level was higher in both summer and winter seasons. Among the two breeds, all the parameters were significantly higher in Toggenberg breed of goat. The serum T_3 and T_4 had a significant positive correlation with the blood metabolites like glucose and cholesterol concentrations; whereas, t**riiodothyronine had a significant negative correlation with serum AST and ALP activity.** Therefore, it can be concluded that, haematological, biochemical and hormonal parameters changes with thermal stress. Further, significant variations of these parameters were observed between Beetal and Toggenberg goats.

3.3.3 Veterinary Parasitology

Molecular characterization and Chemotherapeutic management of bovine cryptosporidiosis

Examination of 510 samples of bovines from Jammu region revealed an overall prevalence of *Cryptosporidium* spp. in 27.25% animals. It was higher in young animals i.e <1 month of age group (56.25%) followed by 1-6 months of age group (39.08%), 6-24 months of age group (21.73%) as compared to adults i.e. >24 months of age group (14.63%) with lowest prevalence. Statistical analysis revealed that the prevalence of *Cryptosporidium* infection in young calves was statistically significant than the other age groups. Diarrhoeic animals revealed significantly (p<0.05) higher prevalence (44.20%) of different age groups, sex and season than non diarrhoeic animals (56.24%). Male animals showed a higher incidence of infection (47.61%; diarrhoeic, 23.07%; non-diarrhoeic as compared to females (42.70%; diarrhoeic, 20.40%; non-diarrhoeic). As per season the highest prevalence was recorded during winter season from December to February (40.22%) and lowest in summer season (12.26%). Moreover chances of occurrence of *Cryptosporidium* infection was assessed and revealed that in all the seasons, diarrhoeic bovines showed higher prevalence than non diarrhoeic bovines. Statistical analysis suggests that prevalence of *Cryptosporidium* infection in winter season varied significantly than other three seasons. Bovines having mucus in the faeces showed significantly higher prevalence (53.70%) of *Cryptosporidium* infection than those having blood in faeces (10.0%). Bovine cryptosporidiosis was assessed by characterisation of *Cryptosporidium* positive bovine samples and positivity was ascertained by nested PCR where an amplification of 1325 bp and 830 bp was obtained by primary and secondary PCR of 18S small subunit (SSU) rRNA. Further digested by three restriction enzymes namely *Ssp1, Vsp1* and *MboII* for specific diagnosis of *Cryptosporidium* spp. *C.parvum* yielded three visible bands at 449bp, 267bp and 108bp and two visible bands at 448bp and 397bp isolating *C.andersoni* when digested with *Ssp1*. Digestion with *Vsp1* enzymes, *C.parvum* yielded 2 visible band at 628bp and 105 bp and *C.andersoni* showed 2 visible bands at 730bp and 115bp. The two species were further differentiated by the *MboII* digestion pattern. The two species when digested by the *MboII* two visible bands at 771bp and 76bp were observed for *C.parvum* and *C.andersoni* generated two visible bands at 769bp and 76bp. RFLP analysis of nested PCR product showed higher prevalence examined in samples having *C.parvum* infection (55.83%) in bovines than *C.andersoni* positive samples (44.16%). Cattle calves of very young age (<1 month) showed 100% positivity for *C.parvum* and *C.andersoni* was observed in older animals. The use of azithromycin drug at the dose rate of 25mg/kg body weight provided better reduction of oocyst excretion and improvement of clinical signs. The oocyst per gram of the faeces (OPG) excreted at day 28 post treatment being significantly (p<0.01) lower in azithromycin treated animals than in control group of animals and the percent efficacy of azithromycin at 28 day post-treatment was 96.62%. As per body weight change was concerned, it was observed that the rate of body weight increase was not significantly (P>0.05)

affected by the drug. At day 28, the percent increase in body weight from the pre-treatment values was 26.51 per cent in azithromycin treated animals as compared to 21.79 per cent increase recorded in the control group of animals.

Efficacy of herbal acaricides against Jammu isolates of *Rhipicephalus (Boophilus) microplus*

The efficacy of ethanolic extracts of *Artemisia absinthium* and *Ageratum conyzoides* (at 1.25, 2.5, 5, 10 and 20% concentrations), and active components of plants *viz.* Carvacrol (at 0.25, 0.5, 1 and 2% concentrations) and Azadirachtin (at 0.005, 0.01, 0.02, 0.04 and 0.08% concentrations) was assessed against cattle tick *Rhipicephalus (Boophilus) microplus using adult immersion test (AIT), egg hatchability test (EHT) and larval packet test (LPT)*. The efficacy was assessed by estimation of percent adult and larval mortality, reproductive index (RI), percent inhibition of oviposition (IO) and hatching rate. A concentrate dependent increase in tick mortality was recorded. Among two extracts used, the extract of *A. absinthium* showed the highest mortality (66.7%) at 20% concentration. The LC_{50} and LC_{95} values of *A. absinthium* and *A. conyzoides* were recorded to be 11.22 and 34.36 %, and 61.77and 537.4%, respectively. The LC_{50} value for carvacrol and azadirachtin was recorded to be 2.55 and 292886.94%, respectively. The egg mass weight of the live ticks (treated with extracts and active components) was significantly (p<0.05) lower than that of control ticks; consequently, the RI and %IO values of the treated ticks were reduced. Further, a reduction in hatching of eggs was recorded in ticks treated with various herbals. In LPT, 100% larval mortality was recorded at all the concentrations used in case of *A. absinthium*, *A. conyzoides* and carvacrol while in azadirachtin the highest mortality (58.0%) was recorded at the concentration of 0.08, with the LC_{50} and LC_{95} values of 0.058 and 0.273%, respectively.

3.3.4 Animal Nutrition

Utilization of Kinnow mandarin fruit waste silage for goat feeding

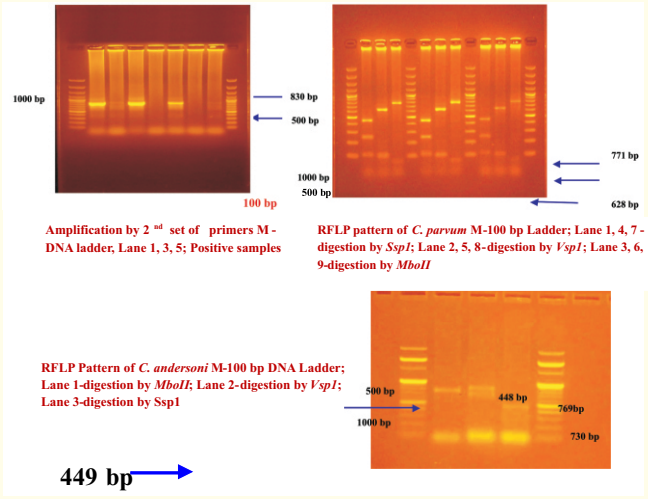
Experiment was conducted to assess the ensilability of *Kinnow* mandarin waste (KMW) and the impact of feeding KMW silage viś-a-viś oat silage on nutrient intake, utilization and general performance of adult male goats. KMW was collected dried to 30% DM level and ensiled in silo pit after addition of disodium hydrogen orthophosphate as a source of phosphorus as KMW is deficient in phosphorus. Oat was collected at milking stage, chopped finely and ensiled in a silo pit for two months. **T**welve local adult male goats were randomly allotted as per RBD to two equal groups namely OS and KS. Animals were offered weighed quantities of respective silage (Oat silage to OS and KMW silage to KS) on *ad libitum* basis. There were significant (P<0.01) difference between chemical composition of both silages with significantly higher OM, EE and NFE and significantly lower CF, NDF and ADF concentration in KMW silage as compared to oat silage. However, both silages were isonitrogenous (P>0.05 for CP) and possess comparable (P>0.05) calcium content. The pH, ammonia nitrogen (per cent of total nitrogen) and soluble carbohydrate content were lower (p<0.05) in KMW silage, whereas, lactic acid concentration was higher (P<0.05) in KMW silage indicating its superior quality as compared to oat silage. Body weight of the animals, silage intake (g/d), DM intake DMI), digestible DMI, digestible OMI and digestible CP intake was comparable (P>0.05) among the two dietary groups. The per cent digestibility of all the analysed nutrients was analogous (P>0.05) in both the groups irrespective of the diet. TDN intake (g/d) of goats kept on KMW silage was significantly (P<0.05) higher than OS group animals. Balance of nitrogen, calcium and phosphorus was positive in both the groups without any significant (P>0.05) difference between dietary groups. It was concluded that Kinnow waste seems to be an ideal substrate for preparing good quality silage for feeding of goats and adult male goats can be maintained on the silage of Kinnow waste without affecting nutrient intake, utilization and general performance of animals.

Utilization of lime treated Olive cake (*Olea europaea*) as a component of complete feed in Goats:

Study was conducted to evaluate the effect of inclusion of lime treated olive cake in the complete feed of goats. Olive cake was treated with 6% slaked lime to increase availability of cellulose and to alleviate digestibility depression caused by high ether extract percentage. *OM, NFE, ADF and NDF*

were significantly lowered by lime treatment of olive cake. The CNCP analysis showed that ADIN **(% total nitrogen) was 21.71% whereas the NDIN (% total nitrogen) in lime treated olive cake.** *In vitro* study with different complete feeds containg variable levels of 6% slaked lime treated olive cake on ADF replacement level revelaed comparable IVDMD, however, a point of inflection was observed at 40% ADF replacement level supported by TDOM, MBP, EMP and PF values. Therefore, 40% ADF replacement level was selected for *in vivo* trial. Twelve local adult male goats were randomly allotted to two equal groups, *viz.* CCF and OCF and were fed *ad libitum* conventional complete feed (Maize 10%, WB 10%, MOC 13%, OC 0%, WS 66%) or lime treated olive cake containing complete feed (Maize 5%, WB 5%, MOC 15%, OC 30%, WS 44%, Mineral mixture and salt 1%), respectively *for a* duration of 30 days. The OCF feed was significantly ($P<0.05$) lower in OM, CF and ADF, however it was significantly ($P<0.01$) higher in calcium and AIA. Mean body weight and daily feed DM and OM intake was comparable among groups and periods. The nutrient digestibility for CF and ADF was significantly ($P<0.05$) in OCF feed. Daily nitrogen intake and DCP intake (% L.Wt. and g/kg $W^{0.75}$), was comparable between both groups. The calcium balance was comparable between the CCF and OCF group but the faecal calcium excretion was significantly higher in OCF group and so was calcium intake. The phosphorus intake, excretion and balance were also comparable between the two groups. The nutrient density (TDN%, DCP%, ME) was comparable between the groups. No significant difference was observed between groups and periods for blood biochemical and serum enzymes. It was concluded that about 78% of nitrogen present in olive cake is available to animal and olive cake can be included in complete feed at 30% level (w/w; 40% ADF replacement) for feeding of adult male goats without compromising nutrient intake, utilization and general performance of the animal.

Utilization of maize cobs as replacer of wheat straw in the ration of goats:



Experiment was conducted to scrutinize the effect of feeding of maize cobs as replacer to wheat straw on the performance of goats. Proximate composition of maize cobs was comparable to that of wheat straw, which further improved on urea treatment. Experiment was conducted in two phases. First phase involved series of *in vitro* studies, results of which revealed that IVDMD increased with increasing level of maize cobs incorporation as wheat straw replacer. *In vitro* degradation parameters of maize cobs based diets were not improved by water soaking, however, a significant improvement was observed with urea-ammoniated maize cobs. To corroborate the results of *in vitro* studies, two *in vivo* trials were conducted. In first trial three groups of adult male goats (n=6) namely T_1, T_2 and T_3 were fed *ad libitum* cow pea fodder; *ad libitum* cow pea fodder with concentrate supplementation and maize cobs with concentrate supplementation, respectively to ascertain *in vivo* digestibility of maize cobs by difference method, which suggested that nutrient density of maize cobs was 55.16±1.28% TDN and 1.70±0.21% DCP. In second trial the nutrient utilization from complete feed containing urea-ammoniated maize cobs as sole roughage was compared with those having either untreated wheat straw or untreated maize cobs. DM and OM intake and DM, OM, CP, CF, EE, NDF and ADF digestibilities were significantly ($P<0.01$) higher for urea treated maize cobs based diet than other two groups. It was concluded that feeding value of maize cobs is similar to wheat straw and

urea treated maize cobs may be used as sole roughage for maintenance of adult male goats.

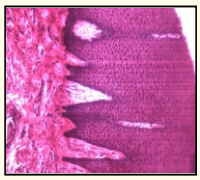
3.3.5 Veterinary Anatomy

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

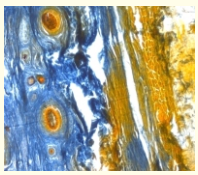
Tissue pieces from the parts of different organs of the digestive system were collected, preserved in formalin solution and processed through paraffin method and slides obtained were stained by H&E, Mallory's method for collagen, Gomori's method for reticulum, Hart's method for elastic fibres, Mercury 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. The stratum corneum of the dental pad was lined by stratified squamous epithelium with connective tissue papillae and stratum basale. The cheek was made of thick collagenous fibres in addition to muscle cells. The gastric mucosa was moderately positive to acidic mucopolysaccharides, whereas, the same was strongly positive to nuetral mucopolysaccharides. In the lamina muscularis mucosae of the abomasal wall, the smooth muscles showed distinct cross striations as evidenced by special staining method.

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

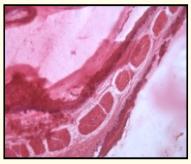
Biometrical parameters of various organs of female genital system in Bakerwali goats pertaining to all the age groups have been conducted and statistically analyzed. The tissue sectioning of all genital organs (ovary, oviduct, uterus, cervix and vagina) has been done. Sections from various organs have been subjected to various histological and histochemical staining methods and their features have been recorded. Prepubertal goat's ovary showed a large number of primary follicles in ovarian cortex. Pubertal follicular group of animals showed Graffian follicles, ovum and cells of follicular wall (membrana granulosa,theca interna and theca externa). The corpus luteum exhibited different types of Luteal cells (dark and light). In the uterus, compactly arranged uterine glands in Pubertal goats and the tunica muscularis contained circular layer of muscle and number of blood vessels in tunica serosa. Follicular fluid collected and analyzed, photomicrography done. Biochemical estimation of the follicular fluid has been done and found that it contained Total Protein 8.08 g/ dl, Albumin 4.175g/ dl, Ca 3.93 g/ dl, Mg 1.976 g/ dl and ALP 24.75g/ dl.



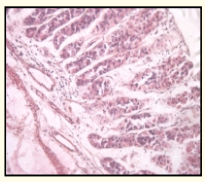
Photomicrograph of the dental pad of adult Bakerwali goat lined by stratified squamous epithelium, H&E, 100X



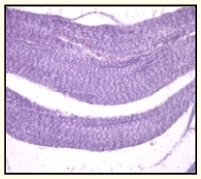
Photomicrograph showing thick collagen fibres in the cheek of adult Bakerwali goat , Mallori's stain, 100X



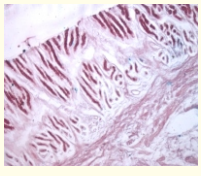
Photomicrograph of the reticulum of adult Bakerwali goat showing smooth muscle bundles, H&E, 100X



Photomicrograph of the abomasum of adult Bakerwali goat, H&E, 100X



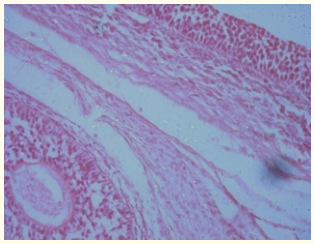
Photomicrograph of the abomasum o f adult Bakerwali goat showing strong reactions to NMPS, PAS method, 100X

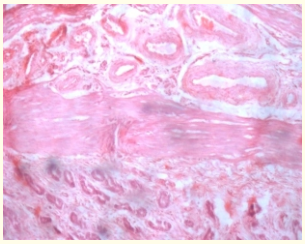


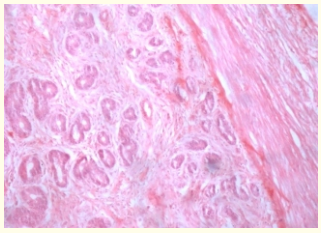
Photomicrograph of the abomasum of adult Bakerwali goat showing cross striations of smooth muscle cells, MPT method, 200X

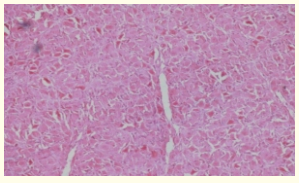
Livestock Products Technology

Quality attributes of chevon and chicken nuggets substituted with fish meat









Photomicrograph of the ovary and uterus ofBakerwali goat, H&E, method, 100X

The study was undertaken to utilize fish meat in improving chevon and chicken nuggets by fish meat substitution. Incorporation of 7% refined vegetable oil, 5% refined wheat flour and 1.5% sodium chloride (Sucrose-0.5 g, Potassium chloride-0.7 g

and Citric acid-0.3 g) was found to be optimum for the preparation of low-sodium nuggets. The low-sodium chicken nuggets were optimized to be cooked at internal temperature of 94±2^{0}C whereas chevon nuggets at 100 ± 2^0 C. Chevon and chicken nuggets at the rate of 50% of fish meat substitution were found to be most optimum for preparation of fish substituted nuggets. Substitution of chevon and chicken meat with fish meat resulted in significantly (P<0.05) lower fat percent, however significantly (P<0.05) higher in emulsion stability, cooking yield, protein and moisture content. During refrigerated storage (4±1ºC), of developed designer chevon and chicken nuggets with substituted fish meat at the rate of 50% in chevon and 50% in chicken were found to be acceptable up to 14 days on the basis of physico-chemical, sensory and microbiological parameters. The use of fish meat in meat products offers processors the opportunity to improve the nutritional and health qualities of their products. This substitution could permit functionality to our designer product without affecting sensory attributes.

Quality attributes of low sodium fish balls fortified with various combinations of flours and nisin

The study was undertaken to optimize the basic formulation and processing conditions for the preparation of low-sodium fish balls. Three different combinations of cereal and pulse based flours namely rice flour with kidney bean flour, corn flour with peanut flour and barley flour with pea flour at three different levels *viz.* 25:75, 50:50 and 75:25 were incorporated for the preparation of fish balls and were compared with fish balls prepared by incorporating 10% refined wheat flour (control). The best variants of these flour combinations viz. 50:50 rice flour with kidney bean flour, 75:25 corn flour with peanut flour and 25:75 barley flour with pea flour showed significantly higher cooking yield and emulsion stability and had significantly higher (p<0.05) overall acceptability than fish balls prepared by incorporating other flour combinations as well as refined wheat flour (control). The three best variants of flour combinations were selected for storage studies and were divided into two groups; one treated with nisin and another without nisin. During storage, the physico-chemical parameters like thiobarbituric acid value and free fatty acid content as well as the microbiological parameters like total plate counts, psychrotrophic counts, coliform counts and yeast and mould counts increased significantly (p<0.05) from day 0 up to 21st day of storage. The fish balls without nisin treatment deteriorated during storage period and were not fit for consumption after 21st day. However nisin treated fish balls maintained their desirable characteristics even up to 21st day and were fit for consumption thereafter 21st day of storage period.

Studies on the development of designer chevon cutlets

The study was undertaken to optimize the basic formulation and processing conditions for the preparation of chevon cutlets. Twice mincing, incorporation of 5% shredded potato and 3% of crushed ice was found to be optimum for preparation of chevon cutlets on the basis of different physico-chemical and sensory parameters. Incorporation of Oat quaker, Barley flour and Jowar flour @ 4, 4 and 6%, respectively were found to be optimum for preparation of chevon cutlets. Replacement of chevon cutlets with Oat quaker, Barley flour and Jowar flour resulted in lower moisture, protein, fat and rusk pick up percent, however higher in dietary fibre, ash and cooking yield percent. Among the optimum levels of Oat quaker, Barley flour and Jowar flour, incorporation of 6% Jowar flour was adjudged best for preparation of chevon cutlets. During storage, TBA value increased with increase in storage period. The TPC of the control as well as the product incorporated with Oat quaker, Barley flour and Jowar flour increased with increase in the storage period and at 15th day it exceeded the acceptable limit except for clove oil treated samples. Most of the sensory attributes declined with increase in the storage period. At 15th day of storage samples were rated unacceptable however samples treated with clove oil were acceptable even after 15th day of storage.

Teaching Veterinary Clinical Complex

a) No. of Cases attended at Clinics

Year	Medicine	Surgery	Gyne	Total
2013-14	2766	1119	344	4229

b) No. of cases attended at Camps

Year	Medicine	Surgery	Gyne	Total
2013-14	11092	714	1414	13220

c) Photographs of the cases: -

3.3.7 Animal Genetics & Breeding

Phenotypic and Molecular Characterization of Purky sheep

i. Phenotypic Characterization of Purky sheep
ii. Molecular Characterization of Purky sheep by using RAPD–PCR technique
iii. To establish genetic relationship and genetic distances between Bakarwal and Purky sheep

For phenotypic characterization data of 510 Purky sheep of either sex were collected. In Purky sheep white body colour was predominant in both the sexes. The sheep breed was of low to medium body weight. The chest girth, punch girth, height at withers of Purky sheep was medium sized. Sex had significant effect ($P<0.05$) on height at wither only. For males the least squares means were higher for all the traits of all age groups baring few exceptions. The phenotypic correlations of age groups with different morpho-metric traits were very high. The phenotypic correlation of body weight with other body measurements like tail size, chest girth, paunch girth, body length and height at wither were very high.

For molecular characterization the blood samples from Bakarwal and Purky sheep were collected. DNA was isolated by HiPuraTM ^{SPP} Blood DNA Kit (Hi-media). Initially, five primers were screened using DNA samples of two sheep breeds. But, only three primers generated reproducible and distinct RAPD profiles. These primers were successfully used to develop discernible bands among the two sheep breeds. A total number of 34 loci were found in Bakarwal and Purky sheep by 3 different RAPD primers. The numbers of loci were 12, 8 & 14 for primer 1, primer 2 & primer 3, respectively (Fig.1, 2 & 3). The genetic identity and diversity between Bakarwal and Purky breed was very high and it was 0.9230 for all three primers used for the present study. On the other hand the genetic distance between Bakarwal and Purky sheep was 0.0801.

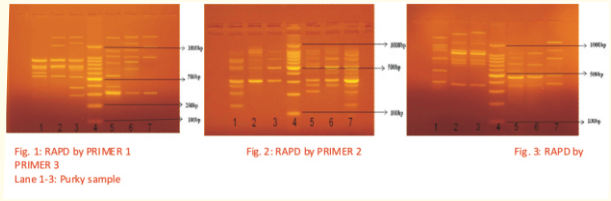


Fig. 1: RAPD by PRIMER 1 PRIMER 3 Lane 1-3: Purky sample

Fig. 2: RAPD by PRIMER 2

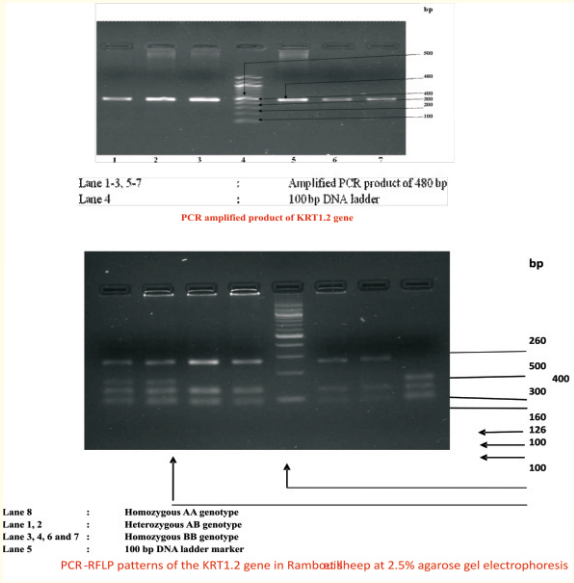
Fig. 3: RAPD by

KRT gene polymorphism & its association with wool traits in Rambouillet sheep

i. To determine genetic polymorphism of KRT gene in Rambouillet sheep.
ii. To study association of polymorphic variants of KRT gene with wool traits.

The present study was carried out on 50 Rambouillet sheep maintained at with the objectives to determine genetic polymorphism of KRT gene and its association with wool traits. The blood samples of sheep were collected along with their wool records. DNA was isolated by HiPuraTM ^{SPP} Blood DNA Kit (HI-MEDIA). Amplification of KRT1.2 gene was carried with the primers reported by Rogers *et al.* (1993). Amplicon of 480 bp of KRT1.2 gene was sequenced. The coding sequence of the exon is of 347 bp that ranges from 65 bp to 412 bp with 116 amino acids in the coding sequence. PCR-RFLP by *Msp*I restriction enzyme revealed three types of genotypic band patterns *viz*. AA, AB and BB of KRT1.2 gene with the genotypic frequencies of 0.36, 0.56 and 0.08, respectively. The allele frequency of A and B alleles of KRT1.2 gene was 0.64 and 0.36, respectively. The calculated expected heterozygosity (H_e) value was 0.46. The Shannon's information index (I) was 0.65. Polymorphic information content (PIC) for co-dominant marker PCR-RFLP was 0.35. The chi-square value for genotypes was non-significant revealing that the population under study was in HWE for KRT1.2. Co-efficient of variation (CV) for wool traits ranged from very low to medium. The co-efficient of determination (R^2) values for all the traits were very

low. The effect of sex was highly significant (P<0.01) only on GFW. The effect of genotype for GFW, FD and SL was non-significant in Rambouillet sheep. Non-significant differences between the least squares means of various genotypes were observed for GFW, FD and SL. High GFW production was recorded for BB genotype. The non-significant effect of genotypes for all the traits was not sufficient to establish the KRT1.2 gene as a suitable marker for wool traits in this Rambouillet population.



KAP gene polymorphism and its association with wool traits in Rambouillet sheep

i. To determine genetic polymorphism of KAP genes in Rambouillet sheep
ii. To study association of polymorphism variants of KAP genes with wool traits

100 blood samples of Rambouillet sheep were collected and DNA was isolated. 598 bp of PCR product of KAP1.3 gene was digested with *BsrI* restriction enzyme. Three genotypes AA (350 bp, 225 bp and 23 bp), AB (350 bp, 307 bp, 225 bp, 43 bp and 23 bp) and BB (307, 225, 43 and 23 bp) were obtained by PCR-RFLP. By SSCP KAP 3.2, 7 and genes revealed AA, AB and BB genotypes. KAP1.3, KAP3.2 and KAP7 genes have significantly (P<0.05) higher clean wool yield in males and KAP1.3, KAP3.2, KAP7 and KAP8 genes have significantly (P<0.01) higher greasy fleece weight in males.

3.3.8 Veterinary Gynecology & Obstetrics

Breeding and management strategies in dairy animal for socio-economic upliftment of rural women

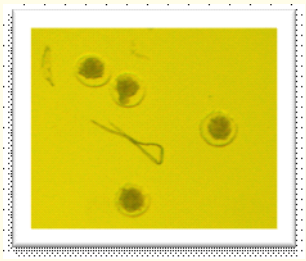
Six Animal Health awareness cum training programmes were conducted in village Chak Sian, Premachak, Balachak, Banota, Baryal Brahmana and Kotali Mirdyan. In these programmes lectures were given on topics related to Care and management of Dairy Animals. Total 182 dairy women and men farmers participated in these programmes. Farmers were distributed mineral mixture, deworming drugs and their animals were registered for the synchonised breeding programme. Selected dairy animals were treated for Anestrus, Repeat breeding using CIDR, Crestar and other hormonal protocols. With the assistance of project fertility and milk productivity in treated animals has increased and the farmers are satisfied with the help and support given to them. Through this project it was conclude that synchronized breeding programme should be regular programme of the Animal Husbandry Department and various hormonal protocols can be used successfully for augmentation of animals' fertility thereby improving socio-economic condition of the dairy farmers.

Genetic improvement of sheep through embryo transfer technology

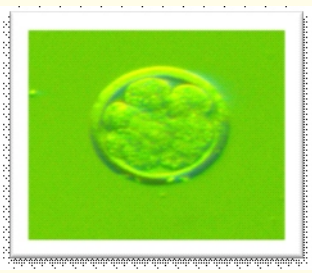
This project is being run in collaboration with the Department of Sheep Husbandry Jammu. After standardization of various process involved in the Embryo Transfer Technology at R. S. Pura, synchronization, super ovulation and embryo transfer activities were put to use at Govt. Sheep Breeding Farm, Panthal w.e.f. September 2013. During the process a total 16 embryos were collected from 9 Rambouillet sheep which were subsequently transferred to 8 recipients out of which four became pregnant. The dream came true with the birth of two lambs on 14th Feb. 2014. Subsequently two more lambs were born on 20th March 2014. Under this project Principal Investigator has constituted a team of veterinary surgeons who are working at Sheep Breeding farm, Panthal for multiplying superior quality Dorper and Rambouillet by Embryo Transfer Technology.

Newly born Lambs through ETT

Dean, FVSc & AH visited, Panthal Farm to see lambs born through ETT



Good quality Embryos



Morula stage embryo

Superovulated ovary

Evaluation and grading of embryos

Endoscope Guided Embryo Transfer

Lambs born through Embryo Transfer Technology

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 and their by reduction of service period and consequently reduction in intercalving period, Increased calf crop, increased fecundity and higher milk production in the treated animals.
- ❖ Conventional made P4 Sponge is cost-effective method to induce estrus in dairy animals, since these sponges were brought on trial from CSWRI, we can take another project to manufacture this type of sponge at our place and use conventional progesterone sponge for mass synchronisation and treatment of infertile dairy animals in rural areas.

3.1.9 Veterinary Public Health & Epidemiology

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

- ❖ On analysis of 200 milk samples (100 cows and 100 goats) by Modified California Mastitis Test, subclinical mastitis was detected in 41% and 20% of cows and goats, respectively.
- ❖ *S.aureus* was found to be the predominant organism.
- ❖ Culture Sensitivity Test revealed gentamicin and enrofloxacin to be the effective antibiotics against isolates

Seroprevalence studies on brucellosis in animals and humans

A total of 57 serum samples comprising of 37 sheep, 13 cattle, 3 dogs and 4 human samples were collected and subjected to Rose Bengal Plate Test and Standard Tube Agglutination test for diagnosis of brucellosis. A total of 5 (3 sheep and 2 goats) and 6 samples (4 sheep and 2 goats) were found positive for brucellosis by RBPT and STAT, respectively. None of the samples of dogs and humans was found positive by RBPT and STAT.

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

- ❖ A total of 75 raw chicken samples and 75 poultry cloacal swabs were analyzed for *Staphylococcus aureus* and Methicillin resistant *S. aureus* (MRSA)
- ❖ 18.7% of chicken and 22.7% cloacal swabs were positive for *S. aureus*.
- ❖ 9.3% of chicken and 12% cloacal swabs were

positive for MRSA.

Prevalence studies of *Bacillus cereus* in milk and milk products

- A total of 215 samples comprising milk (n=30), rasgulla (n=29), burfi (n=28), rasmalai (n=28), *kalaari* (n=25), *paneer* (n=25), ice-cream (n=25) and pastry (n=25) were analysed for *Bacillus cereus*. *B. cereus* was detected in 61/215 (28.37%) samples. Eight (26.66%) milk, 11 (44%) ice-cream, 11 (39.28%) *rasgulla*, 10 (34.48%) *burfi*, 8 (32%) pastry, 7 (25%) *rasmalai*, 4 (16%) *paneer* and 2 (8 %) *kalaari* samples yielded *B. cereus*.
- Adulteration of starch was detected in 16.7% raw milk samples. *Rasgulla* revealed highest starch adulteration (35.71%) followed by *burfi* (34.48%), ice-cream and pastry (32%), *rasmalai* (17.85%), *paneer* (8%) and *kalaari* (4%).

Studies on Methicillin-Resistant *Staphylococcus aureus* from diverse sources

The prevalence of *Staphylococcus aureus* and MRSA among milk, pus, nasal, environment and clinical samples was studied. Out of 150, 59 (39.33%) samples yielded *S. aureus* of which, 30 (20%) were MRSA. Prevalence of *S. aureus* in milk was 34/65 comprising 15 (44.1%) MRSA. Prevalence of *S. aureus* in pus and nasal swabs in human samples was 7/15 (46.7%) and 11/15 (73.3%); respectively while in animal pus and nasal swabs prevalence of S. *aureus* was 13/15 (86.7%) and 8/15 (53.3%), respectively. From 39 positive *S. aureus* from clinical samples, 12 (30.76%) were MRSA. Among environment samples, prevalence of S. aureus was 16/30 (53.33%).

3.3.10 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

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. 79 villages in different identified districts have been surveyed and 80 ITKs related to animal husbandry have been documented. 34 ITK interaction meets were held with traditional healers in different parts of Jammu division to document the practices. 36 medicinal plants which are being used by traditional healers have been collected and validation of selected ITKs in treatment of animal diseases was carried out through clinical trials. The validated ITKs are as follows:

3.3.11 Veterinary Medicine

Studies on metabolic profile and oxidative stress during pregnancy and lactation in Beetal goats

Plant Parts		Indication
	**Dussa** (*Colebrooka oppositifolea*)	Medication for **Sprain**/pain **(lameness)** in large animals
	**Kethi** (*Sauromatum gutatum*)	Medication for maturation of **Abscess**
	**Surajjaad** (*Clematis montana*)	Medication for maturation of **Abscess**
	**Dhaman** (*Grewia optiva*)	Medication for **endoparasitic** infestation
	**Trimbaru** (*Zanthoxylum aromaticum*)	Medication for **fever of unknown origin**
	**Trimbaru** (*Zanthoxylum aromaticum*)	**Tonic properties/Inappetance (indigestion)**
	**Goon** (*Aesculus indica*)	Medication for **Colic (abdominal pain)**

To study the metabolic profile and oxidative stress during pregnancy and lactation, 36 adult Beetal goats were categorized into 3 parity groups *viz.* group-A (1-3 parity), group-B (4-6 parity) and group-C (7-8 parity). Blood samples were collected 3 and 1 week before and 1, 2, 4, 8 and 16 weeks after kidding. Analysis of haematological parameters *viz.* Hb and PCV revealed significant decline during the peri-parturient period. TPP, albumin, BUN, total cholesterol, HDL-C, uric acid and triglyceride level declined 1 week before and remained low till 4 weeks after kidding compared with

level observed 16 weeks post kidding. Plasma creatinine level was significantly (P<0.05) increased for 2 weeks following kidding. Ca and Pi levels of plasma samples were significantly higher 3 weeks and 1 week before kidding thereafter, non-significant decline was observed till 8 weeks after kidding. Lowest average values of Ca and Pi were observed 1 week after kidding whereas, Mg, Cu and Zn levels were lowest after 2 weeks.

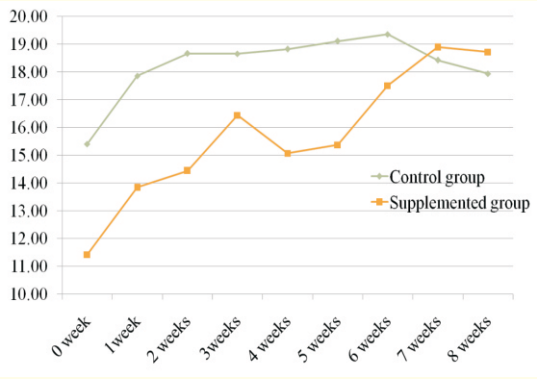
Evaluation of oxidative stress parameters during peri-parturient period revealed significant increase in MDA level along with decrease in anti-oxidant enzymes viz., SOD, catalase, GSH, GPx and G-S-T during the peri-parturient period and lowest levels were observed 2 weeks after kidding. Parity-wise, it was concluded that animals in 4-6 parity showed lowest stress compared with early and late parity animals.

To assess the effect of urea molasses multi-nutrient block (UMMB) on growing goats.

To study the effect of UMMB supplementation on body weight gain, six Beetal cross goats, 5 to 6 months age reared through grazing were provided UMMB @ 50 g/day for 2 months. UMMB supplementation resulted in an average increase of 40% in body weight compared with 21 % among control group animals was observed. It was concluded that UMMB being a good source of energy, protein and minerals needs to be supplemented in diet.

Prevalence, oxidative stress and therapeutic studies on bovine mastitis at drying off

The Prevalence of sub clinical and clinical mastitis during lactation was 59.43 per cent and 11.53 %, respectively, while as for sub clinical mastitis (SCM) at drying off prevalence was 51.02 per cent. The prevalence of mastitis was maximum in animals with milk yield greater than 10 litres. *Staphylococcus aureus* was most frequently isolated pathogen in both sub clinical and clinical mastitis. Infusion of teat sealant in quarters at drying off reduced the risk of acquiring a new intra-mammary infection during dry period by 54.85 per cent. Further the risk of acquiring new infection was reduced by 63.78 per cent, 34.95 per cent and 34.95 per cent, for *Streptococci spp*., *Staphylococcus aureus* and *Coagulase negative staphylococci*, respectively. The supplementation of Vitamin E selenium and copper during dry period significantly improved the udder health of dairy cattle in subsequent lactation, by reducing the somatic cell count in milk. There was also significant decrease in malonylaldehyde level and elevation in reduced glutathione, catalase, glutathione peroxidase and glutathione-s-transferase levels, in groups supplemented with vitamin E selenium and copper.



Clinico-Epidemiological Studies on Vector Borne Diseases of Canines in Jammu

Clinico-epidemiological studies on canine vector borne diseases (CVBD) in Jammu were conducted during July, 2012 to June, 2013. Out of 220 canine cases presented to different clinics for various ailments / routine health check-up, 172 (7.81%) cases suspectedly suffering from vector borne diseases. Overall 22.09% prevalence of Ehrlichiosis recorded. No other canine vector borne infection could be diagnosed. Season wise prevalence was 35.18% (highest) during monsoon, 27.77% during post- monsoon and least 13.88% in summer; age wise prevalence in <1 year was highest (44.68%) being lowest (7.14%) in > 8 years of age with no difference amongst sex. German Shepherd had highest prevalence (40.812%) followed by Bakerwali (37.650%), Non-descript (25%) and minimum (10%) in Doberman.

Studies on diagnosis and therapeutic management of dogs suffering with cardiovascular diseases

Study was conducted on 114 dogs suspected for

various cardiovascular diseases (CVD) and 25 dogs were found positive during the period from July 2012 to June 2013. Clinical, Electrocardiographic and haemato-biochemical parameters were studied in the affected dogs. The prevalence of CVDs was found to be 1.61% (25/1548) with maximum occurrence in month March (16%). Males (56%) were more affected than female with highest prevalence in Labrador breed (44%). Dogs in the age group of old age (>5 year) were found most susceptible (64%) to CVDs. Category wise division of Cardiovascular disorders revealed prevalence of Left atrial enlargement (40%), DCM (24%), CHF (16%), Bi atrial enlargement(12%) and 2º AV block (8 %). Grading of CVD based on clinical signs as per New York Heart Association Insufficiency Score revealed prevalence of Class I (8%), Class II (16%), Class III (20%) and Class IV (56%). Exercise intolerance, syncopal episodes, cyanosis of the buccal mucosa, ascitis, epistaxis, mild to severe anaemia, cachexia, emaciation were the main clinical signs observed in cardiovascular diseases. Haemato-biochemical study revealed lower haemoglobin and PCV, with significant increase in AST, ALP, LDH, CPK, CK-MB, Total Cholesterol, LDL, HDL and significant decrease in Sodium and Chloride. The Electrocardiographic findings in dogs suffering with CVDs revealed significant increase in $P_{dur,}$ ST_{seg}. A highly significant increase in Vertebral heart score of Labrador and German shepherd was observed in Cardiovascular diseases. Treatment response with Enalapril and Digoxin along with supportive therapy was found to be more effective.

3.3.12 Veterinary Pharmacology and Toxicology

Protective Effect of Curcumin on Blood Biochemical and Oxidative Changes induced by Repeated Co-Administration of Fluoride and λ–Cyhalothrin in rats

The study was aimed to investigate the toxic effects of repeated exposure of λ-cyhalothrin (LCT) and fluoride (F) alone and in combination on free radical induced damage in erythrocyte membrane of wistar rats. Forty two wistar were divided into seven groups with six rats in each. Group I without treatment served as control. Group II and III were provided drinking water containing F @ 1 and 10 ppm, whereas rats of Group IV and V were administered LCT @ 2 and 10 mg/kg bw through oral gavage respectively. The animals of group VI and VII received both toxicants daily for 28 days. Repeated exposure of either LCT or F produced significant ($p<0.05$) reduction in superoxide dismutase, catalase, glutathione peroxidase and blood glutathione levels in rats as compared to control. Simultaneous exposure of both the toxicants produces more pronounced effects on these biomarkers in wistar rats. Cellular damage indicator i.e. MDA levels were significantly higher in simultaneous exposure as compared to control and exposed group of either toxicants.

Toxico-biochemical and Reproductive abnormalities induced by repeated oral administration of Metalaxyl in Wistar rats

The study was designed to evaluate haemato-biochemical alterations, oxidative stress parameters, hepatotoxicity and reproductive abnormalities induced by the chronic exposure of metalaxyl fungicide in Wistar rats of both sexes. Rats of 100-200 g body weight were divided into 4 groups of 20 animals each and were subjected to various daily oral treatment regimes for 98 days. Group-I and II served as control male and female respectively, receiving only distilled water orally, whereas group III and IV received metalaxyl @ 75 mg/kg body weight daily in distilled water. A significant ($P<0.05$) decrease in all hematological parameters except lymphocyte cout and ESR values were observed. Total serum proteins, albumin and globulin levels revealed a significant decrease while AST, ALT, ALP, ACP, serum creatinine, BUN, cholesterol and triglycerides were increased significantly ($P<0.05$) in the treatment groups as compared to the controls. Metalaxyl caused marked elevation in malondialdehyde and GST whereas, a significant decrease in SOD, glutathione, GPx and catalase activities were observed. A significant decrease was observed in sperm count, viability and motility. Further live pups per litter and pup weights were also decreased

significantly in exposed groups. Histopathologically, liver revealed congested central vein with bridging fibrosis and mononuclear cell infiltration. Kidneys also revealed congested glomerular capillaries. Ovaries and uterus showed architectural distortion and atresia of follicles, degeneration and necrosis of endometrium. Tests also showed architectural distortion mainly of developing sperms, inter-epithelial edema in epididymis and seminal vesiculitis represented by leukocytic infiltration.

Haematobiochemical changes and oxidative stress induced by sub acute exposure of dichlorvos and copper alone and in combination in wistar rats and subsequent ameliorative changes with vitamin C

The study was undertaken to evaluate the toxic effects of dichlorvos and copper alone and in combination following repeated oral administration for 28 days. The ameliorative effect of daily administration of vitamin C following co-administration of dichlorvos and copper for 14 days on the various haemato-biochemical and oxidative stress parameters was also studied. Co-exposure of dichlorvos @ 5.6 mg/kg & copper @ 4 ppm daily for 4 weeks induced leukocytosis, elevation of blood biomarkers like aminotransferases, phosphatases and creatinine. Also oxidative stress parameters like LPO and GST were increased whereas GSH, GPx, SOD and CAT were decreased. These alterations were dose dependent. Vitamin C ameliorated haematological alterations and increase in acid phosphatase activity. It also prevented the increase in LPO and decrease in GST, GPx SOD. In conclusion, vitamin C failed to afford complete protection against the sub-acute toxicity of dichlorvos and copper.

3.3.13. Veterinary Pathology

Study of Liver Lesions of Slaughtered Sheep and Goats in Jammu

Two Hundred and fifty (250) infected liver samples were collected from different slaughter houses in and around Jammu region from April, 2013-March, 2014.

Local abattoirs and Govt. recognized slaughter house: Gujar Nagar, Dogra Hall (Jammu Tehsil). Gross changes in liver were observed and recorded. The infected liver samples were collected in 10% neutral buffer formalin and processed for histopathological studies.

The prevalence of liver Hydatidosis, Hepatitis Cysticercosa, Fasciolosis and Dicrocoeliosis were found to be 37.5, 15.4, 30.6 and 16.5% in sheep and 47.0, 20.0, 20.0 and 13.0% in goats, respectively. Among parasitic diseases, Hydatidosis was most predominantly present followed by fasciolosis and cysticercosis, dicrocoeliosis.

Prominent gross lesions in liver include cirrhosis, nutmeg liver, hepatomegaly and consolidation with icterus, dilatation and fibrosis of bile duct in fasciolosis and dicrocoeliosis infection. Histopathological examination revealed protoscolosis attached with the liver parenchyma causing excessive fibrosis and marked cellular reaction characterized by proliferation of fibroblasts, diffuse infiltration of mononuclear cells with degeneration of hepatocytes.

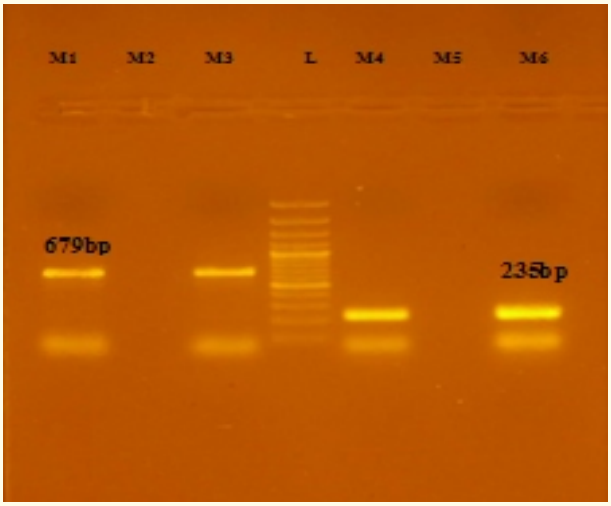
Out of 250 liver examined, four liver samples showed hepatic tumour. The over all incidence was 1.0 per cent. At post mortem examination, the hepatic tumour was uncapsulated, nodular, ovoid or fungiform deteriorating from the normal architecture. Further, the hepatic tumour revealed neoplastic mass of light yellow with dark areas of haemorrhage. Microscopic examination revealed long finger like papillae forming process having a single layer of columnar epithelial cell projecting into the larger glandular structure and presence of abundant fibrous stroma heavily infiltrated with lymphocyte, pleomorphism and hyperchromasia of hepatocyte with mitotic figure. Further, aggregates of the neoplastic cells as crude acini with scant connective tissue stroma between them were seen. In higher magnification, pleomorphic cells, mitotic figures and bizarre forms were more often seen.

3.3.14. Veterinary Microbiology

Screening equines for major respiratory bacterial pathogens

Susceptibility to disease to equines is high due to stress. Gatherings of groups of horses from different tourist sites and places of pilgrimage are potential situations for disease transmission to tourists and pilgrims. Respiratory diseases can be costly for the horse owner/ manager in many ways. Some respiratory diseases may cause abortion, and the expense of veterinary care associated with respiratory disease can be significant. Early detection of respiratory disease is important for successful treatment. Species specific PCR was used for detection of important bacterial pathogens both from clinical samples as well as purified bacterial isolates targeting SeM gene for Streptococcus equi subsp. equi (S. equi subsp. equi), SodA gene for Streptococcus equi subsp. zooepidemicus (S. equi subsp. zooepidemicus) and 16S r RNA for Rhodococcus equi (R. equi). SeM gene encodes for the M like protein exclusively found in S. equi subsp. equi, which protects it from phagocytosis and renders it highly pathogenic. SodA gene encodes for the superoxide dismutase enzyme which neutralises the effect of superoxides by the host thereby protecting it from killing by neutrophils. Part of this gene is conserved in S. equi subsp. zooepidemicus thereby helping in quick molecular detection by amplification of this gene. Based on isolation and molecular characterization of streptococci from equines, it can be concluded that majority of Streptococcal infections were due to S. equi subsp. zooepidemicus and thus has been recognized as potential pathogen of respiratory tract of equines besides S. equi subsp. equi.

We could not detect S. equissp. equi from 47 samples from the diseased equine. Several reasons could be suggested for such negative results. Most obvious reason seems that sampling was done only from nasopharyngeal tract and not from guttural pouch, where this pathogen resides even after disappearance of clinical symptoms of disease, thereby resulting in negative results .Being a very important pathogen it is recommended that surveillance for S. equissp.equi must be continued.



Molecular Detection of *Streptococci* by Polymerase Chain Reaction (PCR) 679 bp products are for *seM* gene and 235bp products for *sodA* gene.

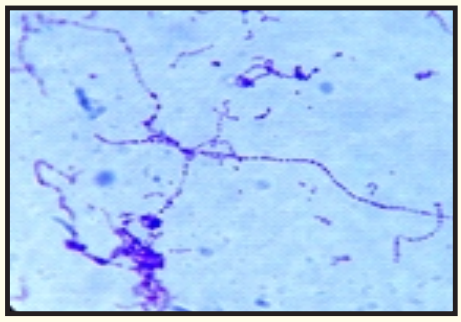
A very rare species of Streptococcus pluranimalium was isolated from nasal tract of equines. This organism has been reported from cattle goat cat canaries but not from equines. This is probably the first report of its association with equines.

Submission of important veterinary microbes to VTCC repository at NRCE, Hisar

A total of 35 cultures are being submitted. Given below is the list of bacterial culture isolates submitted for accession:

List of cultures submitted in 2014 from SKUAST-J

Depositors ID	Bacteria	Source	Serogroup	Remarks
SKJ C1-1	*E. coli*	Cattle/ calf	O15	
SKJ C1-2	*E. coli*	Cattle/ calf	O169	
SKJ C1-3	*E. coli*	Cattle/ calf	O160	
SKJ C1-4	*E. coli*	Cattle/ calf	O169	
SKJ C1-5	*E. coli*	Cattle/ calf	O82	
SKJ C1-6	*E. coli*	Cattle/ calf	O169	
SKJ C1-7	*E. coli*	Cattle/ calf	O169	
SKJ C1-8	*E. coli*	Cattle/ calf	O9	
SKJ C1-9	*E. coli*	Cattle/ calf	O82	
SKJ C1-10	*E. coli*	Cattle/ calf	O169	
SKJ C1-11	*E. coli*	Cattle/ calf	O169	
SKJC1-12	*E. coli*	Cattle/ calf	O15	
SKJ C1-13	*E. coli*	Cattle/ calf		Positive for F41 gene
SKJ C1-14	*E. coli*	Cattle/ calf	O82	
SKJ C1-15	*E. coli*	Cattle/ calf	O9	
SKJ C1-16	*E. coli*	Cattle/ calf	O9	
SKJ C1-17	*E. coli*	Cattle/ calf	O9	
SKJ C1-18	*E. coli*	Cattle/ calf	O9	
SKJ C1-19	*E. coli*	Cattle/ calf		Positive for *stx*2 gene
SKJ C1-20	*E. coli*	Cattle/ calf		Positive for intimin
SKJ C1-21	*E. coli*	Cattle/ calf		Positive for STa gene
SKJ E1-1	*Staphylococcus aureus*	Equine		Positive for Nuclease (*nuc*) gene Positive for *mecA* gene (for MRSA)
SKJ E1-2	*Staphylococcus aureus*	Equine (pus)		Demonstrated Vancomycin resistance
SKJ B1-1	*Staphylococcus aureus*	Buffalo (milk)		Demonstrated methicillin resistance
SKJ E1-3	*Streptococcus equi*	Equine		Positive for *sem* gene
SKJ E1-4	*Streptococcus pleuranimalium*	Equine		Detected by PCR using 16SrRNA gene specific primers followed by sequencing
SKJ E1-5	*Streptococcus pleuranimalium*	Equine		Detected by PCR using 16S rRNA gene specific primers followed by sequencing
SKJ E1-6	*Streptococcus spp.*	Equine		Confirmed by PCR
SKJ E1-7	*Streptococcus spp.*	Equine		Confirmed by PCR
SKJ E1-8	*Rhodococcus equi*			Confirmed by PCR using primers for 16S rRNA (specific for *R. equi*)
SKJ B1-2	*Bacillus cereus*	Buffalo (milk)		

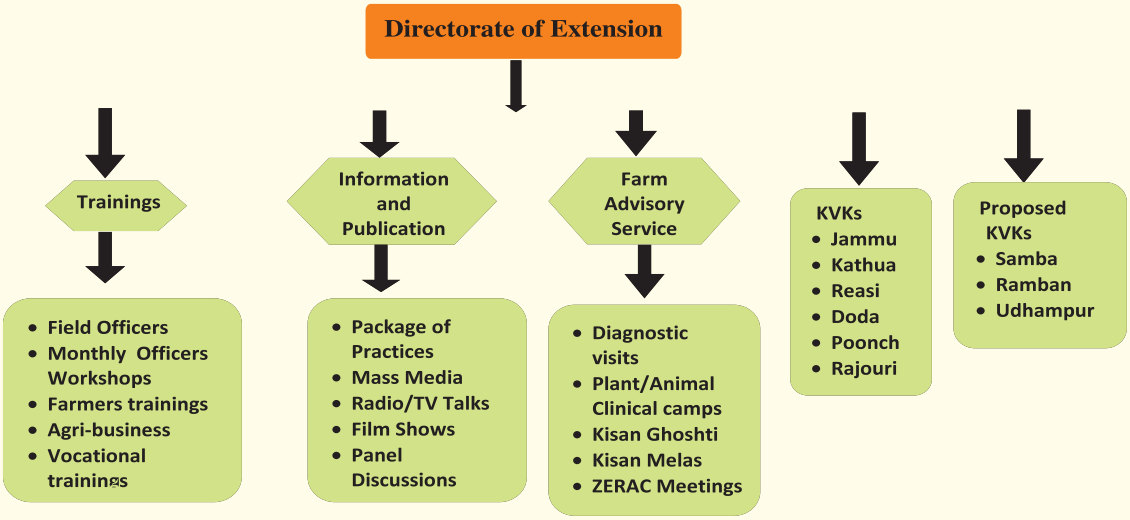


Streptococcus equi subspecies *equi* after Gram staining (1000×)

Hemolytic colonies of *Streptococcus equi* subspecies *equi* on blood agar

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 co-ordinating 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:

It is mandatory for all KVKs to organize two Scientific Advisory Committee meetings one each during Rabi and Kharif as per the ICAR guidelines. The action plan of the respective KVK for the particular year is discussed in this meeting before submission to the ICAR headquarters for funding. The Scientific Advisory Committee of each KVK includes all the district heads of line departments related to farm sectors, besides two progressive farmers and farm women. The Scientific Advisory Committee (SAC) Meetings of following Krishi Vigyan Kendras were held during the period

- KVK, Rajouri = 08th January 2014
- KVK, Kathua = 16th January 2014
- KVK, Jammu = 13th March 2014
- KVK, Reasi = 15th March 2014
- KVK, Poonch = 19th march 2014

4.1.2 Zonal Research & Extension Advisory Committee (ZREAC) Meetings

The Directorate is organizing regularly two Zonal Research & Extension Advisory Committee (ZREAC) meetings during 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.

I) Zonal Research and Extension Advisory Committee (ZREAC) Meeting for *Kharif* - 2013 for Jammu province was held on 6th May, 2013 in the conference hall of SKUAST-J, Main campus Chatha under the chairmanship of Dr.K.S.Risam, Director Extension, SKUAST-J. Sh. Ajay Khajuria, Director Agriculture, Jammu, Sh.K.K Sharma, Director Floriculture, Mr. Anil Sharma, Director Horticulture, Jammu, Dr.J.P. Sharma, Dean FOA: Heads of the Division of the Faculty of Agriculture, Programme Coordinators of Krishi Vigyan Kendras, resource persons of the officers monthly workshops, Chief Agriculture Officers as well as other officers of the allied line departments participated in the meeting. The Salient recommendations of ZREAC meeting for Kharif crops were:

Varieties recommended

- Rice (coarse grain) : BS 444G
- White maize (composite): PMSY-4
- Yellow maize (hybrid) : PHM-12
- Herbicides for weed management in Rice
- Penoxulam @22.5g/ha : 10 DAT (Days after transplanting)
- Bispyrebac @30g/ha : 30 DAT

Management of gladiolus wilt

Carbendazim @ 0.25% +Mancozeb @ 0.1%

Management of bacterial wilt of solanaceous vegetables

- Seedling dip for 30 minutes in Streptocycline sulphate or Ciprofloxacin 100ppm before transplanting
- Application of bleaching powder @25 kg/ha at the time of transplanting

.Management of Tomato leaf curl

- Three sprays of imidacloprid 17.8 SL (0.03%) or Thiomethoxam 25 WG (0.03%) at 15 days interval starting from nursery stage.

i) Zonal Research and Extension Advisory Committee (ZREAC) meeting for Rabi-2013 for Jammu Province was held on 16th December, 2013 in the Conference Hall of SKUAST-J, Main Campus, Chatha under the chairmanship of Dr. K.S.Risam, Director Extension, Dr. Ajay Koul, Director Research, Dr. J.P.Sharma, Dean FOA, Heads of the Divisions of Faculty of Agriculture, Programme Coordinators of Krishi Vigyan Kendras, Incharge Stations, Resource

persons of the officers of monthly workshops, representatives of the Directorate of Agriculture and Horticulture, Chief Agriculture Officers, Chief Horticulture Officers as well as other officers of the Agriculture, Horticulture and other line departments participated in the meeting.

Department of Agriculture, Jammu projected following issues:

1. Mixing of different varieties of Basmati.
2. Reasons to be ascertained of the low productivity of the Mustard crop.
3. Participation of the University in the National Conference on Rabi and Kharif and fixing of the ZREAC meeting after seven to ten days of the said National Conference.
4. Testing of diesel plough under Jammu conditions.

Department of Horticulture, Jammu projected the following issues:

1. Package of practices for fruit crops.
2. Requirement/Availability of quality planting material of fruits.
3. Low chilling varieties of stone fruits suitable for Jammu division.
4. Anar butterfly problem of wild pomegranate.
5. Imparting training to officers on training and pruning of orchards and other related aspects

Director Extension, SKUAST-J requested the Department of Horticulture to scale up the production of strawberry runners. He further directed HOD, Fruit Sciences:

i) To prepare a policy paper of cultivars in view of changing climatic condition.

ii) The four low chilling varieties of apple namely Michal, Anna, Paslins' beauty and CS chlomit be tested under local condition.

Chief Horticulture officer, Jammu requested for identifying a variety of Pomegranate which may be resistant to attack of Anar butterfly.

4.1.3 University Level Workshop of KVKs under SKUAST-Jammu

One day University Level Workshop of all Krishi Vigyan Kendras under SKUAST-Jammu was held on 31st March, 2014 at the University Head Quarter in which all Heads of the divisions from Faculty of Agriculture and Faculty of Veterinary Sciences & A.H and scientific staff of all KVKs participated. The workshop provided a platform to all the participants to interact on the technology generation, refinement and dissemination and to deliberate upon the proven technologies generated through research for dissemination through FLDs with farmers participation in the Jammu region and those technologies which require assessment in the various districts and their refinement for location specificity at KVK level as on Farm Trials (OFTs).

4.1.4 Officers Monthly Workshops:

The Directorate of Extension conducts Monthly Workshops for Officers of the line departments at the district headquarter in which schedule of package of practices for various crops and allied activities for the ensuing month are discussed. The feedback from the line departments is also obtained with regard to problems of the farmers in the field and on spot solution is provided. The workshops are attended by the district and sub-divisional level officers from Department of Agriculture and Department of Horticulture.

In order to strengthen and increase the coordination between the Agricultural University and the development departments, Directorate of Extension organized 29 Officers Monthly Workshops at various district headquarters during the period.

Officers Month Workshop

4.1.5 Technological backstopping of KVKs

The Directorate is organizing capacity building programmes for scientific staff of all KVKs for providing technological backstopping. Three one day training programmes in the identified areas were organized for scientific staff of all KVKs by the Directorate of Extension in collaboration with various divisions of Faculty of Agriculture.

S.No.	Title of the training prog.	Collaborating Division	Date
1.	Market Intelligence for Agricultural Commodities	Division of Agricultural Economics	20th March, 2014
2.	Reporting & Documentation of Field experiments	Division of Agricultural Extension Education	21st March, 2014
3.	Scientific documentation of case studies/success stories	Division of Agricultural Extension Education	22nd March, 2014

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

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

5.1 Training programmes conducted under SAMETI-Jammu

Discipline	Number of training programmes	Number of participants
Agronomy	03	55
Agril. Extension	08	263
Entomology	02	42
Horticulture	06	183
Mushroom Cultivation	01	20
Agril. Economics	01	35
Agril,. Engineering	03	85
Water Management	01	29
Animal Science	02	32
	27	**744**

5.2 Post Graduate Diploma in Agricultural Extension Management (PGDAEM) funded by MANAGE, Hyderabad under the Govt. of India scheme "Support to State Extension Reforms" : 18 Candidates were registered in the first batch for the academic year 2012-13, out of which 16 candidates have been declared successful after completing the requirements of PGDAEM by MANAGE, Hyderabad. 13 candidates have been registered for the academic year 2013-14 to undergo PGDAEM.

5.3 Diploma of Basic Agriculture Training/ Basic Horticulture Training:

One year Diploma in BAT/BHT has been started at district level and has commenced at respective KVKs. Ninety nine candidates have registered for the said programme during the current session 2013-14.

6 Training programme and Other Extension activities organized by KVKs

Krishi Vigyan Kendras (KVKs) working under the administrative control of SKUAST- Jammu are organising both on and off campus trainings programmes for benefit of farmers to enrich their knowledge regarding the new agricultural technologies being generated through research and other innovations.

6.1 Farmer Trainings

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	37	727	26	666	57	1499	23	1052	43	768	38	1027

N= Total trainings organised= 224; T= Total No. of participants = 5793

Training on Agronomy at KVK Doda

Farmers Training at KVK Kathua

Training to women farmers at KVK Reasi

Farmers training at KVK Rajouri

6.2 In- Service Trainings

Krishi Vigyan Kendras organised on and off campus in-service trainings refresher courses for field functionaries from line departments of Agriculture, Horticulture, Command area Development, Animal husbandry and sheep husbandry etc. to refersh and update their knowledge/skill. The details are as under:-

	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	03	22	09	114	07	114	5	98	7	92	7	117

N= Total trainings organised=38; T= Total No. of participants = 557

6.3 Rural youth/Vocational trainings:-

KVKs conduct short and long term vocational training for rural youth, farm women to create self employment through income generating activities.

	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	06	121	05	71	04	62	5	124	05	82	05	65

N= Total trainings organised=30; T= Total No. of participants = 525

Vocational training programmes organized for rural youth by KVKs

6.4 Technology transferred and assessed

6.4.1 Technology transferred to the farmers' field

KVK Jammu

S. No.	Name of the technology	Crop	Benefit of technical intervention to the farmers
1.	Introduction of high yielding varieties of respective crops along with full scientific package of practices	Maize, wheat, Rice, Mustard,	Enabled farmers to overcome various location specific production constraints and consequently farmers attained self sufficiency and realized considerable enhancement in yields.
2.	Conservation practices	Cereals	The technology helped the farmers in reducing the losses caused by erosion and depletion in soil fertility
3.	Introduction and popularization of vegetables and introduction of high yielding varieties in traditional vegetables along with full scientific package of practices.	Vegetables	Farmers were benefited by improved nutrition and were able to realize self sufficiency in these vegetables.
4.	Popularization of cash crops like strawberry and marigold with high yielding varieties along with full scientific package of practices.	Strawberry and Marigold	Enabled farmers to overcome various issues concerned with monitory loss and gets immediate benefits for his crop.
5.	Popularization of fish farming along with full scientific package of practices.	Fish	Production increased and mortality of fishes reduced.

6.4.2 On Farm Trials

S. No	Name of the technology tested	Crop	No. of trials	Feedback	Economic benefit B:C ratio
1	Integrated nutrient management in Til (sesamum) T1= N+P T2= N-20kg/ha, P-10kg/ha T3= T2+ S-20kg/ha	Til	03	Use of sulphur is beneficial for both quantity and quality of til.	1: 3.98
2	Effect of vermiwash on yield of Marigold T1= FYM T2= NPK 120kg/ha N, 100kg/ha P,100kg/ha K T3= T2+vermiwash (10 % solution)	Marigold	06	NPK+ vermin-wash is more beneficial.	1: 3.2
3	Moisture stress at flowering and silique formation stage T1= No application T2= 1% urea spray at 50% flowering stage T3= 0.5% thiourea spray at 50% flowering stage + 0.5% thiourea spray at 50% at pod formation stage	Mustard	05	Use of sprays was beneficial.	1: 2.06
4	Effect of organic mulching on yield of strawberry T1= No Mulching T2= Polythene mulching T3= Straw Mulching	Strawberry	02	Straw mulching has helped in significant increase in yield.	1: 3.8
5	Effect of Azolla on Paddy (var. Pusa1121) T1= Application of N and P Only T2= N-50Kg/ha, P – 44 Kg/ha, K – 16 Kg/ha + Zn -50 Kg/ ha T3= T2 + Azola	Paddy	06	Application of azolla is quiet satisfactory.	1: 2.5
6	Soil Test based fertilizer recommendation in strawberry (var. Chandler) T1= N+P without any ratio T2= N 94kg/ha, P 112 kg/ha and K 60 kg/ha T3= Soil test based 104endra104zer recommendation	Strawberry	05	Excellent results have come after soil testing and application of NPK based on it.	1: 3.2

7	Effect of vermiwash on cauliflower T1= No application T2 =N 120 kg/ha, P 60 kg/ha and K 60 kg/ha T3= T2 + vermiwash (10 %)	Cauliflower	04	Growth of the plant was good.	1: 3.4
8	Effect of micronutrient based fertilizer in Gram T1= No application of fertilizer T2 =DAP @ 88 kg/ha T3= T2 + Raligold	Cauliflower	05	Better yield.	1: 2.41
9	Impact of feed supplement on fish production T1= Farmer Practice T2= Rice bran & oil cake at the ratio of 1:1 T3= Rice bran & oil cake mixed with mineral mixture @20gm/kg	Fish culture	01	-	Results awaited.
10	Assessment of sinking fish feed on growth and production in composite fish culture T1= Farmer Practice T2= Rice bran+ Oil cake (1:1) @ 3% of body weight T3= Pelleted sinking feed @ 3% of body weight	Fish culture	02	-	Results awaited.

6.5 KVK Rajouri

6.5.1 Technologies transferred to the farmers field

S.No	Name of the technology	Crop	Benefit of technical intervention to the farmers
1.	Introduction of single cross hybrids, integrated nutrient management, weed management, insect pest management of respective crops along with full scientific package of practices	Maize, wheat, Rice, Mustard, Gobhi Sarson, Urd bean	Enabled farmers to overcome various location specific production constraints and consequently farmers attained self sufficiency and realized considerable enhancement in yields.
2.	Promotion of seed replacement and introduction of new varieties, seed treatment	Maize, wheat, Rice, Mustard, Gobi Sarson, Urd bean, oats and perennial grasses	Farmers were benefited by more production per unit area and have new seeds.
3.	Introduction of new varieties, control of disease and pest, post harvest and canopy management in major fruit crops.	Apple Stone fruit Guava Citrus Strawberry	Better management of orchards, lesser losses due to insect pests and Increased income

4.	Promotion of HYV, disease and pest management. Round the year cultivation, healthy nursery raising of vegetable crops.	Cucurbits Onion Okra Cole crops Spinach	Farmers were benefited by improved nutrition and been able to realize self sufficiency in these vegetables.
5.	Introduction and popularization of loose flower cultivation, spice cultivation, medicinal & aromatic plants and mushroom cultivation	Turmeric, Marigold, Mushrooms Medicinal and aromatic plants	To increase farmers income from sources other than traditional crops
6.	Promoting poultry farming as source of livelihood	Backyard poultry	Diversification and sustainability

6.5.2 On Farm Trials

S.No	Name of the technology tested	Crop	No. of trials	Feedback	Economic benefit
1.	Evaluation of improved fodder grasses under intermediate conditions. T1: Farmers practice (Natural Grass) T2: Setaria T3: *Napier* hybrid	Fodder	01	Results reveal that, Since the farmers were harvesting green grass from the pastures only, with the availability of perennial grasses, he was able to take multi-cut from the grasses planted on the bunds of the farmer's field.	-
2.	Management of blister beetle in Maize T1: Farmers practice (No application of pesticide) T2: Trap Crop T3:IPM (T2+Hand Picking)	Maize	01	The results reveal that, in case of case of integrated pest management there is an increase of 11.6% in yield (T3) as compared to the farmers practice, whereas there is an increase of 9.8 % in total yield (T2) as compared to the farmers practice.	1:1.80 1:1.83 1:1.87
3.	Introduction & evaluation of Punjab haldi-1 (Turmeric) in Rajouri T1: Farmer practice (Own seed) T2: Sugundha T3: PH-1	Turmeric	01	Farmers are convinced with the performance of PH-1 as well as Sugandha	1:1.90 1:2.38 1: 2.54

4.	Economic appraisal of nutrient management in wheat crop T1: Farmers practices (Imbalance application of seed and fertilizer) T2: Recommended application of seed and fertilizer (N-60kg, P_2O_5-30kg, K_2O-20kg, Seed 100 Kg) T3: Recommendations of DWR for NW Himalayan region (N-90kg, P_2O_5-30kg, Seed 120 Kg)	Wheat	01	The results revealed that in case of nutrient management there is increase of 42.1 % in yield (T3) as compared to the farmers practice, whereas there is an increase of 36.8% in yield (T2) as compared to farmer practice	- 1:1.57 1: 1.91
5.	Evaluation of improved oats varieties of Oats T1:Farmers practices (Kent) T2:Palampur-1 T3:Sabjar	oats	01	The results revealed that in case of variety Kent there is increase of 34.0 % in yield (T3) as compared to the farmers practice Sabjar, whereas there is an increase of 23.0 % in total yield (T2) as compared to farmer practice	- 1:1.82 1: 1.99

6.6 KVK Reasi

6.6.1 Technologies transferred to the farmers' field

S. No.	Name of the technology	Crop	Benefit of technical intervention to the farmers
1	Introduction of single cross commercial maize hybrids, Integrated Nutrient Management, weed management, Common insect / pests and disease management.	Maize	The technology increased the yield as compared to local check
2	Promotion of high yielding variety, seed treatment, weed management, diseases including termite management. Seed production of new varieties.	Wheat	The technology increased the yield as compared to local check
3	Hybrid varieties of Paddy and Integrated disease and pest management.	Paddy	The technology increased the yield as compared to local check
4	Promotion of spices in the district, introduction of new varieties, standardization of planting dates, common diseases in spices, nutrient management etc.	Turmeric	Sugandha variety of Turmeric gave better results as compared to local check
5	Promotion of hybrid varieties of marigold, integrated nutrient management.	Marigold	It gave better yield and improved the economic status of the farmers.
6	Promotion of new varieties, Increasing area under fodder crops.	Oats (Kent)	The Kent variety gave better yield as compared to local varieties.
7	Promotion of hybrids, introduction of new varieties. Healthy nursery raising of vegetable crops. Integrated insect-pest and diseases management.	Vegetables.	Hybrid varieties of vegetables gave better yield and improved the economic condition of the farmers.

8	Introduction of Urea Mineral Molasses feed block in these fodder scarcity areas in order to increase production potential and improve overall health status of livestock	Animal husbandry	Increase milk production and improvement overall health status of animals
9	Introduction high egg laying varieties like Vanraja, Chandigarh brown, RIR .	Animal husbandry	Increase household income by round the year availability of eggs.
9	Introduction of improved varieties, insect pest and disease management and integrated nutrient management	Oilseeds, Lentil, Chickpea and black gram	Increase in yield of pulses as compared to local varieties.
10	Promotion of mushroom cultivation, growing of more species for year round cultivation.	Mushroom	Increase in income.

6.6.2 On Farm Trials

S. No	Name of the technology tested	Crop	No. of trials	Feedback	Economic benefit
1.	Treatment of Mastitis	Livestock	01	Use of intra mammary antibiotic found the best for complete cure of Teat	Milk yield was increased
2.	Urea mineral molasses blocks and mineral mixture supplementation.	Livestock	02	Farmers were pleased after seeing the results of UMMBs use.	Milk yield was increased and the animal health was improved.
3.	Productivity estimation of Turmeric under bamboo based Agroforestry system	Turmeric	02	Farmers were satisfied with the results, as they were not using the land under bamboo canopy	1:3.89
4.	Yield of wheat varieties under mango based Agro forestry System.	Wheat PBW175	01	PBW 175 performed better in comparison to local variety used by the farmers under Agroforestry system.	1:2.04
5.	Integrated Nutrient management in wheat	Wheat	02	Farmers were satisfied after seeing the results of OFT.	1:3.40
6.	Management of loose smut in wheat	Wheat	04	Farmers were satisfied after seeing the results of OFT and they showed ken interest in using the raxil as a fungicide	1:3.25

6.7 KVK, Kathua

6.7.1 Technologies transferred to the farmers field

S. No.	Name of the technology	Crop	Benefit of technical intervention to the farmers
1.	Popularization of New high yielding varieties/hybrids of cereals, pulses and oilseed crops	Maize, wheat, Rice, Mustard, Gobhi Sarson, Urd bean	Technical intervention enabled farmers to overcome various location specific production constraints and resulted in increased production.

2.	Popularization of Pusa-1121 in irrigated areas of the district.	Rice	Farmers were benefited by increased income/profit per unit area
3.	Nitrogen Management through Leaf Colour Chart (LCC)	Rice	Saved 40-50% nitrogen
4.	Management of Yellow Rust	Wheat	Managed disease and yield incr ased by 25%
5.	Promoting Mushroom as source of livelihood	Mushroom	Diversification and increased farm income

6.7.2 On Farm Trials

S. No	Name of the technology tested	Crop	No. of trials	Feedback	Economic benefit
1.	Effect of different sowing dates on Broccoli	Broccoli	04		
	T1: Farmers practice (November)			Planting in 2nd week of Oct. resulted highest yield of 132 q/ha and showed 43% increase in yield over farmers practice	3.4
	T2: 2nd week of October				5.4
	T3:4th week of October				4.8
2	Effect of nutrient doses on the yield of marigold	Marigold	04	Application of 120:100:100 (NPK) resulted 25.7% increase in yield over farmers practice	
	1. Farmer Practice				3.9
	2. 120:100:100				4.8
	3. 100:80:80				4.7
3	Management of fruit borer in tomato	Tomato	04	Application of metasystox @0.2%/lt. of water resulted in 63.13% reduction of fruit damage and 37.20% increase in yield of tomato	
	1.Farmers Practice (Chlorpyriphos @0.2%)				7.16
	2.Metasystox@0.2%				9.5
	3. Quinalphos @0.2%				9.01
4	Evaluation of new varieties of wheat under rainfed areas of Kathua district	Wheat	04	Performance of PBW-527 was better and resulted 45.26% increase in yield over farmers practice Raj-3077	
	1 Farmers Practice (Raj-3077)				1.40
	2 HS-490				1.49
	3 PBW-527				1.56
5	Weed management in DSR Rice	Rice	04	Application of Oxydiazon @ 750 gm a.i per ha. +Bispyribac Sodium @ 25 ml a.i per ha resulted in 33.0 % increase in grain yield of paddy over farmers practice	
	1.Pendimethalin @ 1500 ml *a.i* / ha				6.2
	2.Oxydiazon @ 750 gm a.i / ha.				6.3
	3.T2 +Bispyribac Sodium @ 25 ml. a.i / ha				8.3

6	Management of purple blotch in onion 1.No spray (Farmers Practice) 2.Mancozeb @0.25% 3.Ridomil MZ @ 0.25%	Onion	04	Application of Ridomil MZ @ 0.25% resulted in reduction of purple blotch disease to an extent of 82.97% and increase the yield to the tune of 64.28% over farmers practice	 3.6 5.6 5.8

6.8 KVK, Poonch

6.8.1 Technologies transferred to the farmers' field

S.No	Name of the technology	Crop	Benefit of technical intervention to the farmers
1.	Introduction of high yielding varieties along with of respective crops along with full scientific package of practices	Maize, Wheat, Paddy, Mustard, Gobhi Sarson,	The technology given by KVK has enabled farmers to increase the productivity of these crops by managing various problems related to crop production.
2.	Integrated Pest Management in Rajmash	Rajmash	Managed the insect pest and disease problem thereby increasing the yield of Rajmash, an important cash crop of intermediate and temperate region of the district.
3.	Introduction of Oats as fodder crop	Fodder	Tackled the scarcity of fodder in the area, especially mono-cropped area, besides replacing wheat as fodder crop.
4.	Health Management of Domestic animals.	Cattle, Goat, Sheep & poultry	Trainings and Vet. Camps led to mass awareness among farmers regarding nutrition of milch animals and general health management of domestic animals thereby increasing the production of milk, meat and egg.

6.8.2 On Farm Trials

S.No	Name of the technology tested	Crop	No. of trials	Feedback	Economic benefit
1	**Evaluation of Paddy Varieties** T1: Farmers Practice K343 T2: Pusa Hybrid 6129	Paddy	02	Paddy-6129 gave 51.87% higher yield in comparison to farmers practice K343. Farmers are willing to adopt this variety on large scale due to higher yield and resistance against blast.	1:3
2	Effect of seed rate on the productivity of high yielding varieties of wheat.	Wheat	04	-	-

3	Management of San Jose Scale in Apple	Apple	02	Maximum yield per plant (56kg) was recorded in the plants sprayed with Horticultural oil+ metasystox followed by treatment of horticultural oil + chlorpyriphos (49 kgs). Since farmers were not using any chemical and were suffering from loss of fruit, they were very enthusiastic in using the chemical subject to availability in the market.	
	T1: Farmers Practice (No chemical)				-
	T2 : Spray of Horti. Oil +Metasystox				7.0
	T3: Spray of Horti. Oil +Chloropyriphos				4.3
4	Insect Pest management in Cucumber	Cucumber	02	Results of the trials conducted at farmers' field at three different locations revealed that incidence of insect pests was least when crop was sprayed with Carbaryl 11 %). It was followed by Cypermethrin (19%), whereas crop sprayed with Chlorpyriphos showed maximum (32%) insect pest incidence	
	T1 :Farmer Practice (Chlorpyriphos)				1: 3.03
	T2: Carbaryl (Sevin)				1: 4.82
	T3: Cypermethrin				1: 4.21

6.9 KVK, Doda

6.9.1 Technologies transferred to the farmers' field

S. No.	Name of the technology	Crop	Benefit of technical intervention to the farmers
1	Bio-fertilizer	Pea	Yield Enhancement
2	Insect pest and disease management	Cauliflower	Control of Insects , Pests and Diseases
3	Disease management	Chilli	Disease control
4	Insect pest and disease management	Brinjal	Control of Insects , Pests and Diseases
5	Insect pest and disease management	Tomato	Control of Insects , Pests and Diseases
6	Variety, seed treatment and fertilizer	Maize	Disease control and Yield Enhancement
7	Insect pest and disease management	Paddy	Control of Insects , Pests and Diseases
8	Variety, seed treatment, Bio-agent	Urd bean	Disease control and Yield Enhancement
9	Insect pest and disease management	Rajmash	Control of Insects, Pests and Diseases
10	Variety, Insect pest and disease management	Mustard	Control of Insects, Pests and Diseases and yield enhancement
11	Variety, Insect pest and disease management	Rapeseed	Control of Insects , Pests and Diseases and yield enhancement

12	Variety, Urea	Oats	Yield enhancement
13	Insect pest and disease management	Apple	Control of Insects, Pests and Diseases
14	Insect pest and disease management	Walnut	Control of Insects, Pests and Diseases
15	Variety	Broccoli	Better yield
16	Production Technology	Strawberry	Awareness regarding low volume high value crop
17	Production Technology	Marigold	Awareness regarding off season flower cultivation
18	Production Technology	Kiwi	Awareness regarding low volume high value crop
19	Queen rearing, Management in beekeeping	Beekeeping	Yield Enhancement of honey
20	Cultivation practice, Spawn	Dingri	Crop Diversification
21	Management practices and worms	Vermicompost	Worm distributed to Farmer to start vermin compost unit

6.9.2 On Farm Trials

S. No	Name of the technology tested	Crop	No. of trials	Feedback	Economic benefit
1	Yield enhancement of vegetable Pea with Bio-fertilizer	Vegetable Pea	06	Farmers were satisfied with seed treatment with rhizobium. They desire the timely availability of rhizobium	1:3.59
2	Yield enhancement of Urd bean by seed treatment	Urd Bean	06	Farmers were satisfied with seed treatment with carbendazime before sowing of Urd bean along with technology used for yield enhancement.	1:1.50
3	Assessment of sowing date of Broccoli in temperate area	Broccoli	07	Farmers are ready to grow Broccoli and satisfied with the performance.	1:2.42

6.10 Front Line Demonstrations

6.10.1 KVK Jammu

S. No	Name of the technology demonstration	Crop	Area (ha)	No. of farmers	Benefits of demonstration
Kharif 2013					
1.	INM	Maize ISOPOM	8.0	20	63% increase in productivity with B:C ratio 1.8
2	INM	Paddy	4.0	10	21% increase in productivity with B:C ratio of 3.2
3	Variety , Line sowing, chemical weed control	Mash	2.50	18	32% increase in productivity with B:C ratio of 2.5

4	INM	Maize	4.0	9	63% increase and BC ratio 1.8
5	Variety , Line sowing and use of sulphur	Til	0.70	8	36 % increase in productivity with B:C ratio of 3.3
6	Line sowing and INM	Toria	2.0	10	51 % increase in productivity with B:C ratio of 1.9
Rabi 2013-14					
6	INM	Wheat	12.0	45	20% increase, B:C ratio of 2.3
7	INM	Gobi Sarson	4.0	20	40% increase, B:C ratio of 2.7
8	Vegetables - ICM	Onion	2	21	34% increase, B:C ratio of 4.0
		Brinjal	1.6	11	25% increase, B:C ratio of 3.3
		Chilli	2	21	54% increase, B:C ratio of 3.1
		Tomato	1.6	11	41% increase, B:C ratio of 4.1
		Cabbage	1	10	38% increase in productivity and BC ratio 2.8
		Cauliflower	2	12	35% increase in productivity and BC ratio 2.8
		Knol khol	1	8	21% increase in productivity and BC ratio 3.5
		Turnip	1	8	21% increase in productivity and BC ratio 3.7
9	Variety	Gram	4.0	20	58% increase, B:C ratio of 2.48
10	INM	Strawberry	0.75	8	44% increase, B:C ratio of 3.8
11	Composite fish culture	Fish feed	1.5	15	-
12	Variety , seed treatment	Berseem	2.0	15	

6.10.2 KVK, Rajouri

S.No	Name of the technology demonstration	Crop	Area (ha)	No. of farmers	Benefits of demonstration
Rabi 2011-12					
1.	Varietal Evaluation	Wheat	10.0	49	46.3 % increase in productivity with B:C ratio of 1:1.69
2.	Crop management	Mustrad	3.0	15	36.7 % increase in productivity with B:C ratio of 1:1.71
3.	Varietal Evaluation	Gobi-Sarson	3.0	18	39.2 % increase in productivity with B:C ratio of 1:1.74
Kharif 2013					
1.	Demonstration new single cross Maize hybrids	Pro-agro 4794	10.0	84	29.7 % increase in productivity in Pro-agro 4794 with B:C ratio of 1:1.53
		Bio-seed 9621			9.3 % increase in productivity in bio-seed 9621 with B:C ratio of 1:1.33
		Double Dekalb			32.0 % increase in productivity in Double Daklb with B:C ratio of 1:1.58

2.	High yielding variety along with full scientific package of practices	Paddy	4.12	18	35.8 % increase in productivity in Double Dekalb with B:C ratio of 1:1.94
3.	Demonstration of improved variety of urd-bean	Mash	3.0	19	34.8 % increase in productivity in Double Daklb with B:C ratio of 1:1.78

6.10.3 KVK, Reasi

S. No	Name of the technology demonstration	Crop	Area (ha)	No. of farmers	Benefits of demonstration
1	High Yielding variety of Til	Til (PB Til 1)	2	17	Demonstrated variety yield was more as compared to local check BC ratio was 3.062
2	High Yielding variety of Toria	Toria (RSPT-01)	1.5	20	Increase in yield and BC ratio was1.81.
3	High Yielding variety of Mustard	Mustard (RSPR-1)	4	36	Increase in yield and BC ratio was 2.45.
4	High Yielding variety of Wheat	Wheat	6	40	Increase in yield
5	High Yielding variety of Black Gram	Black Gram (Uttara)	5	42	Increase in yield and BC ratio was 3.062
6	High Yielding variety of Lentil	Lentil (L-4147)	3.8	44	Results of L-4147 were much better than local check
7	High Yielding variety of Chickpea	Pigeon pea (GNG-469)	2.0	29	Results of GNG-469 were much better than local check.
8	Single cross hybrid varieties of Maize	Maize	8	80	Farmers attained BC ratio of 3.062
9	High Yielding variety of Potato	Potato (Kufri Sinduri, K. Badshah, Pukhraj.	0.20	80	Demonstrated varieties showed better results than local varieties.
10	High Yielding variety of Marigold	Marigold (Kesar)	2	50	Farmers attained BC ratio of 11.03
11	Hybrid var. of vegetables	vegetables	0.2	80	Farmers attained BC ratio of 5.0
12	High Yielding variety of Spices	Turmeric (Sugandha)	01	40	Farmers attained BC ratio of 2.72
13	High Yielding variety of fodder	Oats(kent)	2	28	Kent variety gave better results.
14	Introduction of High egg laying poultry varieties	Chicks (vanraja, Chabro)	75 house holds	750	Demonstrated varieties showed better results than local varieties.

6.10.4 KVK, Kathua

S. No	Name of the technology demonstration	Crop	Area (ha)	No. of farmers	Benefits of demonstration
Kharif 2013					
1	Production Technology	Paddy	37.0	49	47.4 % increase in yield with B:C ratio of 6.43
2	Production Technology	Maize	14.0	58	17.9 % increase in yield with B:C ratio of 3.31
3	Production Technology	Mash	5.0	21	25.9 % increase in yield with B:C ratio of 2.33
4	Production Technology	Okra	1.0	14	35.6 % increase in yield with B:C ratio of 4.28
5	Production Technology	Lentil	5.0	50	46.0 % increase in yield with B:C ratio of 3.88
Rabi 2013-14					
1	Production Technology	Wheat	41.0	89	34.8 % increase in yield with B:C ratio of 3.78
2	Production Technology	Toria	5.8	29	59.5 % increase in yield with B:C ratio of 1.68
3	Production Technology	Gobhi sarson	11.0	42	32.4 % increase in yield with B:C ratio of 2.45
4	Production Technology	Gram	4.0	27	38.0 % increase in yield with B:C ratio of 2.58

6.10.5 KVK, Poonch

S.No	Name of the technology demonstration	Crop	Area (ha)	No. of farmers	Benefits of demonstration
Kharif 2013					
1 2	Sowing of Hybrid Balanced Dose of fertilizers	Maize	10.0	38	37.65% increase in productivity with B:C ratio of 1:2.69
3	New Improved Variety Balanced Dose of Fertilizer	Paddy	6.0	16	26.24 % increase in productivity with B:C ratio of 1:4.18
4	Integrated Pest management	Rajmash	5.0	15	40.93 % increase in productivity
Rabi 2013-14					
1	High yielding variety along with full scientific package of practices	Wheat	10.0	35	-
2	High yielding variety along with full scientific package of practices	Mustard	1.0	08	-
3	High yielding variety along with full scientific package of practices	Gobi Sarson	1.0	08	-
4	Introduction of Fodder Crop	Oats	2.0	09	

/ Replacement of wheat with oats as fodder				
Introduction of Strawberry & its scientific cultivation	Strawberry	0.5	09	

6.10.6 KVK, Doda

S. No	Name of the technology demonstration	Crop	Area (ha)	No. of farmers	Benefits of demonstration
Kharif 2013					
1	Variety	Mash	3.0	15	Yield Enhancement of pulses
2	Variety	Maize	8.0	36	Yield Enhancement of cereal
Rabi 2013-14					
1	Variety	Oats	8.0	14	Yield Enhancement of Fodder
2	Variety	Mustard	3.0	40	Yield Enhancement of oilseeds

Consultancy Service provided

	S. No.	Type of consultancy	No. of camps organized	Place/ Organization
KVK Jammu	1	Kissan Melas	4	*Bishnah / Under ATMA by Deptt of Agriculture. *Pandorian Bishnah/ Kisan Advisory Board. *Vijaypur/Samba under ATMA by Deptt of Agriculture *Nud/Samba under ATMA by Deptt of Agriculture at Udhampur distt. under T&V Different places
	2	Officers Workshops	1	
	3	Scientist farmer interaction for Agri. Department	11	
KVK Rajouri	1	Field Day	07	199
	2	Kisan Mela	02	800
	3	Kisan Ghosthi	03	106
	4	Exhibition	06	1200
	5	Film Show	10	200
	6	Method Demonstrations	08	169
	7	Farmers Seminar	01	77
	8	Workshop	08	110
	9	Group meetings	02	68
	10	Scientific visit to farmers field	138	138
	11	Farmers visit to KVK	185	185
	12	Diagnostic visits	08	66
	13	Exposure visits	01	16
	14	Animal Health Camp	02	82
	15	Seed treatment campaigns	01	26

KVK Poonch	1	Kissan Melas	6 Nos.	Deptt. of Agriculture & Deptt. Of Horticulture
	2	Officers Workshops	02	
	3	Scientist farmer interaction for Department of Agriculture & Horticulture	2 Nos	KVK
KVK Reasi	1	Technical Guidance under ATMA	3	Arnas,Dhramari
	2	Entrepreneurship development in horticulture	1	Reasi
	3	Exposure Visit and exhibited the technologies.	1	Nagpur
	4	Farmers Club	2	KVKReasi,Mansoo
	5	Entrepreneurship development in dairy farming.	2	KVK Reasi
	6	Scientific guidelines to floriculture farmers	1	Agar ballian, Reasi
	7	Seed production Technology	2	Kasi, Patta,KVK,Reasi.

c) Consultancy services provided to Department of Agriculture, Nehru Yuva Kendra Sangthan, Indian Army, Forest department, Department of Sheep Husbandry, Department of Animal Husbandry and NGOs etc on various aspects from time to time.

Name of KVK	**Department**	**Type of consultancy**	**Place/ Organization**
Jammu	Nehru Yuva Kendra Sangthan	Training on Entrepreneurship development amongst youth on 26/03/2014	KVK Jammu
Rajouri	Department of Agriculture Department of Horticulture Department of Animal Husbandry Department of Sheep Husbandry Department of Floriculture Department of Forest Department of Fisheries	• Technical Support • Consultancy • Resource personnel, • Agro advisory • Monthly Messages • Joint Diagnostic Visits	
	NABARD	Resource personnel	
	J&K Bank RSETI	Resource personnel	
	Nehru Yuva Kendra	Technical Support Consultancy Resource personnel,	
	Indian Army	Consultancy Resource personnel,	

	Farmers Training Centre	Resource personnel	
	District Institute of Education and Trainings	Resource personnel	
	Non Governmental Organizations	Consultancy	
	Self Help Groups	Consultancy	
Poonch	Department of Agriculture	Diagnostic Visits, Scientist-Farmer Interactions & Resource Persons in various camps under ATMA	Poonch
	Department of Horticulture	Diagnostic Visits, Scientist-Farmer Interactions & Resource Persons in various camps under ATMA	Poonch
	Department of Floriculture	Resource Persons in Training to "Raising & protection of Floricultural Crops in Poonch" under HTM	Poonch
	Indian Army	Training to soldiers on "Mushroom Cultivation" and also established a Mushroom Unit.	Doongas, Poonch
Reasi	Deptt. of Agriculture Reasi	Technical guidance under ATMA	Arnas
	Deptt. of Horticulture Reasi	Entrepreneurship development in horticulture among rural youths	Reasi
	Nehru Yuva Kendra, Reasi	Exposure Visit and exhibited the technologies.	Nagpur
	NABARD	Farmers Club	KVKReasi,Mansoo
	Deptt. of Animal Husbandry	Entrepreneurship development in dairy farming.	KVK Reasi
	Deptt of Floriculture	Scientific guidelines	Agar ballian, Reasi
	Mega Seed Proj.,SKUAST-Jammu	Seed production Technology	Kasi, Patta,KVK,Reasi.
Kathua	Department of Agriculture, Kathua	Identifying needs and field problems, training of AEO's, JAA's and SMS. Monthly Workshops and diagnostic visits	Kathua
	Department of Horticulture, Kathua	Formulating training and demonstrations programmes on pruning & training of fruit plants	Kathua
	Department of Animal Husbandry	Participation in various programmes of livestock improvement and organization of clinical camps	Kathua

Department of Sheep husbandry	Collaboration for formulation of action plan and conducting of training programmes	Kathua
NABARD, Kathua	Collaboration on formation of Farmers Club, for formulation of action plan and conducting of training programme	Kathua
RSETI, Kathua	Collaborating on skill development programmes for rural youth	Kathua
District Rural Development Agency	Formulation of training programmes for rural youths	Kathua
Nehru Yuva Kendra	Collaboration in various capacity building training programmes for rural youths	Kathua
Punjab Agri. University, Ludhiana	Procurement of the seed of new varieties of various crops along with package of practices	Ludhiana
Directorate of Wheat Research, Karnal	Procurement of seed and technical assistance regarding wheat crops	Karnal
Indian Agricultural Research Institute (IARI)	NEP project; Post office Linkage	New Delhi
Division of Plant Breeding & Genetics, SKUAST-Jammu	Procurement of seed of Paddy &Wheat	Jammu
Faculty of Veterinary Sciences & Animal Husbandry, SKUAST-Jammu	Technical guidance & skill, organization of veterinary clinical camps	Jammu

Farmers Educative Events

	KVK Jammu		KVK Kathua		KVK Reasi		KVK Doda		KVK Rajouri		KVK Poonch	
	N	**T**	**N**	**T**	**N**	**T**	**N**	**T**	**N**	**T**	**N**	**T**
Campaigns/ Clinical camps	2	165	2	69	1	35	-	-	03	108	2	68
Kissan Goshti	4	1500	2	122	3	88	2	133	3	106	2	51
Field Day	2	106	2	123	9	368	5	128	7	199	4	74
Exposure visit	2	83	1	37			1	2	1	16	1	20

Technology week	1	18	-	-	1	200	-	-	-	-	1	56
Kisan Mela (Participated)	4	1500	3	1000	-	-	-	-	2	800	4	-
Awareness camp	3	238	3	109		1106			10	405	4	65
Important days	-	-	-	-	1	89	-	-	01	79	4	53
Film Shows	16	283	3	75	5	150			10	200	4	58
Radio talks	2	-	12	-	-	-	-	-	-	-	17	
Officers workshop	3	170	10	60			9	102	8	110	2	20
Farmers Scientist interaction	8	404	3	120	-	-	2	135	2	200	5	64
Exhibition / Farmer fair	4	1500	3	1000	3	500	-	-	6	1200	5	115
Method Demonstrations	1	29	59	123	-	-	2	12	08	169	3	52

5.1 Inaugral Ceremonies

School of Biotechnology, Health Centre, Examination, Sports Facility

Sh. N.N.Vohra, Hon'ble Chancellor and Governor of J&K inaugurated School of Biotechnology/Health Centre Examination Hall and Sports Facility at Main Campus Chatha in presence of Hon'ble Vice-Chancellor and other dignitaries on 28.02.2014.



Hon'ble Chancellor inaugurating University Buildings at Chatha

5.2 Works Completed during the year 2013-14

Station:- Main Campus, Chatha

1 Construction of Health Centre (GF) including associated sanitary and internal electrification.

2 Construction of 06 Sets Residential Quarter for Professors / Associate Professors (G+2) including associated Sanitary and Internal electrification works

3 Providing and laying of Sewerage System & Sewerage Treatment Plant

4 Construction of School of Biotechnology.

5 Construction of Sports facility.

6 Establishment of Acqua culture in Sub-tropical zone.

7 Strengthening of Research Farm by way of internal service road and allied works .

8 Construction of Examination Hall (Single storey)

9 Construction of Dairy Barn for calf (Farming Unit)

10 Construction of Dairy Barn for 50 Miltching cattle shed (Farming Unit)

11 Construction of Office cum Miltching parlor at (Farming Unit)

12 Construction of Box Type Culvert

13 Construction of Internal Service Roads in Agriculture Research Farm near IFS Centre.

14 Construction of Main Drainage Channel (Farming Unit)

15 Construction of Farm Roads

16 Construction of Gymnasium for students under sports facility

Station:-FVSc & AH Campus, R.S. Pura

1 Construction of Instructional Farms .

2 Construction of Road by way of WBM laying and premixing from Main Rotary to Library Building and Boys Hostel

Station:-RHRS, Bhaderwah

1 Establishment of Acqua culturein temperate zone

Station:- RRSS, Raya

1 Strengthening of existing building by way of additional accommodation at RRSS for Sub-Tropical Fruits.

5.3 Works in progress during 2013-14

Station: Main Campus Chatha

1. Construction of Examination Hall Complex (G+1) including associated sanitary and internal electrification
2. Construction of Lecture Theatre (04 No.) (G+1) including associated sanitary and internal electrification
3. Construction of Health Centre (GF) including associated sanitary and internal electrification.
4. Construction of Directorate of Extension Education Building (G+1) including associated sanitary and internal electrification
5. Construction of Estates Division Building (G+1) including associated sanitary and internal electrification
6. Construction of International Guest House (G+1) including associated sanitary and internal electrification at SKUAST-J, Main Campus, Chatha
7. Construction of Vice-Chancellor's Residence (Duplex) including associated sanitary and internal electrification
8. Construction of Director's Residence (G+1) including associated sanitary and internal electrification
9. Construction of Residential Quarter for Asstt. Professors (G+2) including associated sanitary and internal electrification (10 sets)
10. Construction of Residential Quarter for Professors / Associate Professors (G+2) including associated sanitary and internal electrification (06 sets)
11. Construction of Residential Quarter Non-Teaching Staff (G+1) (AR/ AC or equivalent) including associated sanitary and internal electrification (08 sets)
12. Construction of Sewerage system and water supply line in the proposed residential complex
13. Construction of 06 Sets Residential Quarter for Professors / Associate Professors (G+2) including associated Sanitary and Internal electrification works
14. Providing and fixing of Chain Link Fencing to periphery of Agriculture Research Farm
15. Design and construction of RCC framed structure Over Head Tank of capacity 1,00000 gallons capacity with staging height of 15m at Residential Complex on Turn Key Basis
16. Sewerage System including Sewerage Treatment Plant
17. Providing and laying of Sewerage System & Sewerage Treatment Plant
18. Construction of 6.3 MVA, 33/11 Receiving station
19. Construction of class IV employees residential quarters (06 sets)
20. Construction of Office building for "Controller of Examinations" alongwith associated Sanitary fitting and internal electrification
21. Construction of Building for "School of Agribusiness Management (SABM)" along with associated Sanitary fitting and internal electrification
22. Construction of Shopping Complex and Post Office alongwith associated Sanitary fitting and internal electrification
23. Construction of Brick Masonry Compound wall around Girls Hostel
24. Construction of Lawn Tennis Court, Volleyball Court and Basketball Court
25. Construction of Office building for State Agriculture Management & Extension Training Institute (SAMETI) including Sanitary and Internal Electrical fittings.
26. Construction of "Auditorium" including associated sanitary and connected electrification.
27. Construction of Seed processing laboratory
28. Construction of School of Biotechnology.

29. Construction of Sports Complex.
30. Establishment of Acqua culture in Sub-tropical zone.
31. Strengthening of Research Farm by way of internal service road and allied works .
32 Construction of Examination Hall (Single storey)
33. Construction of Gymnasium for students under sports facility
34. Construction of Girls Hostel (1st & 2nd Floor).

Station:- FVSc & AH, R.S. Pura, Jammu

1. Construction of Postmortem Facility for Division of Vety. Pathology
2. Construction of Road by way of WBM laying and premixing from Main Rotary to Library Building and Boys Hostel
3. Construction of Lawn Tennis Court, Volley Ball Court and multipurpose ground
4. Construction of Instructional Farms at FVSc & AH Campus, R.S. Pura.

Station:- RRSS, Raya

1. Strengthening of existing building by way of additional accommodation at RRSS for Sub-Tropical Fruits.

Station:-Seed Production Farm, Chakroi, R.S. Pura, Jammu

1. Providing and fixing of Barbed wire fencing to Seed Production Farm
2. Development of Deep Drilling Tube Well No. 4 by way of Reverse Rotary method .

Station:- RHRS, Bhaderwah

1. Establishment of Acqua culture in temperate zone

5.4 New works proposed for the year 2014-15

Station:- Main Campus, Chatha

1 Internal finishes of under Construction Auditorium by way of Audio Video and Stage Lightening, Interiors including Acoustics treatment, Internal & External Electrification, Central HVAC System, Fire Fighting and other allied works.

2 Construction of New Boys' Hostel (Double Storeyed) 142 inmates.

3 Construction of Boys' Hostel (Double Storeyed) of capacity 200 inmates (Balance work).

4 Providing and fixing Fire Fighting Equipments in the Buildings at different Stations of SKUAST-Jammu.

5 Construction of Spine & Additions/Alterations to the existing Museum.

6 Upgradation of internal service roads by way of premixing to the newly constructed roads.

7 Construction of Brick masonry compound wall alongwith Main Gate & Guard Room work around Hon'ble Vice-Chancellor's Residence.

AWARDS AND RECOGNITIONS 6

Name of Teacher/Scientist	Name of Award/Distinction/ Recognition	Awarding Institution/Organization
Dr. Sajad Majeed Zargar	CREST overseas fellowship	DBT, New Delhi
Dr. R. K. Salgotra	Swedish International Development Agency Fellowship	Govt. of Sweden
Dr Sanjay Guleria,	DBT –Crest Fellowship Award 2013	DBT, GOI
Dr. Manoj Kumar	JAE Best Paper Award 2013 (Farm Machinery & Power Engg.)	Indian Society of Agricultural Engineers, New Delhi
Dr. Neelash Sharma	Gold Medal Award for excellent performance in PhD programme,	Jeju National University, Jeju, South Korea
	Graduate Student Award	World Association of Animal Production (WAAP) during 11th World Conference on Animal Production (11th WCAP), Beijing, China.
	Outstanding presentation award	Korean Society of Animal Sciences and Technology (KAST) during Annual Congress, Jeju, South Korea,
Dr. Anil Bhat	Conferred with Young Scientist Associate Award – 2014	Bioved Research Institute of Agriculture and Technology, Allahabad (BRIAT) and Integral University, Lucknow
Dr. Mahital Jamwal	Agricultural Research Organization Postdoctoral Fellowship	Ministry of Agriculture and Rural Development, The Volcani Center, Bet Dagan, Israel
Dr. Parshant Bakshi	Fellowship Award-2012	Hi-Tech Horticultural Society
Dr M A Bhat,	DBT CREST award	Department of Biotechnology, Government of India.
Dr. Brij Nandan	Scientist of the year 2014	Society for Scientific Development in Agriculture and Technology, Meerut,
Dr. Pratiksha Raghuwanshi , Dr. R.K.Sharma, Dr. Ankur Rastogi , Dr. A.K.Pathak, Dr Rajiv Singh and Dr. R.K.Bhardwaj	Best poster award	Indian Academy of Veterinary Nutrition and Animal Welfare
Dr. A.K.Pathak, Dr. R.K. Sharma and Dr. Ankur Rastogi	Best oral Presentation	Indian Academy of Veterinary Nutrition and Animal Welfare
Dr. Nishi Pande,	Best Research Paper Award	Indian Academy of Veterinary Nutrition and Animal Welfare
Dr. Arvind Kumar	Best Paper Presentation Award	Indian Academy of Veterinary Nutrition and Animal Welfare
Dr. Anil Kumar Pandey	Best Paper Presentation Award	Indian Society for Veterinary Medicine
Dr. Arvind Kumar	Best Paper Presentation and Poster award	Indian Society for Veterinary Medicine
Dr. Dhirendra Kumar	Best Poster Presentation	Indian Academy of Veterinary Nutrition and Animal Welfarte
Dr. Dibyendu Chakraborty	Appreciation Award	Indian Society for Veterinary Medicine
Dr Rajiv Singh, Dr. R.K.Bhardwaj and Dr. Dibyendu Chakraborty	Best Oral paper presentation awards	Indian Society for Veterinary Medicine

7.1 Major Programmes

International Symposium and XXXII Annual Convention of ISVM

International Symposium on "The 21st Century Road Map for Veterinary Practice, Education & Research in India & Developing Countries" and XXXII Annual Convention of Indian Society of Veterinary Medicine was organized by Division of Veterinary Medicine, Faculty of Veterinary Sciences & A.H., R.S. Pura, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu from February 14-16, 2014. It was inaugurated by Prof. M.P. Yadav, Ex-Director, Indian Veterinary Research Institute, Izatnagar & Ex-Vice Chancellor, Sardar Vallabbhai Patel University of Agricultural Sciences, Meerut. The Guests of Honor were Prof. B.B. Verma, Ex Dean, Bihar Veterinary College, Patna and Jenab H.U.Khan, Founder Vice-chancellor, SKUAST-Jammu. More than 300 scientists, University teachers and Veterinary Practioners across the country and abroad participated in this convention.

In the inaugural session, Prof. M.P. Yadav highlighted the problem of increase in number of infectious diseases affecting livestock which considerably reduce the income of poor farmers solely dependent on Animal Husbandry for sustenance. He stressed upon the use of molecular diagnostics such as Polymerase Chain Reaction (PCR) methods for early and timely detection of such infectious diseases. He also dwelt upon the theme of the symposium and hoped that such interaction of thoughts will usher the much needed knowledge and package of practices for clinical consultants, scientists, teachers, technologists and industry people.

Dr. B.B. Verma said that the animal productivity plays a pivotal role in the rural economy of the country and stressed upon the development of cost effective disease surveillance, monitoring and control methods to contain catastrophic threats like Bird-flu, FMD etc.

Jb. H.U.Khan stressed about the advancement of standards of clinical care in veterinary internal medicine through education, training, research and outreach.

Three days deliberations in the symposium lead to recommendations which will help in evolvement of much needed knowledge and package of practices for clinical consultants, veterinary practitioners, scientists, researchers, teachers, technologists and industry people for evolving a road map to be implemented for the benefit of animal health across India and developing countries.

XXXII ISVM Convention & International Symposium

!Some recommendations are as under

- Thrust is to be given to carry a collaborative effort of multiple disciplines to attain optimal health for people, animals and the environment as a one health concept
- An urgent need of upcoming biotechnological tools for addressing improvement in animal health was felt and be adopted on larger scale
- *Pasteurella multocida type A & D should be included in the vaccination of pigs.*

- *Biosafety laboratories atleast BSL –II level be established in veterinary colleges.*
- National coordinated programs on control & eradication of PPR and Foot Rot in sheep and goat are to be undertaken by sheep and goat rearing states of India and abroad.
- *In view of heavy economic losses caused by duck plague in duck farming, a need to develop better duck plague vaccine was felt. Better management practices are to be initiated for safe & wholesome meat production with minimum pesticide and antibiotic residues in poultry meat.*
- *Emphasis is to be made to setup separate wildlife department in each of the veterinary college.*
- Colic and laminitis should be taken as thrust areas in equine medicine research.
- In order to reduce the risk of mastitis, emphasis on udder health & teat morphological studies should be given a topmost priority in lactating dairy animals.
- Strengthening of Integrative medicinal studies with herbal, homeopathy and western system of medicine is need of the day.
- Emphasis should be given on scientific evaluation of ethno veterinary practices for cost effective treatment by academic institutions.

National Symposia and XIII Annual Conference of ISVPT

Division of Veterinary Pharmacology and Toxicology of Faculty of Veterinary Sciences & Animal Husbandry, SKUAST-Jammu organized the XIII Annual Conference of Indian Society of Veterinary Pharmacology & Toxicology (ISVPT) and National Symposia on "Biopharmaceuticals and Nanotechnology in Therapeutics & Development of Anti Cancer Drugs from Botanicals" from November 20-22, 2013 at R.S. Pura, Jammu. More than 200 Delegates from different universities, national institutes and corporate sector participated in the conference. The programme was conducted in twelve sessions including two symposia: Symposia I: Biopharmaceuticals and nanotechnology in therapeutics & Symposia II: Development of anticancer drugs from botanicals Twenty expert speakers drawn from national institutes like NDRI, Karnal, CSIR, Jammu, ICT, Pune, IVRI Izatnagar and other universities delivered their invited lectures in the symposia. A Souvenir/Compendium in the form of abstracts and a book of lead papers entitled "Biopharmaceuticals and Nano Technology in Therapeutics" were released by the Chief Guest, Dr A. Ahamad, Former Vice chancellor SKUAST (J&K).

National Symposia and XIII Annual Conference of ISVPT

The Challapa memorial oration was delivered on "Drug Discovery: The Road Through Genomics" by Dr. T.K. Dutta (Principal Scientist, Biotechnology, NDRI Karnal). His presentation was packed with facts and finesse. Four awards viz Intas Pharma Young Scientist Award, Anjaria Award, R. Natarajan Award and V.V.Ranade Young Scientist Award were given in different categories for the research work and best presentation

2nd National Conference on "Nutrition-Health interactions for Optimum Livestock production and Human welfare under Indian Academy of Veterinary Nutrition and Animal Welfare

Division of **Animal Nutrition** SKUAST-Jammu organized 2nd National Conferece **on 19h - 21st September, 2013 at R.S.Pura**

More than 150 Delegates from different universities, national institutes and corporate sector participated in the conference.

The recommendations are as under:

- There is great need of increasing awareness of farmers regarding health care, deworming, mineral supplementation and feeding of balanced ration of livestock. A series of steps are required for making livestock husbandry lucrative and fiscally viable enterprise, even for small scale units. Ration balancingis the new National policy

and can be the key for reducing production cost. Further, deworming should be done twice a year to prevent 10-15% economic losses due to ecto-endo parasitic infection. Continuous efforts must be made to increase availability of good quality semen and well trained artificial insemination personnel. Pregnancy diagnosis kits should be made available at field level.

- Farmers should be made aware and encouraged for fish farming in mixed farming/ commercial farming approach. This will enhance their income and provide livelihood security. There is need of Scientist - Farmers - Industry Interface to develop fish production as industry.
- Novel technologies like complete feed block should be adopted for livestock feeding for enhancing productivity and for supplying

2nd National Conference on "Nutrition-Health interactions for Optimum Livestock production

nutrients during calamities and natural disaster conditions. Concept of regional fodder bank may also be initiated to tackle such situations.

- There are several unexplored feed and feed supplements. Availability of such feeds are needed to be documented with respect to specific season and region of availability. To address problem of feed shortage, under-utilized feed resource like oak, black/red gram straw, maize cobs, paddy straw, olive cake, fruit and vegetable waste, khejri, tree leaves etc. should be included in feeding regimen of livestock. This will reduce the feeding cost and will improve profitability for farmers.
- Biotechnological tools are still under-utilized for improvinglivestock health and production and there is need of concentrated efforts to evaluate up and down regulations of all gene involved. The use of GM crops is essential to bridge the gap between the demand and supply of raw materials as well as crop residues for animal production. More and more scientific research should be under taken to study the effects of GM crops use for animal feeding for livestock production on merit basis.
- Quality control and quality assurance of feed is must to prevent contamination, adulteration and hazardous chemical residues in milk & meat products for better animal and human health. To encompass it effectively,a comprehensive'Feed Quality Control Act'should be framed to prevent feed associated productivity depressions and accidents and to fix liability of feed manufacturers.
- Good work has been initiated on documentation of plants for treatment of various ailments in animals among livestock pastoralist. The work needs great attention and validation of the documented plant resources, so that their active principles are identified and put to routine use thereby minimizing dependence on allopathic drugs.
- Methane emission from livestock enterprises is a concern all over the world. *In vitro* studies should be followed by *in vivo* studies to minimize the production of methane or its conversion to energy utilizable by the animals.
- Use of feed additives such as yeast, Direct-fed-microbials etc. should be promoted on large scale to improve nutrient utilization from roughage. Research work on development of novel synthetic nutraceuticals/ feed additives should be strengthened.

7.2 Other Programmes

S.No	Organizer	Programme sponsoring Institute	Title of the programme/ event	Date and Venue	No. of participants
4					
1	Division of Animal Nutrition		Recent Updates in Small Ruminants' Health and Production	19th -25th Feb, 2014 04th – 10th March, 2014 R.S.Pura	19
2	Division of Animal Genetics and Breeding	Sheep Husbandry Department	Training programme for Laboratory Technicians	24-28 March R.S.Pura	10
	Division of Livestock Products Technology	Department of Science & Technology	Training programme on Empowering rural women through development of value added livestock products	20-21 Feb, 2014 27-28 March, 2014	40
		Department of DBT	Training programme socioeconomic upliftment of rural women through development of value added meat products	24-25 Feb, 2014 24-25 March, 2014	40
3	Division of Veterinary and Animal Husbandry Extn. Education.		Farmers Awareneess Programm about importance of deworming and feeding fo minteral mixutre to their dairy animals	10th September 2013 Jeoda, R.S.Pura	
	Division of Veterinary Medicine	Division of Veterinary Medicine in collaboration with M. S. Anti-rabies Vaccine Laboratory, Department of Animal Husbandry, Jammu	Treatment and control of Mastitis and FMD	20-21st January, 27-28th January, 3-4th February, 10-11th February, 17-18th February, 2014	201
		NAIP	Animal health Camps	4-5th December, 2013 Kudgram and Jatti (Doda)	105
4	Divison of Agroforestry	Education Division, ICAR, New Delhi	Ensuring Livelihood Security through Agroforestry in an Era of Climate Change	13th November-03rd December, 2013 Main campus Chatha	20
5	Division of Sericulture	Department of Bio-Technology	Training on Chawki work rearing	30th August, 2013 Sial Sallan (Udhampur)	38
			Demonstration of leaf plucking, leaf preservation, chopping and feeding of quality mulberry	13th November, 2013 Salmeri ,Udhampur	62
6	Division of Fruit Sciences	HTM(MM– 1)	Maturity indices of aonla	29th November, 2013 Raya, Jammu	71
		HTM(MM– 1)	Maturity indices of aonla	21th November, 2013 Akhnoor, Jammu	89
		HTM(MM– 1)	Canopy management/after care of high density orchard of guava	27th December, 2013, Patti, Purmandal Samba	50
		HTM(MM– 1)	Canopy management/after care of high density orchard of mango	25th February, 2014, Flora, Nagbani Jammu.	50
		HTM(MM– 1)	Canopy management/after care of high density orchard of guava	03rd January, 2014, Gole, Talab Tillo, Jammu	55

7	Division of Vegetable Sciences & Floriculture		Training and demonstration on scientific cultivation of turmeric	31st July, 2013 Dangri , Rajouri and Siot, Sunderbani	22
			Vegetable cultivation and quality seed production of Winter Vegetables seed	3rd October, 2013 Mir Nagar, Bishnah	55
			Importance and scope of rare exotic vegetables crops	9th November, 2013 Dab Bhatia	52
			Off season nursery raising of hybrid vegetables	25th November, 2013 Barota, Camp, Vijaypur	40
			Scientific seed production technology of marigold	15th January, 2014 Marh, Jammu	50
			Ginger cultivation and post harvest management	22nd January, 2014 Pinjour, Kanachak	50
			Production technology of rare exotic vegetable crops	30th January, 2014 Jhiri, Mishriwalla	48
			Protected cultivation of vegetable crops	19th February, 2014 Chatha	33
			Importance of hybrid vegetables as an entrepreneurship for income generation of farmers	25th February, 2014 Chatha	30
8	**Division of Entomology**	National Bee Board, New Delhi	National training programme of 2 days each on Beekeeping	8- 9th January, 2014	
		National Bee Board, New Delhi	National training programme of 2 days each on Beekeeping	20-21st February, 2014	
		National Institute of Plant Health Management, Department of Agriculture & Cooperation, Ministry of Agriculture, Government of India, Rajendra Nagar, Hyderabad	National training programme on rodent pest management	03– 07th March 2014	
9	Division of Post Harvest Technology		Importance of tomato, preparation of puree/ketchup.	17th of June, 2013 Udheywalla	15
			Importance of Jamun, processing into squash and leather.	18th of July, 2013 Udheywalla	10
			Importance of tomato, preparation of puree/ketchup.	8th of October, 2013 Kathua	20
			Processing of lemon.	9th of October, 2013 Chadwal	54
			Nutritional value of Hill lemon and preparation of squash and pickle.	14th of November, 2013 Raya	33
			Importance of tomato & kinnow and preparation of tomato puree & kinnow RTS	19th of November, 2013 Udheywalla	14
			Importance of carrot, preparation of carrot preserve.	21st of November, 2013 (Akhnoor)	38
			Importance of mushrooms, preparation of mushroom pickle.	26th November, 2013 Hiranagar	42
			Importance of Aonla and	3rd February, 2014	40

			preparation of Aonla candy	Kathua	
10	Division of Economics and Statistics	NAIP-I	Data analysis using SAS	17-22nd March, 2014 Chatha	25
11	Agricultural Extension Education	In collaboration with BEDF &APEDA	Quality Improvement of Basmati Rice for Export	31th July,2013	
12	School of Biotechnology		Basic techniques in Molecular Biology	6-12th November, 2013	
13	Water Management Research Centre	SLNA- (Integrated Watershed Development Programme)	Integrated Watershed Development Programme	11 -12th January, 2014	27
		Command Area Development Department, Jammu	Role of pressurized irrigation system in the development of command areas	05-07th March, 2014	50
14	Farming System Research Centre	ATMA	Training Programme in Integrated Farming System Research	29th March, 2014 Chatha	30
15	Regional Agriculture Research Station, Rajouri	TSP for Tribal Farmers	One day's on farm training on seed production of Rabi crops (cereals, pulses, oil seeds and forages)	11th February 2014 Dhar Sakri, Rajouri	54
			One day's on farm training on Recent techniques in seed production and Safe storage of Seed Grains (cereals, pulses, oil seeds, forages and vegetables)	13th February 2014 Sewa Jagir, Rajouri	51
			Training and demonstration of Seed production Techniques at RARS, Rajouri (One day)	05th March 2014 RARS Rajouri	31
			Rainwater harvesting and its benefits to horticultural crops	Doongi	52
			Rainwater harvesting and its benefits to horticultural crops	Ladote	64
			Rainwater harvesting and its benefits to horticultural crops	Dhangri	37
			Rainwater harvesting and its benefits to horticultural crops	Nagrota	39
			Rainwater harvesting and its benefits to horticultural crops	RARS	63
16	Dry Land Research Sub Station, Dhiansar		Workshop on Pre-Rabi Season Workshop for farmers of domain area	7th November 2013 Dhiansar	65
			Training programme on Seed production of Rabi field crops	15-16th January 2014 Dhiansar	20
		NICRA-AICRPDA	Hybrid vegetable nursery raising and production'	25th February 2014 Chatha	15
17	Pulse Research Sub Station, Samba	Society for Scientific Development in Agriculture and Technology, Society for Extension Education and Management in Agriculture Jhansi (U.P) and Ch. Charan Singh University Meerut, U.P	Emerging Problems And Recent Advances In Applied Sciences : Basic To Molecular Approaches (EPRAAS-2014)	8-9th February 2014 Choudhary Charan Singh University, Meerut (U.P.)	

Training Programme on Beekeeping

Farm women being trained on value addition programme

Farmers attending one day training Programme at Main Campus Chatha

Training Programme on Live Stock Production Technologies

Students Village Visit cum Farmers Awareneess Programm at
Jeoda Fram, R. S Pura, Jammu to apprise the students about village situations and the condtions of dairy farmers at field level

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

8.

International

- Dr. S.M.Zargar, Assistant Professor (Biotechnology) attended a Post-doctoral research fellowship on "Proteomic approach for identification of mineral responsive proteins in Arabidopsis and Rice- Model Plants." at NAIST-Japan w.e.f March 21 to August 21, 2013.
- Dr. Neelash Sharma, Assistant Professor (Veterinary Medicine) attended:-
  - Workshop 2013-CABX (The Center for the Animal Bioreactor and Xenotransplantation) and International Symposium on "Stem Cell and Transgenic Animal" at Jeju, South Korea w.e.f December 7-10, 2013.
  - 11th World Conference on Animal Production at Beijing, China w.e.f October 15-20, 2013.
  - AGBC International Symposium on "The Global Genomic Approaches to Climate Change Impact on Livestock Production at Seoul National University, Seoul, South Korea w.e.f July11-12, 2013.
  - Annual Congress of Korean Society of Animal Sciences and Technology (KAST) at Jeju, South Korea w.e.f June 27-28, 2013.
- Dr. M. Altaf Bhat, Associate Professor (Veterinary Microbiology) attended Six month training on "Isolation of Diarrhoeagenic Escherichia coli by Colony Hybridization Method Using Hydrophobic Grid-Membrane Filters and Screening them for Human Colonizing Factors" at Osaka City University, Graduate School of Human Life Science, Japan.
- Dr. R. K. Salgotra, Associate Professor cum Coordinator, (Biotechnology) attended training programme at Sweden w.e.f September 23- October 11, 2013.
- Dr. Vikash Sharma, Associate Professor (Soil Science) attended one year Raman Fellowship of UGC funded by UGC at U.S.A w.e.f August 23,2013 onwards.
- Dr. Vikas Abrol, Assistant Professor (Soil Science) attended one year Postdoctoral Fellowship at Israel w.e.f October 31,2013 onwards.
- Dr. Peeyush Sharma, Assistant Professor (Soil Science) attended one year Postdoctoral Fellowship at Israel w.e.f October 31,2013 onwards.
- Dr. Sanjay Guleria, Associate Professor (Biochemistry and Plant Physiology) attended one year training programme on "Development of aptamers for polyphenolic natural products at USA w.e.f January 2014 onwards.

National

- Dr. Pratiksha Raghuwanshi, Assistant Professor (Vety. Physiology & Biochemistry) participated in 21 days Winter School on "Climate Change and abiotic stress management in Livestock: Basic concepts and amelioration measures" at National Institute of Animal Nutrition and Physiology, Adugodi, Bangalore w.e.f November 5-25, 2013.
- Dr. Jonali Devi, Associate Professor & Head (Vety. Physiology & Biochemistry) attended three days XXII Annual Conference of SAPI & National Symposium on "Physiological & Nutri-genomic interventions to augment food security and animal welfare" at Department of Veterinary Physiology, College of Veterinary Science & Animal Husbandry, UP Pt. Deen Dayal Upadhaya Pashu Chikitsa Vigyan Vishwavidyalya Evam Go-Anusandhan Sansathan at Mathura, UP w.e.f November 19-21, 2013.
- Dr. Sushil Sharma, Associate Professor (Agriculture Engineering) attended 48th Annual Convention of Indian Society of Agricultural Engineers (ISAE) and Symposium on Engineering Interventions in Conservation Agriculture at CTAE, MPUAT, Udaipur w.e.f February 21-23, 2014.
- Er. Hemant Dadhich, Assistant Professor (Agriculture Engineering) attended 48th Annual Convention of Indian Society of Agricultural Engineers (ISAE) and Symposium on Engineering Interventions in Conservation Agriculture at CTAE, MPUAT, Udaipur w.e.f February 21-23, 2014.

- Er. Sushmita M Dadhich, Assistant Professor (Agriculture Engineering) attended 48th Annual Convention of Indian Society of Agricultural Engineers (ISAE) and Symposium on Engineering Interventions in Conservation Agriculture at CTAE, MPUAT, Udaipur w.e.f February 21-23, 2014.
- Dr. J.P. Singh, Assistant Professor (Agriculture Engineering) attended National training on "Ground and Remote sensor based Precision farming on small field" at Department of Farm Machinery and Power Engineering, Punjab Agricultural University, Ludhiana, Punjab w.e.f March 18-28, 2014.
- Dr.Sandeep Chopra, Associate Professor (Vegetable Sciences & Floriculture) participated in 2 day seminar on Weed Management towards food security-issues and prospects held at Division of Agronomy w.e.f August 19-20, 2013.
- Dr. Satesh Kumar, Assistant Professor (Vegetable Sciences & Floriculture) participated in 4th Annual group meeting of All Indian Network Research Project on Onion and Garlic, held at BCKV, Kalyani (WB) w.e.f April 22-23, 2013.
- Dr. Manoj Kumar, Assistant Professor (Vegetable Sciences & Floriculture) Participated in XXXI Annual group meeting of All Indian Coordinated Research Project on Vegetables held at HPKVV, Palampur (HP) w.e.f May2-5, 2013.
- Dr. Sanjeev Kumar, Assistant Professor (Vegetable Sciences & Floriculture) :-
  - Participated in XXXI Annual group meeting of All Indian Coordinated Research Project on Vegetables held at HPKVV, Palampur (HP) w.e.f May2-5, 2013.
  - Attended short training course on "Basic Techniques in Molecular Biology" held at School of biotechnology, FoA, Chatha, SKUAST, Jammu w. e. f. November 6-12, 2013
  - Attended 101st Indian Science Congress held at University of Jammu w.e.f February 3-7, 2014.
- Dr. Nomita Laishram, Assistant Professor (Vegetable Sciences & Floriculture) attended one month training titled "Plant molecular breeding/genomic tools and techniques for crop improvement" at Institute of Bioresources and Sustainable development, DBT, GOI, Takyelpat, Imphal, Manipur w.e.f March 12–April 12, 2013.
- Dr. Arvinder Singh, Assistant Professor (Vegetable Sciences & Floriculture) attended one month training course on "Advanced training in molecular breeding tools and techniques for crop improvement" under DST-Special package programme at School of Agricultural Biotechnology, PAU, Ludhiana w.e.f April 1-30, 2013.
- Dr. S. K. Gupta, Professor & Head (Agroforestry) attended
  - A workshop "Agricultural Terminology and its Translation in Dogri" as an expert organized by Commission for Scientific and Technical Terminology, Ministry of HRD, GOI in Department of Dogri, University of Jammu w.e.f August 26-3, 2013.
  - 101st Indian Science Congress held at University of Jammu w.e.f February 3-7, 2014.
- Dr. Sandeep Sehgal, Assistant Professor (Agroforestry) attended "World Congress on Agroforestry" at New Delhi w.e.f February 10-14, 2014.
- Dr. N. S. Raina, Associate Professor (Agroforestry) Dr. L. M. Gupta, Associate Professor, Agroforestry attended 101st Indian Science Congress held at University of Jammu w.e.f February 3-7, 2014.
- Dr. L. M. Gupta, Associate Professor (Agroforestry), attended 101st Indian Science Congress held at University of Jammu w.e.f February 3-7, 2014.
- Dr. Kamal Sarma, Associate Professor & Head (Veterinary Anatomy) attended the XXVIII National Convention and Annual Symposium of Indian Association of Veterinary Anatomists held at Bikaner w.e.f January 8-10, 2014.
- Dr. Shalini Suri, Associate Professor (Veterinary Anatomy):-
  - participated in Training programme on Electron Microscopy organized at AIIMS, Ansari Nagar, New Delhi w.e.f October 17-31, 2013.
  - attended the XXVIII National Convention and Annual Symposium of Indian Association of Veterinary Anatomists held at Bikaner w.e.f January 8-10, 2014.

- Dr. Ashok Dangi, Assistant Professor (Veterinary Anatomy) attended XXVIII National Convention and Annual Symposium of Indian Association of Veterinary Anatomists held at Bikaner w.e.f January 8-10, 2014.
- Dr. Mohd. Rashid, Assistant Professor (Vety. Public Health & Epidimology) attended 21 days training on "Innovative approaches in processing and packaging of milk and milk products" at NDRI Karnal w.e.f July 19 – August 08, 2013.
- Dr. H.K.Sharma, Assistant Professor (Vety. Public Health & Epidimology) attended 6 days training on "Data Analysis using SAS" at NDRI Karnal w.e.f February 17-22, 2014.
- Dr. A.K.Bhat, Cordinator (SGMM) attended 101st Indian Science Congress held at University of Jammu w.e.f February 3-7, 2014.
- Dr. Upma Dutta, Assistant Professor (Microbiology Programme) attended 101st Indian Science Congress held at University of Jammu w.e.f February 3-7, 2014.
- Dr. Brajeshwar Singh, Assistant Professor (Microbiology Programme) attended 101st Indian Science Congress held at University of Jammu w.e.f February 3-7, 2014.
- Dr. Dileep Kachroo, Chief Scientist (Agronomy) attended 31st Group meeting of AICRP on Integrated Farming System at ICAR Research complex for NEH region, UMIAM, Meghyala w.e.f December 2-4, 2013.
- Dr. N. P. Thakur, Senior Scientist (Soils)
  - Attended 31st Group meeting of AICRP on Integrated Farming System at ICAR Research complex for NEH region, UMIAM, Meghyala w.e.f December 2-4, 2013
  - Seminar on developments in soil Science – 2013 at Central Arid Zone Research Institute, Jodhpur w.e.f October 23 - October 26, 2013
- Dr. A. K. Gupta, Senior Scientist (Agronomy) attended 31st Group meeting of AICRP on Integrated Farming System at ICAR Research complex for NEH region, UMIAM, Meghyala w.e.f December 2-4, 2013
- Dr. Vijay Khajuria, Junior Scientist (Agronomy) attended 10 days training programme on "Integrated Farming System Research for improved livelihood options for small and marginal farmers" at ICAR research complex for GOA, old Goa w.e.f June 4–13, 2013.
- Dr D P Abrol, Professor & Head (Entomology) attended 'National Symposium on Recent Advances in Beneficial Insects' organized jointly by Society for Advancement of Natural Resins and Gums (SANRAG) and Indian Institute of Natural Resins and Gums (IINRG, at Ranchi w.e.f November19-27, 2013
- Dr. R. K. Gupta, Associate Professor (Entomology) attended 'National Symposium on Recent Advances in Beneficial Insects' organized jointly by Society for Advancement of Natural Resins and Gums (SANRAG) and Indian Institute of Natural Resins and Gums (IINRG, Ranchi w.e.f November 19-27, 2013.
- 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 06, 2013 .
- Dr. Anju Bhat attended 101st Indian Science Congress at Jammu University w.e.f February 3-7, 2014.
- Dr. Amit Kumar Singh, Assistant Professor (Entomology) attended training programme on "New horizons in biotic stress management in rice under changing climatic scenario' at CRRI, Cuttack, Orissa w.e.f September 10-30, 2013
- Dr. Monika Sood, Assistant Professor (PHT) attended
  - training programme on "Recent advances on valorization of horticultural produce" at IARI, New Delhi w.e.f December 6-26, 2013
  - 101st Indian Science Congress at Jammu University w.e.f February 3-7, 2014.
- Dr. Julie D. Bandral, Assistant Professor (PHT) attended 101st Indian Science Congress at Jammu University w.e.f February 3-7, 2014
- Dr. Ankur Rastogi, Assistant Professor (Animal Nutrition) attended ICAR sponsored Winter School on "Climate change and abiotic stress management in livestock: Basic concepts and amelioration measures" at National Institute of Animal Nutrition & Physiology, Bengaluru w.e.f November 5-25, 2013
- Dr. Sanku Borkataki, Assistant Professor (Parasitology), attended

- training programme on "Advances in Statistical Genetics" at IASRI, New Delhi w.e.f July 2-22, 2013
- Summer School on "Advances in Diagnosis, Therapy and Prevention of Emerging and Re-emerging Diseases of Live-stock" at GADVASU, Ludhiana w.e.f October 8 -28, 2013.

♦ Dr. Rajesh Godara, Assistant Professor (Parasitology), attended

- Training programme on "Molecular Biological approaches for diagnosis and control of parasitic diseases" at IVRI, Izatnagar, Bareilly w.e.f December 2-22, 2013
- Summer School on "Advances in Diagnosis, Therapy and Prevention of Emerging and Re-emerging Diseases of Live-stock" at GADVASU, Ludhiana w.e.f October 8-28, 2013.

♦ Dr. Poonam Parihar, Assistant Professor (Extension Education) participated in "3rd International Conference on Extension Education strategies for sustainable Agricultural Development - A global Perspective" held at University of Agricultural Sciences, Bangalore w.e.f December 5-8, 2013.

♦ Dr. Rakesh Nanda, Professor & Head (Extension Education)

- Delivered a lecture on the topic "Research in Extension Education past present & future" at PAU Ludhiana on Apr 25, 2013.
- Delivered a lecture on "Recent Trend in Research Methodology in Extension Education" at PAU Ludhiana on Apr 26, 2013.

♦ Dr. Rajinder Peshin, Associate Professor (Extension Education)

- presented two research papers entitled "Economic Impact of Govt. Intervention on Procurement of Rice" and "Drivers of Wheat Productivity in sub Tropical Agro Climatic Zone of J&K state" in NABAD seminar on Jan 06, 2014.
- participated in the 101st Indian Science Congress held at Jammu University and oral presentation of research paper in Indian Science Congress "Environmental Impact of Vegetable IPM programme in Jammu region of J&K state" authored by Rakesh Sharma, Rajinder Peshin and V. Koul w.e.f February 3-7, 2014.

♦ Dr. A. K. Raina, Chief Scientist (Water Management) attended

- "Biennial Scientists' Meet of ACRIP on WM and AICRP on GWU" at NAU, Gujrat w.e.f July 29 – August 01, 2013.
- "Consortia Advisory Committee Meeting (NAIP)" at NASC complex, ICAR, New Delhi w.e.f October28- 29, 2013
- "One day RCC meet as member NIH –Jammu" at Regional Centre NIH, Satwari, Jammu on August. 27, 2013.

♦ Dr. A. Samanta, Senior Scientist, Soil Science (Water Management) attended

- training programme on "Remote sensing and GIS application in natural resource management" at NBSS and LUP, Nagpur w.e.f Jan 12- March 4, 2013.
- "Biennial Scientists' Meet of ACRIP on WM and AICRP on GWU" at NAU, Gujrat w.e.f July 29- August 1, 2013.

♦ Dr. Vijay Bharti, Junior Scientist, Agronomy (Water Management) attended

- Training on "Data Analysis for Water Management Research using SAS" at DWM, Bhubaneshwar w.e.f February 18-23, 2013.
- "Hydrological Data Entry and Processing using Surface Water Data Entry System Software" at Western Himalayan Regional Centre, NIH, Jammu w.e.f February 26-28, 2013.
- "Bio-drainage for reclamation of water-logging in high rainfall deltaic areas" at DWM, Bhubaneshwar w.e.f May 7-27, 2013.
- "Biennial Scientists' Meet of ACRIP on WM and AICRP on GWU" at NAU, Gujrat w.e.f July 29- August 1, 2013.

♦ Dr. Dhirendra Kumar, Assistant Professor (Animal Genetics & Breeding) attended National Training Programme "Advances in Statistical Genetics" at IASRI, New Delhi, w.e.f July 02-22, 2013.

♦ Dr. R. K. Taggar, Associate Professor (Animal Genetics & Breeding) attended National Symposium on "Harmonizing Phenomics and Genomics for Sustainable Management for Upliftment on Rural Masses" at NBAGR, Karnal w.e.f February 6-7, 2014.

♦ Dr. Dhirendra Kumar, Assistant Professor (Animal Genetics & Breeding) attended

National Conference on "Emerging Problems and Recent Advances in Applied Sciences: Basic to Molecular Approach (EPRAAS-2014)" at Ch. Charan Singh University, Meerut, w.e.f February 08-09, 2014.

- Dr. Dibyendu Chakraborty, Assistant Professor (Animal Genetics & Breeding) attended National training programme on "Advanced Breeding and Allied Technologies for Enhancing Livestock Productivity" at NDRI, Karnal w.e.f March 5-25, 2014.
- Dr. Brij Nandan ,Junior Scientist (Agronomy) attended
  - 21 days training programme on " Soil Health Assessment Techniques " in Division of Soil Science and Agricultural Chemistry at IARI, New Delhi w.e.f Jun 4-24, 2013.
  - 3 days Annual Workshop of AICRP on Chickpea at JKNVV, Jabalpur ,M.P w.e.f August 24-26, 2013
  - 3days National Conference on "Emerging Problems and Recent Advances in Applied Sciences: Basic To Molecular Approaches" at Ch. Charan Singh Agricultural University, Meerut, U.P w.e.f February 8-9,2014
- Dr. B S.Jamwal, Chief Scientist (Plant Breeding Genetics) attended 3 days Annual Workshop of AICRP on Chickpea at JKNVV, Jabalpur, M.P w.e.f August 24-26, 2013.
- Dr.S.K.Singh, Junior Scientist (Plant Pathology) attended training programme on "Ensuring Livelihood Security through Agroforestry in an Era of climate change at SKUAST-J w.e.f November13-December 3, 2013.
- Dr. S.P. Singh, Assistant Professor (Agril. Economics) attended two days' International Conference on "Impact of Technological Tools on Food Security under Global Warming Scenario" and present paper on "Increase in the Prices and its Impact on Fertiliser Use Efficiency in Jammu Division: an Economic analysis in the Light of Food Security Perspectives" at SHOBHIT University, Modipuram (U.P.) w.e.f May 11-12, 2013.
- Dr. Anil Bhat, Assistant Professor (Agril. Economics) attended
  - three days' 21stAnnual Conference of Agricultural Economics Research Association at SKUAST-K, Srinagar w.e.f Sep10-12, 2013.
  - two days' 16th Indian Agricultural Scientists & Farmers' Congress on Nanobiotechnological Approaches for Sustainable Agriculture & Rural Development at Integral University, Lucknow w.e.f February 22-23, 2014.
  - one day NABARD Seminar on Land Question: Agricultural Credit, Technology and Marketing Reforms for Inclusive Growth in Jammu and Kashmir at Hotel Asia, Jammu on Jan 06, 2014
- Dr. Manish Kumar Sharma, Associate Professor (Statistics) attended:
  - Two days' meeting cum workshop on Installation under NAIP project at NDRI, Karnal, Haryana w.e.f September 30 - October 01, 2013.
  - Three days' workshop of National Knowledge Network organized by MOC &IT at IISc, Bangalore, Karnataka w.e.f October 17-19, 2013.
  - Two days' meeting cum workshop on "Appraisal cum Data validation workshop" of NISAGENET at Orissa University of Agricultural Sciences & Technology, Bhubaneswar, Orissa w.e.f November 11-12, 2013.
  - 101st Indian Science Congress at University of Jammu, Jammu w.e.f February 03-07, 2014.
- Dr. S.E.H. Rizvi, Professor (Statistics) attended
  - Two days' XVII National Conference of Agricultural Research Statisticians at NDRI, Karnal (Haryana) w.e.f November 27-28, 2013.
  - 101st Indian Science Congress at University of Jammu, Jammu w.e.f February 03-07, 2014.
- Dr. Sudhakar Dwivedi, Associate Professor (Agril. Economics) attended one day NABARD Seminar on Land Question: Agricultural Credit, Technology and Marketing Reforms for Inclusive Growth in Jammu and Kashmir at Hotel Asia, Jammu on Jan 06, 2014
- Dr. Anil Kumar Pandey, Assistant Professor (VGO) attended
  - National Seminar and Annual Conference on "Sheep and Goat Biodiversity and Breeding Policies – Issues and Perspective" at

Department of ARGO, Krantisinh Nana Patil College of Veterinary Science, Shirwal, MAFSU and Indian Society for Sheep and Goat Production and Utilization w.e.f February 21–22, 2014.

- 10 days training course on "Artificial Insemination and Embryo Transfer Technology in Sheep" at CSWRI (ICAR), Avikanagar, Rajasthan w.e.f May 14–23, 2013.

- Dr. Nishi Pande, Assistant Professor (VGO) attended 21 days training cum refresher course on "Recent Trends in Optimisation of Livestock Health and Production with special emphasis to Hilly Areas" at FVSc. & A.H., SKUAST-J, R.S. Pura w.e.f November 29 - December 19, 2013.

- Dr. S. A. Kahndi, Assistant Professor (Vety. Animal Husbandry Ext. Edu) attended

- training programmed on "Recent trends in optimization of Livestock Health and production with special emphasis to hilly areas" at F.V.Sc & A.H , R S Pura, SKUAST-Jammu w.e.f November 29 - December 19 , 2013.

- 2nd National Conference of Indian Academy of Veterinary Nutrition and Animal Welfare (IAVNAW) on " Nutrition Health Interactions for Optimum Livestock Production and Animal Welfare" at Division of Animal Nutrition , SKUAST-Jammu, R.S Pura w.e.f September 19-21, 2013.

- 32nd Annual Convention of ISVM and International Symposium on " The 21st Century Road Map for Veterinary Practice, Education and Research in India and developing Countries" being organized by Division of Veterinary Medicine , SKUAST-Jammu, R.S Pura w.e.f February 14-16, 2014

- Dr. Pranav Kumar, Assistant Professor (Vety. Animal Husbandry Ext. Edu) attended

- training programmed on "Recent trends in optimization of Livestock Health and production with special emphasis to hilly areas" at F.V.Sc & A.H , R S Pura, SKUAST-Jammu w.e.f November 29 - December 19 , 2013.

- 2nd National Conference of Indian Academy of Veterinary Nutrition and Animal Welfare (IAVNAW) on " Nutrition Health Interactions for Optimum Livestock Production and Animal Welfare" at Division of Animal Nutrition , SKUAST-Jammu, R.S Pura w.e.f September 19-21, 2013.

- 32nd Annual Convention of ISVM and International Symposium on " The 21st Century Road Map for Veterinary Practice, Education and Research in India and developing Countries" being organized by Division of Veterinary Medicine , SKUAST-Jammu, R.S Pura w.e.f February 14-16, 2014

- Dr.B.C.Sharma,Professor (Agronomy) and Incharge (Agrometeorology) attended

- Working Group Meeting of AICRP on Agrometeorology at Assam Agricultural University, Jorhat w.e.f November 11-13, 2013.

- 7th Annual Review Meeting (ARM) of IAAS at Maharana Pratap University of Agriculture and Technology, Udaipur from November 20-22, 2013.

- Dr. Vikas Sharma Assistant Professor (Biochemistry) attended

- 28 Days UGC sponsored training programme on "General Orientation Course" at UGC Academic Staff College, University of Jammu, Jammu. w.e.f December 27,2013 – Jan 24, 2014.

- 101st Indian Science Congress at University of Jammu, Jammu, J&K w.e.f February 3-7, 2014.

- Dr. S. A. Mallick Professor (Biochemistry) attended and Chaired a session under New Biology in 101st Indian Science Congress at University of Jammu Jammu, J&K w.e.f February 3-7, 2014.

- Dr. Moni Gupta, Assistant Professor (Biochemistry) attended

- and delivered invited lecture on the topic "Herbicide resistant mechanism-a case study" in the " 2nd J&K Women Science Congress at GCW, Parade, Jammu w.e.f February 3-7 (2014), University of Jammu Jammu, J&K

- and presented Poster on the topic "Biochemical Characterization of Trichoderma isolates from Jammu " 101st Indian Science Congress at University of Jammu, Jammu, J&K w.e.f February 3-7 2014.

- Dr. B.K. Sinha, Assistant Prof, Plant Physiology attended 101st Indian Science Congress at University of Jammu, Jammu, J&K w.e.f February 3-7 2014.
- Dr. R. Puniya, Assistant Professor (Agronomy) attended 52nd All India wheat and barley research meet at CSAUA&T, Kanpur w.e.f September 1-4, 2013.
- Dr. Anil Kumar, Professor (Agronomy) participated in 21st Annual Review meeting of All India coordinated research project on weed control held at DWSR, Jabalpur w.e.f February 12-14, 2014.
- Dr. B. R. Bazaya, Assistant Professor (Agronomy) attended
- winter school on Ensuring livelihood security through agroforestry in an era of climate change at SKUAST-Jammu w.e.f November 13 – December 03, 2013.
- a summer school on Machinery for natural resources management and technologies during at PAU, Ludhiana w.e.f September 2-22, 2013.
- Dr. M. C. Dwivedi, Assistant Professor (Agronomy) attended winter school on Ensuring livelihood security through agroforestry in an era of climate change at SKUAST-Jammu w.e.f November 13 – December 03, 2013.
- Dr. Meenakshi Gupta, Assistant Professor (Agronomy) attended
- training programme on Remote sensing and GIS application to agriculture and soil science at IIRS, Dehradun w.e.f May 06 – Jun 28, 2013.
- Participated in Regional Reiew Meeting of FASAL for North-West Region held at CSKHPKV, Palampur w.e.f November 8-9, 2013.
- Dr. Sarbdeep Kour, Assistant Professor (Agronomy) attended a short course on Assessment of soil carbon pools and their significance to carbon sequestration in soils held at PAU, Ludhina w.e.f February 26-March 04, 2014.
- Dr. SM Zargar, Assistant Professor, (Biotechnology) attended
- 1st Plant Proteomics Workshop/ Training programme held at Department of Botany, University of Delhi, in collaboration with INPPO w.e.f 26-30th December, 2013.
- 3rd J&K Agriculture Science Congress held at SKUAST –Kashmir w.e.f May, 12-14, 2014.
- Dr. Ravinder Singh, Assistant Professor, (Biotechnology) attended a 10 days CAFT training programme on "Computational Aspect for NGS Data Analysis-A Sojourn form Lab to field" at Anand Agricultural University, Gujarat w.e.f Mar 4 - Apr13, 2014.
- Dr. Susheel Sharma, Assistant Professor (Vegetables) attended
- Training programme on "Project Formulation, Risk Assessment, Scientific Report Writing & Presentation" at Division of Agricultural Engineering, Indian Agricultural Research Institute New Delhi w.e.f July 30 – August 3, 2013.
- training programme on "Frontier technologies, in the area of biotechnology, on gene isolation, characterization and breeding with reference to abiotic stress related genes" at NRCPB, New Delhi w.e.f December 10 – 30, 2013.
- Dr. Vijay Bahadur Singh, Junior Scientist (Plant Pathology) attended winter school on "Molecular identification of invasive and emerging Phytophthora diseases of horticultural crops" at Indian Institute of Horticultural Research, Hesarghatta, Bangalore w.e.f September 2- 23 2013 .
- Dr. Akash Sharma, Assistant Professor (Fruit Science) attended ICAR Sponsored Short Course on "Rootstock in Resilient Horticulture Production System" at Indian Institute of Horticultural Research, Hessaraghatta Lake Post, Bengaluru w.e.f August 19-28, 2013.
- Dr. Sunil Kumar, Associate Professor (Livestock Products Technology) attended a 21 days ICAR sponsored Training Programme on "Advances in Production, Functional, Rheological and Quality Aspects of Traditional Indian Dairy Products" at Centre of Advanced Studies in Dairy Technology, at National Dairy Research Institute, Karnal w.e.f October 08-28, 2013.
- Dr. Vikas Sharma, Junior Scientist (Agronomy) attended
- training programme on "Exploring Rhizosphere for increasing input efficiency" at

Department of Agronomy, G. B. Pant University of Agricultural & Technology, Pantnagar w.e.f October 11 –31, 2013.

- 101th Indian Science Congress at University of Jammu, Jammu. w.e.f February 3-7 , 2014.
- training programme on "Data Analysis using SAS" at Chatha, SKUAST-J, Jammu w.e.f March17–22, 2014.

- Dr. Kamlesh Bali, Junior Scientist (Entomology) attended
- training programme on "Advances in Pest Management in Legume Crops" at Department of Entomology, CCS, HAU, Hissar, Jammu w.e.f September 25- October15, 2013.
- National Symposium on Recent Advances in Beneficial Insects (Apiculture, Lac-culture, Sericulture and Insect Pollinators) at IINRG, Ranchi. w.e.f November 27-29, 2013.
- 101th Indian Science Congress at University of Jammu, Jammu. w.e.f February 3-7 , 2014.
- training programme on "Data Analysis using SAS" at NDRI, Karnal w.e.f February 17–22, 2014.
- International Conference on Entomology at Punjabi University, Patiala. w.e.f February 21-23, 2013.

- Dr. Narinder Panotra, Junior Scientist (Agronomy) attended training programme on Computational and Statistical Advances in Bioinformatics for 'omics' Data at IASRI, New Delhi w.e.f Jan21– February 10, 2014.

- Dr. A. K. Sharma, Associate Director Research attended 101th Indian Science Congress at University of Jammu, Jammu. w.e.f February 3-7 , 2014.

- Dr. Rajesh Agrawal, Assistant Professor (Veterinary Medicine) attended ICAR summer school on "Advances in Diagnosis, Therapy and Prevention of Emerging and Re-emerging Diseases of Livestock at Division of Veterinary Medicine, COVSc, GADVASU, Ludhiana w.e.f October 8-28, 2013.

- Dr. R. K. Bhardwaj, Assistant Professor (Veterinary Medicine) attended XI Annual convention of the National congress if canine practice on Strategy for canine health care with focus on zoonotic diseases held organized by the ISACP in association with Bihar Veterinary College at Patna, BAU- Sabour, Bhagalpur w.e.f February 10-12, 2014.

- Dr. Shagufta Azmi, Associate Professor, (Vety. Pathology) attended National symposium on the topic "Biopharmaceuticals and nanotechnology in therapeutics and development of anti cancer drugs from botanicals" in connection with the XIII Annual Conference of Indian Society of Veterinary Pharmacology and Toxicology at Division of Veterinary Pharmacology & Toxicology, FVSc & AH, SKUAST-Jammu w.e.f November 20-22, 2013.

- Dr. Shilpa Sood, Assistant Professor, (Vety. Pathology) attended National symposium on the topic "Advances and applications of diagnostic pathology for disease management in livestock, poultry, pet, fish, laboratory animal wildlife" and Satellite Seminar on "Pathology of disease of poultry, avian, wildlife and pet birds" in connection with the XXX Annual Conference of Indian Association of Veterinary Pathologists at Department of Veterinary Pathology, CVSAH, Orissa University of Agriculture & Technology, Bhubaneswar, Odisha w.e.f November 21-13, 2013.

- Dr. Shafiqur Rahman, Assistant Professor, (Vety. Pathology) attended
- 21 days training programme on "Advances in diagnostics of infectious diseases of domestic animals" at Department of Veterinary Microbiology, LLRUVAS, Hisar (Haryana) w.e.f September 17 - October 7, 2013.
- 21 days training programme on "Recent trends in optimization of livestock health and production with special emphasis to Hilly areas" at Faculty of Veterinary Sciences & Animal Husbandry, SKUAST-Jammu w.e.f November 29 - December 19, 2013.

- Dr. K.R. Sharma Professor (Soil Science) attended
- Indian Science congress at Jammu University, Jammu w.e.f February 03- 04, 2014.
- 78th Annual convention of Indian Society of Soil Science at CAZRI Jodhpur w.e.f October 23-26, 2013.

- National conference on "sustainable farming system and Bio industrial watershed management for food security and enhancing income of the farming community at Lucknow, UP w.e.f Apr 16-17, 2013.
- Dr. A. K. Bhat, Professor (Soil Science) attended Indian Science congress at Jammu University, Jammu w.e.f February 03- 04, 2014.
- Dr. M.P. Sharma Professor (Soil Science) attended
- 78th Annual convention of Indian Society of Soil Science at CAZRI Jodhpur w.e.f October 23-26, 2013.
- Indian Science congress at Jammu University, Jammu w.e.f February 03- 04, 2014.
- Dr. Reenu Gupta Assistant Professor (Soil Science) attended Indian Science congress at Jammu University, Jammu w.e.f February 03-04, 2014.
- Dr. Vivak M . Arya Assistant Professor (Soil Science) attended Indian Science congress at Jammu University, Jammu w.e.f February 03-04, 2014.
- Dr.A.P.Rai Assistant Professor (Soil Science) attended
- International Conference on "Impact of Technological Tools on Food Security under Global Warming Scenario" organized at SHOBHIT University, Meerut w.e.f May 11-22, 2013.
- 21 days "11th Refresher Course in Agricultural Science" organized by BHU, Varanasi (UP) during w.e.f February 5-25, 2014.
- Dr Bikram Singh, Professor & Head (Plant Breeding & Genetics) attended
- VIII Review Meeting of ICAR Seed Project "Seed Production in Agricultural Crops" at NAAS, New Delhi w.e.f August 26-27, 2013
- J&K State Seed Sub –Committee meeting at SKUAST-Kashmir on October 11, 2013.
- Dr. S. K. Sudan, Associate Professor (Plant Breeding & Genetics) attended DRR, Hyderabad (ICAR) sponsored 48th Annual Rice Research Group Meeting at SKUAST-Kashmir w.e.f Apr 13-16, 2013.
- Dr. Anil K. Gupta, Associate Professor (Plant Breeding & Genetics) attended DRR, Hyderabad (ICAR) sponsored 48th Annual Rice Research Group Meeting at SKUAST-Kashmir w.e.f Apr 13-16, 2013.
- Dr. S.K. Rai, Assistant Professor (Plant Breeding & Genetics) attended
- Annual Group meeting for Rapeseed and Mustard at Dantiwada Agricultural University, Sardar Krushi Nagar w.e.f July 05-07, 2013.
- 21 days "11th refresher course in Agricultural Sciences at B.H. U., Varanasi, U.P. w.e.f February 5-25, 2014.
- Dr. Rajeev Bharat, Assistant Professor (Plant Breeding & Genetics) attended
- Annual Group meeting for Rapeseed and Mustard at Dantiwada Agricultural University, Sardar Krushi Nagar w.e.f July 05-07, 2013.
- attended 2 days National Brassica conference entitled "Brassica for addressing edible oils and Nutritional Security at PAU, Ludhiana w.e.f February 14-16, 2014.
- Dr. Bupesh Kumar, Assistant Professor (Plant Breeding & Genetics) attended
- State Seed Sub-Committee Sponsored meeting for Agriculture & Horticulture crops at SKUAST Kashmir on October 11, 2013.
- IRRI, Phillipines sponsored brain storming meeting on dry direct seeded rice, traits, varieties and future prospects at PAU, Ludhiana w.e.f March 20-12, 2014.
- DRR, Hyderabad (ICAR) sponsored 48th Annual Rice Research Group Meeting at SKUAST-Kashmir w.e.f Apr 13-16, 2013.
- Dr. Sachin Gupta, Assistant Professor, (Plant Pathology) attended workshop in Biological Sciences at Indian Institute of Sciences, Bangalore w.e.f May 7-30, 2013.
- Dr. Vishal Gupta, Assistant Professor (Plant Pathology) attended
- "2013 BGRI Technical Workshop", at New Delhi w.e.f August 19-22, 2013
- brain storming session on "Strategic management of yellow rust and Karnal bunt of wheat in north western plains and hill zone of India" at PAU Ludhiana on Jul 23, 2013.
- meeting on "Evolving strategies for enhancing wheat production with special reference to management of wheat rust" at Chandigarh on October 05,2013.

- Dr. Vijay K. Razdan, Professor (Plant Pathology) attended brain storming session on "Strategic management of yellow rust and Karnal bunt of wheat in north western plains and hill zone of India" at PAU Ludhiana on Jul 23, 2013.
- Dr. Sachin Gupta, Assistant Professor attended 101st Indian Science Congress at University of Jammu and presented the paper on "Improved practices for cultivation of milky mushroom in subtropics of Jammu w.e.f February 2-7, 2014.
- Dr. Mahender Singh, Senior Scientist (Agronomy) attended
  - training in SERB School on Agrometerological Aspects of Extreme weather Events' at CRIDA, Hyderabad w.e.f May 01- 21, 2013.
  - Annual workshop of NICRA-AICRPDA at College of Agriculture, Bijapur, Karnataka w.e.f December15-17,2013.
  - presented the concept note in Programme Advisory Committee on Atmospheric Science entitled "Impact of Climate Change on growth and yield of Maize- Wheat cropping system through crop modelling at Deptt. of Agricultural Meteorology COA, Assam Agricultural University Jorhat during November 15-16,2013.
  - presented the research paper entitled "Study of Radiation use efficiency in maize based intercropping system under subtropical region of Jammu" in National seminar on Reorientation of Agricultural Research to ensure food security at CCSHAU, Hisar from Jan 6-7, 2014.
- Dr Virendra Kumar Singh, Assistant Professor (Plant Pathology) attended 21 days training programme on "Diseases and management of crops under organic production" organized by CAFT at Deptt. of Plant Pathology, College of Agriculture, GBPUAT, Pant Nagar w.e.f September 4-24, 2013.
- Dr. Jai Kumar , Junior Scientist(Agronomy) attended
  - 21 days training programme on " Management Technologies for Improving Soil Quality and Crop Productivity" organised by CAFT , Division of Soil Science in collaboration with ICAR at PAU, Ludhiana w.e.f October 9-29, 2013.
  - Annual workshop of NICRA-AICRPDA at College of Agriculture, Bijapur, Karnataka w.e.f December 15-17, 2013.
- Dr. Sonika Jamwal, Junior Scientist (Plant Pathology) attended 21 days training programme on "Understanding of the mechanism of host-pathogen-bioagent interaction and sustainable management strategy for threatening crop diseases" at Centre of Advanced Faculty training Division of Plant Pathology, IARI, New Delhi w.e.f September24 - October14, 2013.
- Dr. Birender Singh, Junior Scientist (Soil Science) attended 10 days Short Course on "Adaptation and Mitigation Strategies for Climate Resilient Agriculture" organized by AICRPDA cell, at CRIDA, Hyderabad w.e.f October 22-31, 2013.
- Dr. Reena, Junior Scientist (Entomology) presented her paper entitled "Pest management modules for the management of gram pod borer (Helicoverpa armigera) in chickpea in the 101st Indian Science Congress at University of Jammu, Jammu w.e.f February 3-7, 2014.
- Dr. Magdeshwar Sharma, Junior Scientist (Entomology) attended training programme on "Recent Advances in Stored Product Insect Pests Management" at Deptt .of Agricultural Entomology, CAFT, TNAU, Coimbatore-64100 .w.e.f November 13 to December. 03, 2013
- Dr. Praveen Singh, Junior Scientist (PBG) attended training programme on "Quality seed production and seed standards in forage crops and range grasses: challenges, advances and innovations" at IGFRI, Jhansi w.e.f September 11 to October 1, 2013.
- Dr. Amit Jasrotia, Junior Scientist (Fruit Science) attended
  - 06 days workshop/training programme on "Data analysis using SAS", jointly organised by SKUAST-J, and NDRI, Karnal at FOA, Chatha, SKUAST-Jammu w.e.f March 17-22, 2014.
  - Second Group Meet of Networking Project on "Outreach of Technologies for Temperate Fruits" at Central Institute of Temperate Horticulture, Srinagar, w.e.f September 14-15, 2013.

- Dr. Vinod Gupta, SMS (Extension Education) participated in 21days training on "Bio-drainage for reclamation of water logging in high rainfall deltic areas" at Directorate of Water Management, ICAR, Bhubaneswar w.e.f May 7-27, 2013.
- Dr. Prem Kumar, SMS (Fisheries), participated in training programme on "Recent advance in aquaculture for popularization through KVKs", at KVK Ernakulum, CMFRI, w.e.f July 15-20, 2013.
- Dr P.K.Rai, SMS (Soil Sci.), attended :

➢ 24th National Conference on Sustainable Farming System and bio- industrial watershed management for food security and enhancing income for farming community, at Lucknow, w.e.f April 16-17, 2013.

➢ 21 days training program on "Technological innovation for shaping future agriculture in salt affected areas" CSSRI, Karnal, w.e.f June 4-24, 2013.

- Dr. Raju Gupta, Farm Manager (KVK Jammu), attended 2 days training program on "Promotion and Strengthening of Agriculture Mechanization through training, testing and demonstration" at CSKHPKV, Palampur w.e.f April 29-30, 2013.
- Dr. Rakesh Sharma, SMS (Agriculture Extension), attended training programme on "Agribusiness and Agriculture information System", at AAU Anand Gujarat, w.e.f July 01-21, 2013.
- Dr. Punit Choudhary, SMS (Agroforestry), attended training programme on "World Congress on Agro-forestry", at ICAR, New Delhi w.e.f February 10-17, 2014.
- Dr. Arvind Kr. Ishar, SMS (Entomology), attended training programme on "Pest Surveillance", at NIPHM, Hyderabad w.e.f August 12-19, 2013.
- Dr. Sanjeev Kumar, SMS (Plant Breeding), attended training programme on "Climate Change, food security and livelihood Opportunities in Mountain Agriculture" at SKUAST Kashmir, Shalimar Srinagar w.e.f May 14- 23, 2013.
- Dr. Sanjeev Kumar, SMS (Plant Breeding), attended training programme on "Unconventional Breeding Approaches to Tackle Emerging Issues of Food Security", at PAU Ludhiana, w.e.f September 10-30, 2013.
- Lalit Upadhyay, SMS (Agroforestry), attended training programme on "Role of scientists in natural resources & environment management" at IIFM Bhopal w.e.f December 09-13, 2013.
- Vishal Mahajan, SMS (Agroforestry), attended training programme on "GIS and Remote Sensing" at MANAGE, Hyderabad w.e.f August 5-9, 2013.
- Dr. Amrish Vaid, Programme Coordinator, participated in "BGRI workshop" at ICAR, New Delhi w.e.f August 19-22, 2013.

➢ attended training programme on "Networking of KVKs and VVKs" at Himachal Forest Research Institute (HFRI), Shimla w.e.f August 29, 2013.

➢ attended training programme on "Diseases and management of crops under organic production" at GBPU&T Pantnagar w.e.f September 4-24, 2013.

- Dr. Berjesh Ajrawat, SMS (Extension Education), attended training programme on "Advances in methodological paradigms and tools in extension research" at Division of Extension IARI, New Delhi. w.e.f September 17- October 7, 2013.

➢ attended training programme on "Agricultural Marketing- The new paradigms" at MANAGE Hyderabad w.e.f January 20-24, 2014.

- Dr. Anamika Jamwal, SMS (Plant Protection), attended training programme on "Understanding of mechanism of Host-Pathogens Bio agent interaction and sustainable bio-management strategy for threatening crop diseases" at Division of Plant Pathology IARI, New Delhi w.e.f September 24-October 4, 2013.
- Dr. R. S. Bandral, Programme Coordinator, attended training programme on "National Conference of KVKs ", at UAS, Bangalore w.e.f October 23-25, 2013.

S.No	Title of The Project	Principal Investigator
Horticulture Technology Mini-Mission-1 (ICAR)		
1.	Dissemination of Refined Production Technology of Rare Exotic Vegetable Crops in Jammu Region	Dr.R.K.Samnotra (Vegetable Science)
2	Seed Production of Hybrids and Open Pollinated Varieties of Vegetables under Mid-Hill Conditions of Jammu Region	Dr.Sanjeev Kumar (Vegetable Science)
3	Standardization/Refinement of Production Technologies for Cultivation of Hybrid Vegetables in Jammu Region	Dr.Satesh Kumar (Vegetable Science)
4	Technology Refinement & Dissemination of Ginger & Turmeric in Jammu Region	Dr.Sandeep Chopra (Vegetable Science)
5	Production of Quality Planting Material of Ornamental Crops in Jammu	Dr.R.K.Pandey (Vegetable Science)
6	Rain Water Harvesting and its demonstration for supplemental benefits for horticultural crops in sub temperate area.	Dr. Vikas Sharma (Agronomy)
7	Promotion of biological control as a key component for management of soil borne pathogens for sustainable horticulture in Jammu Province of J&K	Dr. Vishal Gupta (Plant Pathology)
8	Promotion of year round mushroom cultivation for self employment in Jammu Division	Dr. Sachin Gupta (Plant Pathology)
9	Development and promotion of IPM module in temperate vegetable crops of Jammu	Dr. Uma Shankar (Entomology)
10	Post Harvest value addition of sub-tropical fruits and vegetables for women empowerment in Jammu region	Dr. Monika Sood (PHT)
11	Training and demonstration on rejuvenation of old/unproductive orchards of Jammu subtropics	Dr.V.K.Wali (Fruit Science)
12	Determination of quality and harvest maturity for commercial grown fruit crops in Jammu subtropics.	Dr. Parshant Bakshi (Fruit Science)
13	High Density orcharding of mango and guava in Jammu sub-tropics	Dr. Akash Sharma (Fruit Science)
14	Production of quality planting material of subtropical fruit crops in Jammu subtropics	Dr. Arti Sharma (Fruit Science)
15	Domestication of naturally occurring and wild relatives of some fruits for specific Horticultural traits	Dr. Rajesh Kumar (Fruit Science)
16	Development of aonla based cropping system for Jammu sub-tropics	Dr. Deep ji Bhat (Fruit Science)
17	Technological interventions for controlling Mango Malformatio optimize mango (*Mangifera indica*) productivity	Dr. Bhav Kumar Sinha (Plant Physiology)
18	Site specific analysis and management of nutrient in fruit growing areas of Jammu for precision horticulture	Dr. A. K. Bhat (Soil Sciences)
19	Refinement and extension of soil quality and water productivity enhancement technology in rainfed orchard in Jammu region	Dr. Vivak M. Arya (Soil Sciences)
	Department of Science & Technology (DST)	
20	Development and Evaluation of Automatic Timer Based V.S.D for sprinkler System	Er. Sushmita M Dadhich (Agril. Engineering)

21	Design and development of a tractor operated soil compaction measurement device	Dr. Manoj Kumar (Agril. Enginering)
22	Breeding and management strategies in dairy animal for socio –economic upliftment of rural women.	Dr. Anil Kumar Pandey (VGD)
23	Determination of genetic diversity among common bean (*Phaseolus vulgaris* L.) genotypes and assessment for water stress tolerance.	Dr. Sajad Majeed Zargar (Biotechnology)
24	Molecular Marker Asssisted Introgression of powdery mildew resistance genes in elite genotype of pea (*Pisum sativum* L.)	Dr. Susheel Sharma (Biotechnology)
25	Exploitation of Under-utilized fruits of kandi areas of Jammu region through value addition for human resource development	Dr. Neeraj Gupta (RRSS, Raya)
26	Empowerment of rural women through training programme on the developmet of value added livestock products (LPT)	Dr. Sunil Kumar (LPT)
27	Entrepreneurship opportunities for socio-economic up-liftment of rural farmers through QPM hybrid seed product techniques.	Dr. Anjani Kr. Singh (PBG)
28	Diversity analysis of *Pseudomonas fluorescens* and its utilization in disease suppression and nutrient management	Dr. Vishal Gupta (Plant Pathology)
	Department of Bio-Technology (DBT)	
29	Bovine Cryptosporidiosis and its Zoonotic Potential in Jammu district.	Dr. Rajesh Katoch (Vety.Parasitology)
30	Development of single nucleotide polymorphisms (SNPs) for *Brassica juncea*	Dr. Ravinder Singh (Biotechnology)
31	Socioecnomic upliftment of rural women through development of value added meat products (LPT)	Dr. Zuhaib Fayaz Bhat (LPT)
32	Isolation, identification and characterization of plant viruses of Solaneceous crops in different agro climatic zones of Jammu region.	Dr. Ranbir Singh (Plant Pathology)
33	Androgenesis Mediated Introgression of Fruit and Shoot Borer (*Leucinodes orbonalis*) Resistant Genes into Cultivated Eggplant (*Solanum melongena*)	Dr. Pooja Ratan (Biochemistry)
34	Impact of Chawki reared worms on double cropping system and its role in livelihood generation in rural areas.	Dr. R.K.Bali (Sericulture)
35	Popularization of lac cultivation through large scale demonstrations and trainings in Jammu and Kashmir	Dr. R. K. Gupta (Entomology)
	Indian Council of Agricultural Research (ICAR)	
36	Veterinary Type culture centre	Dr. Anil Taku (Vety. Microbiology)
37	National Initiative On Climate Resilient Agriculture	Dr. Vivak M. Ary (Soil Science)
38	Characterization of Bakherwali Goat	Dr. R.K.Taggar (AGB)
39	Characterization and Conservation of Poonchi Sheep	Dr. R.K.Taggar (AGB).
40	Enhancement of Livelihood Security through Sustainable Farming Systems and related farm Enterprises in North-West Himalaya	Dr Rajiv Singh (Vety. Medicine)
41	Exploration of plant growth promoting rhizobacteria, antagonistic and plant pathogenic microbial resources from high altitude agro-climate/ cropping system of Jammu and Kashmir State for sustainable agriculture	Dr. Vijay K. Razdan (Plant Pathology)
42	Degradation and effective utilization of agrowastes through technologies involving mushrooms or macrofung.	Dr. Sachin Gupta (Plant Pathology)

43	Seed Producation in Agricultural crops "Tribal Sub Plan"	Dr. A.K.Sharma (Agronomy)
44	Establishment of additional rootstock and bud wood banks and virus indexing facilities at SKUAST-J and their large scale multiplication at RHRSS Bhaderwah	Dr. Amit Jasrotia (Fruit Science)
45	Network project on Outreach of Technologies for Temperate Fruits	Dr. Amit Jasrotia (Fruit Science)
46	TSP Seed Project on "Seed production in agricultural crops in Poonch district"	Dr. Praveen Singh (PBG)
47	National Project of Insect Biosystematics	Dr. D. P. Abrol (Entomology)
48	Climate change and lac crop performance (NICRA)	Dr. R. K. Gupta (Entomology)
49	Strengthening Statistical Computing for NARS (NAIP component –I)	Dr. Manish Kumar, (Eco. & Statistics)
50	National Initiative on Climate Resilient Agriculture, AICRPDA, CRIDA	Dr. Mahendar Singh (Agrometrology)
	Science & Technology Department. Govt. of J&K	
51	Mechanism controlling the metalaxyl induced developmental toxicity with special reference to reproduction indices in Wistar rats	Prof. Mudasir Sultana (Vety. Pharmacology)
	National Horticulture Board	
52	Establishment of Mother plant nursery for high pedigree planting material for fruit crops	Dr. V. K. Wali (Fruit Science)
	Jammu and Kashmir State Govt. (Plan)	
53	Animal Disease Monitoring and Surveillance	Dr Rajiv Singh (Vety.Medicine)
	Indian Council of Medical Research	
54	Epidemiological studies on important emerging bacterial zoonotic diseases of equines used for tourism and pilgrimage in Jammu and Kashmir	Dr. Anil Taku (Vety. Microbiology)
	National Innovation Foundation, Ahmedabad	
55	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 (VAE)
	National Medicinal Plant Board	
56	Conservation, production and sustainable management of Shatavar (*Asparagus recemosus* Willd.)	Dr. Meenakshi Gupta (Agroforestry)
	Rashtriya Krishi Vikas Yojna	
57	Testing centre for testing of farm implements and machinery at SKUAST-Jammu (J&K State)	Dr. Sushil Sharma (Agricultural Engg)
	Ayurvet Limited	
58	To study efficacy of herbal ectoparasiticidal and fly repellant product (Keetguard Liquid) to control ectoparasites and fly population in poultry broiler farm	Dr. Rajesh Katoch (Vety. Parasitalogy)
	Agri. Production Department, Govt. of J&K	
59	Impact Evaluation of the Government Intervention in Procurement of Wheat	Dr. Rajinder Peshin (Agri. Extn. Education)

	Ministry of Agriculture, Govt. of India	
60	Genetic improvement of sheep through embryo transfer technology.	Dr. Anil Kumar Pandey (VGO)
	State Task Force Project, J&K Govt	
61	Development of molecular laboratory for analysis of purity of germplasm of Basmati rice and other seeds	Dr. R.K.Salgotra (Biotechnology)
	Fertilizer Association Of India, New Delhi ,India	
62	FAI Soil Health Enhancement Programme	Dr. Brij Nandan (Agronomy)
	University Grants Commission	
63	Physio-biochemical screening of drought resistant and nutrition enrich wheat genotype	Dr. S.A. Mallick (Bio. Chem)
	Ministry of Earth Sciences, GOI	
64	Integrated Agromet Advisory Services for mid to high altitude intermediate zone of J&K (Gramin Krishi Mausam Sewa)	Dr. A. K. Sharma (Agronomy)

All India Coordinated Research Projects (ICAR)

S.No.	Title of the project	Directorate/Division
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 Coordinated Research Project on Agro meteorology, Chatha	Directorate of Research
7	All India Coordinated 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 Coordinated Research Project on Rape Seed and Mustard, Chatha	Plant Breeding &Genetics
10	All India Coordinated Research Project on Honeybees and Pollinators (voluntary centre)	Entomology
11	All India Coordinated Research Project on Linseed (voluntary centre)	Entomology
12	All India Coordinated Research Project on Wheat and Barley (voluntary centre)	Plant Breeding & Genetics
13	All India Coordinated Research Project on Rice (voluntary centre)	Agronomy
14	All India Coordinated Research Project on Onion and Garlic (voluntary centre)	Olericulture
15	All India Coordinated Research Project on Weed Control(voluntary centre)	Agronomy

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LINKAGES AND COLLABORATION 11

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

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

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

12.1 University Council Meeting

9th University Council Meeting

9th University Council meetings was held on 16-04-2013 at Raj Bhavan, Jammu under the Chairmanship of Sh. N. N. Vohra, Hon'ble Governor of Jammu & Kashmir and Chancellor of SKUAST-Jammu.

Sh. N.N.Vohara, Hon'ble Governor J&K, and Chancellor SKUAST-Jammu chairing the 9th University Council Meeting

Sh. N. N. Vohra, Hon'ble Governor, and Sh.. Omar Abdullah, Hon'ble Chief Minister, emphasized the high importance of making Krishi Vigyan Kendras (KVKs) as nerve centres for transfer of agricultural technologies to the farmers to progressively enhance agri-productivity and production in the State on a sustained basis.

The Hon'ble Governor observed that for securing sustained growth of agriculture and its allied sectors, all of which are vital contributors to the J&K's economy, it is most urgently essential to ensure effective coordination among the two Farm Universities of the State and each of the various extension agencies of the Government to achieve the desired objectives. In this context, the Hon'ble Governor called for pilot projects being launched on time bound basis to establish area and crop specific demonstration plots of vegetables, cereals, pulses and oilseeds and publicizing the success stories to enlarge the farmers' awareness of improved agri-techniques and technologies. Further he observed that all available resources and expertise should be optimally utilized for producing quality seeds of various crops and ensuring their timely supply to the farmers. He added that possibilities should also be explored for encouraging promotion of "seed villages" to supplement the production of quality seeds.

While reviewing the status of cultivation of vegetables and other cash crops in various areas of the State, the Hon'ble Governor observed that wherever possible efforts need to be made to encourage the farmers to cultivate a third crop and all possibilities explored for promoting organic farming in the State. He also urged the adoption of a multi-disciplinary approach in this regard, adding that this can literally bring about a revolution in agriculture and allied sectors. He suggested for constituting a working group of experts to take a macro view for growth of agriculture sector on long-term basis. While referring to the KVKs, he stressed for establishing all these Kendras which are in the pipeline within fixed timelines for the benefit of the growers.

The Chief Minister, who is Pro-Chancellor of the University, emphasized the need for speedy completion of under-construction buildings and other infrastructure of the University for putting in place the envisaged facilities. He said that the implementation of these projects should be constantly monitored for completing them within the fixed timelines.

Mian Altaf Ahmad, Hon'ble Minister for Forests, put forth several suggestions for the growth of agriculture and allied sectors in the State.

Mr. Ghulam Hassan Mir, Hon'ble Minister for Agriculture, emphasized the need for optimum utilization of available resources and expertise for increasing seed production in the State and dwelt on the initiatives already being taken towards this direction. He also spoke about the issues relating to the promotion of organic farming as well as the certification and marketing of organic crops.

Mr. Raman Bhalla, Hon'ble Minister for Horticulture, dwelt on the future growth of the University as the need for urgently transforming agriculture and its allied sectors.

Mr. Nazir Ahmad Khan (Gurezi), Hon'ble Minister of State 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, Hon'ble Vice Chancellor, SKUAST, Jammu, presented a detailed report on the status of teaching, research and extension activities undertaken by the varsity. He dwelt on the

achievements of the University in varied fields and the new varieties of seeds of different crops which had been developed and proposals mooted to the State Government for clearing the new varieties for distribution to the farmers. He also gave details of the various ongoing research projects and those in the pipeline.

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

The meeting was attended by Dr. A. R. Trag, Vice Chancellor, Islamic University of Science and Technology, Awantipore; Mr. B. R. Sharma, Principal Secretary, Planning and Development; Mr. B. B. Vyas, Principal Secretary to the Chief Minister and Principal Secretary, Finance; Mr. Navin K. Choudhary, Principal Secretary to the Governor; Mr. M. K. Kumar, Additional Secretary, Agriculture; Prof. Farooq A. Zaki, Registrar, SKUAST, Kashmir; Mr. Ajay Khajuria, Director, Agriculture, Jammu; and Dr. B. B. Gupta, Registrar, SKUAST-Jammu.

10th University Council Meeting

10th University Council meetings was held on 13.10.2013 at Raj Bhavan, Jammu under the Chairmanship of Sh. N.N. Vohra, Hon'ble Governor of Jammu & Kashmir and Chancellor of SKUAST-Jammu. Among others, the meeting was also attended by Mr. Omar Abdullah, Hon'ble Chief Minister and Pro-Chancellor SKUAST-Jammu.

Sh. N.N.Vohara, Hon'ble Governor J&K, and Chancellor SKUAST-Jammu chairing the 10th University Council Meeting

During the meeting it was decided that a sector specific Action Plan will be formulated for the rapid growth of Agriculture, Dairy, Poultry, Vegetable, Pasture and Fodder Development, Animal and Sheep Husbandry, Fisheries and the other allied sectors possessing very high potential for generating employment and wealth in the State..

The Hon'ble Governor, and Hon'ble Chief Minister, emphasized the need for adequate utilization of infrastructure, manpower and all other logistics and resources available with the Farm Universities for maximizing their outputs. They stressed the need for taking all required measures on urgent basis for enhancing production 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.

Reviewing the intake capacity of the SKUAST-Jammu, the Hon'ble Governor said that every effort must be made to ensure that no seat in any discipline remains unfilled.

Regarding the status of infrastructure development works of the University, the Hon'ble Governor asked the Vice Chancellor to take up the matter with the concerned executing agencies for ensuring timely completion of all these works. He also emphasized for expediting all the required measures to facilitate construction of building for Maize Research Sub-Station at Sansoo, in Udhampur district in a time bound manner.

While reviewing the headway made towards establishing Krishi Vigyan Kendras in Samba, Udhampur and Ramban districts, the Hon'ble Governor asked the Vice Chancellor to pursue the matter with the concerned authorities for expediting possession of the land for the establishment of the KVKs, describing these as nerve centres for transfer of agricultural technologies to the farmers to progressively enhance agri-productivity and production in the State on a sustained basis.

The Hon'ble Chief Minister stressed that the progressive farmers with notable success stories need to be involved in a big way in enlarging awareness among the farmers who have been benefited with the various technological and scientific interventions made by the Agricultural Universities and the extension agencies of the Government which have culminated into these success stories so that other farmers could also benefit from their experiences.

Regarding the revision of Statutes of the State Agricultural Universities, the Chief Minister asked both the Vice Chancellors to jointly revisit the Statutes and list out the amendments, wherever, required to be made.

The Council approved the establishment of the School of Genomics, Molecular Biology and Microbiology at the Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu, on self-sustainable basis.

Sh. Mian Altaf Ahmad, Minister for Forests, while putting forth several suggestions for the growth of agriculture and allied sectors in the State, urged for development of horticulture sector, particularly in Rajouri, Poonch, Mahore and Gool areas, which have high potential. He also called for making available quality maize seed to the farmers in these areas for increased production.

Sh. Ghulam Hassan Mir, Hon'ble Minister for Agriculture, emphasized the need for utilizing the entire student intake capacity of the University to optimally benefit from the available infrastructure, manpower and resources. He stressed for maximum participation of farmers in the farmers awareness camps and extending the activities of KVKs in collaboration with the extension agencies of the Government for the larger benefit of the growers.

Mr. Raman Bhalla, Hon'ble Minister for Horticulture, dwelt on the future growth of the University as the need is felt for urgently transforming agriculture and its allied sectors.

Mr. Nazir Ahmad Khan (Gurezi), Hon'ble Minister of State 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, Hon'ble Vice Chancellor, SKUAST, Jammu, presented a detailed report on the status of teaching, research and extension activities undertaken by the varsity. He dwelt on the achievements of the University in varied fields and the new varieties of seeds of different crops which have been developed and released since the last meeting of the University Council. He also gave details of the various ongoing research projects and those in the pipeline.

The meeting was attended by Dr. Tej Partap, Vice Chancellor, SKUAST-Kashmir; Dr. A. R. Trag, Vice Chancellor, Islamic University of Science and Technology, Awantipore; Mr. B. R. Sharma, Principal Secretary, Planning and Development; Mr. B. B. Vyas, Principal Secretary to the Chief Minister and Principal Secretary, Finance; Mr. Navin K. Choudhary, Principal Secretary to the Governor; Dr. Asgar Hassan Samoon, Commissioner/Secretary, Agriculture Production; Dr. Manjit Singh Kang; and Dr. B. B. Gupta, Registrar, SKUAST- Jammu

12.2 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. 21st and 22nd meetings of Board of Management of SKUAST-Jammu were held on 08.04.2013 and 23.09.2013 respectively in the Committee Hall of Vice Chancellor's Secretariat, SKUAST-J, Chatha, Jammu.

Dr. D.K.Arora, Hon'ble Vice-Chancellor Chairing the 21th Board of Management Meeting

13.3 RESEARCH COUNCIL MEETING

14th Research Council Meeting of Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu was held at Faculty of Agriculture, Chatha on 12-09-2013 under the Chairmanship of

Dr. D. K. Arora, Hon'ble Vice-Chancellor Chairing 14th Research Council Meeting

Prof. D.K. Arora, Vice-Chancellor, SKUAST-J. Dr. S.N.S Randhawa, Director Research cum Dean, Post Graduate Studies, GADVASU, Ludhiana participated as the expert of eminence, besides the meeting was attended by the officers of the University, Heads of the Divisions of Faculties, Officers from the Line Departments and Incharges of the Research Stations and Sub-Stations and others,

In his opening remarks, Vice Chancellor, Prof. D.K. Arora, laid emphasis on basic, strategic and applied research to contribute to the body of knowledge of science as well as welfare of the farmers. He said that we must identify the niche, upcoming and frontier areas of research so that the university does not lag behind. He further said that Research Council Meeting is a platform for debate, discussion and brain storming to critically evaluate whether the research projects are worth to be continued. He furtner emphasized that the scientists should undertake the research only if they have the drive and draw pleasure in research pursuits. The Vice-Chancellor told that the quality of research is not up to the mark as it is not helping the farming community. He called upon the scientists to submit suitable area needed research projects so as to actualize the vast untapped growth potential of state agriculture to generate income and employment opportunities for the hilly and backward areas. Vice Chancellor stressed upon the need to improve the quality of research publications.. He directed the Deans to identify the research gaps and promote motivated young scientists to undergo meaningful research.

The Vice-Chancellor opined that funding is very important for quality research. Therefore to have any significant research out of this amount, the road map should be made and five important gaps in research should be identified:

- Priority areas (maximum three) should be delineated. Equal distribution of research funds among scientists should be discouraged but programme-based funding be encouraged.
- Research programme for next five years should be drawn
- Research should be competitive
- Individualised research with meagre research funding should be stopped.
- No research for line departments should be undertaken unless funding is received from them/State Govt

Dr. J.P Sharma, Dean, FOA and Dr. S.K.Gupta Dean FVSc presented the research outcomes of their respective faculties. The Vice Chancellor enquired about the total funding for research in faculty received from the state Government. Dr. Deepak Kher, Project Planning & Monitoring Officer informed the house that approximately Rs.30.00 lacs are received annually as Research Operating Cost. This amount is meagre for conducting meaningful research.

At the end, the Vice-Chancellor concluded the proceedings of the 14th Research Council Meeting with the following directions:

- Brainstorming session on research should be held once in six months to know whether the scientists are going in the right direction or not.
- The University and the scientists are responsible are food security, and research concerning food security should be the top priority.
- The Government cannot develop any programme concerning agriculture without the help of agriculture universities but honesty and commitment is must in the research. The honest approach in research should be inculcated and we must ask ourselves how good research would flourish.
- The Vice-Chancellor said that we are not bringing any technology to the field so we must bring good technology to field like hybrids, new varieties on regular basis.
- We should work to our strengths in the research which should be fully utilized and weaknesses should be converted to strengths.
- Five year targets of research and research goals should be set up.

The formal vote of thanks was presented by Dr. K.S. Risam, Director Extension who thanked Vice Chancellor, Officers of the University and Line Departments of the state, expert and heads of the divisions and stations for participating in the meeting.

6th Extension Council Meeting

Sixth meeting of Extension Council of SKUAST-Jammu was held on 16th September, 2013 in the Conference Hall of SKUAST-J, Main Campus, Chatha under the chairmanship of Dr. D.K. Arora, Vice-Chancellor, SKUAST of Jammu. Vice-Chancellor called upon the scientists of the University and officers of the line departments to work in close coordination for the benefit of the farmers. He suggested that the policies need to be formulated keeping in mind the benefit of farmers. There should be a viable interaction between University and line departments and all should truthfully implement the proceedings of the meeting.The dissemination of research technologies needs to be implemented by the line departments. The research carried out by the University should be farmer oriented.

6th Extension Council Meeting

13th Academic Council Meeting

The 13th Academic Council meeting of Sher-e-Kashmir University of Agricultural Sciences and Technology (SKUAST), Jammu was held on 19.09.2013 under the chairmanship of Prof. D.K.Arora, Hon'ble Vice-Chancellor, SKUAST-Jammu. While speaking, Vice Chancellor expressed his satisfaction over CET 2013 conducted by SKUAST-J recently and the admission process undertaken by the University. He also briefed the House about the changing scenario of the academics in the present day times and emphasized that the nomenclature of various degree programmes including course curriculum should be evolved with the changing times and should cater to the needs of present day scientific fields. Dr BB Gupta, Registrar and Member Secretary presented the agenda items of the 13th Academic Council before the House where the council approved the institution of new PG programmes as well as increase intake of various existing programmes. Among the new programmes are MSc Microbiology and MSc Genomics and Molecular Biology and other PhD programmes in Forestry, Biochemistry, and Statistics, Veterinary Physiology, Veterinary Biochemistry, Veterinary Animal Husbandry Extension Education, Veterinary Anatomy and Livestock Product Technology. The council also resolved to start of M Tech. programme from the forthcoming academic session. Besides, decisions other important issues regarding strengthening of various faculties and schools were also taken. Chairman opined that the resolutions passed in the council meeting will be taken up keeping in view the long term prospects of the academics in this university. A detailed discussion on various issues was held and various new resolutions were resolved. The meeting concluded with the vote of thanks presented by Dr. R.M. Bhagat, Director Education, SKUAST-Jammu.

Vice Chancellor SKUAST- Jammu Prof Dilip K Arora addressing Academic Council meeting at Jammu on Friday

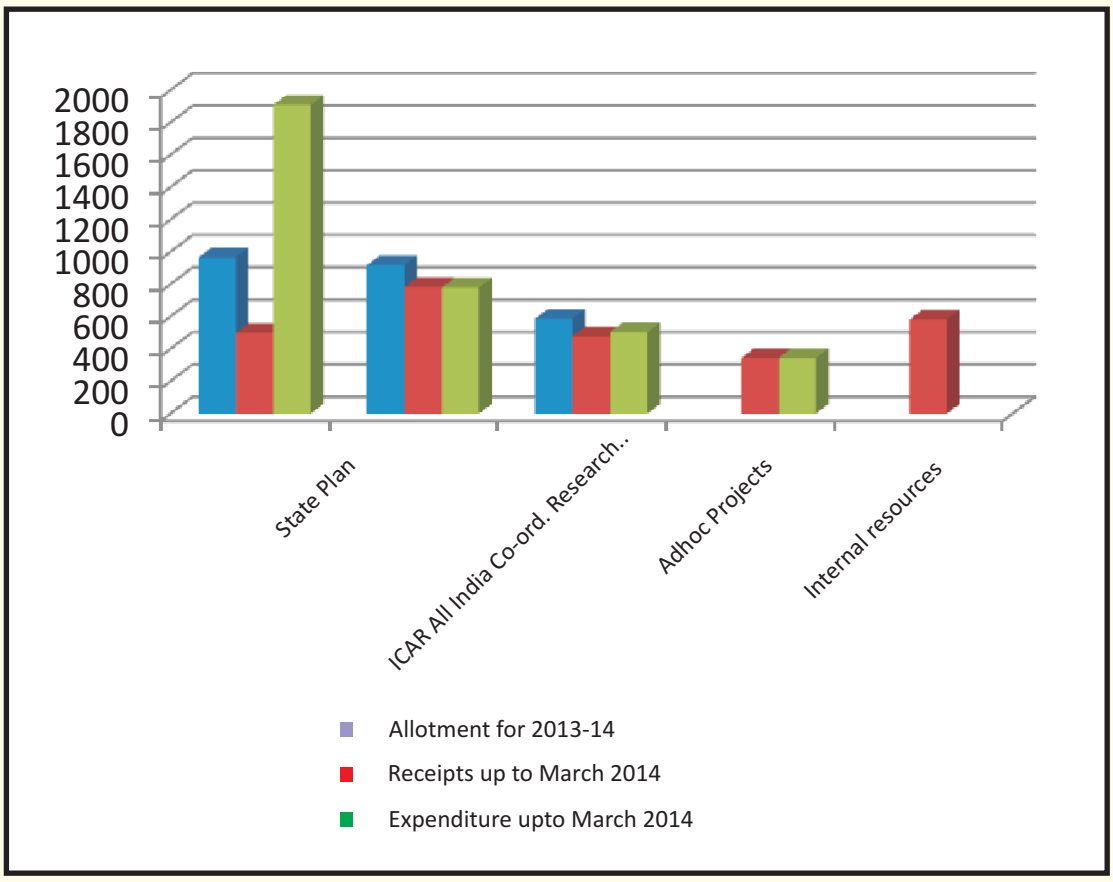
- Sh. N.N.Vohra, Hon'ble Governor J&K & Chancellor SKUAST-Jammu.
- A. H. Samoon, Commissioner / Secretary, APD, Government of J&K.
- Dr. Ram A.Vishwakarma, Director, Indian Institute of Integrative Medicine (CSIR), Jammu
- Prof. A. Ahmad, Founder Vice Chancellor, SKUAST-J&K.
- Prof. A.K. Srivastava, Director cum Vice Chancellor, NDRI Karnal.
- Dr. P.K. Gosh, Director IGFRI, Jhansi.
- Prof. M.P. Yadav, Former Vice-Chancellor SVBP Meerut & Ex-Director IVRI, Izatnagar.
- Dr. S. M. A. Rizvi, Former Director Research and DDG (UPCAR-UP).
- Dr. R. K. Thakur, Project Coordinator, AICRP (Hb&P).
- Dr. N. S. Rao, ADG- NIPHM, Hyderabad.
- Dr.Nazir Ahmed,Director CITH,Srinagar / Nodal officer,HTMM-I.
- Dr.J.P.Singh,Director Research,GBPUAT, Pantnagar.
- Mr.H.U.Khan,Ex-Vice Chancellor, SKUAST-Jammu.
- Mrs Sukhjinder Kour, Coordinator, Parsar Bharti.
- Dr. S. Bhatnager, Director Planning, University of Agriculture, Kota.
- Dr. D. N. Kamra, National Professor (ICAR), IVRI, Izatnagar.
- Dr. K K Baruah, Former Director, NRC on Yak (ICAR), Arunachal Pradesh.
- Dr. N N Pathak, Former Director, NRC on Buffalo (ICAR), Hisar.
- Sh. M. R. Mattoo, Director Planning, APD, J&K Govt.

Dr. A. H. Samoon, Commissioner / Secretary, APD, Government of J&K. with Business Management team at Chatha

Dr. A.K. Srivastava, Director cum Vice Chancellor, NDRI Karnal. at R.S. Pura Campus

(Rs. In Lakhs)

S.No	Particulars	Allotment for 2013-14	Receipts up to March 2014	Expenditure upto March 2014
1	State Non Plan	5587.00	5400.00	5373.75
2	State Plan	965.00	498.75	1909.92*
3	ICAR SAU Dev.Grants & PM's Special Grant	917.00	782.00	779.37
4	ICAR All India Co-ord. Research Schemes	588.61	478.87	504.49
5	Adhoc Projects	-	343.85	343.85
6	Internal resources	-	583.09	-
	Total	**8057.61**	**8086.56**	**8911.38**

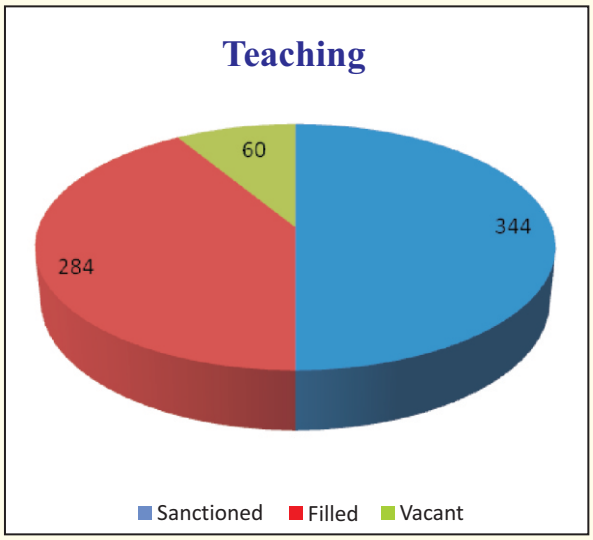


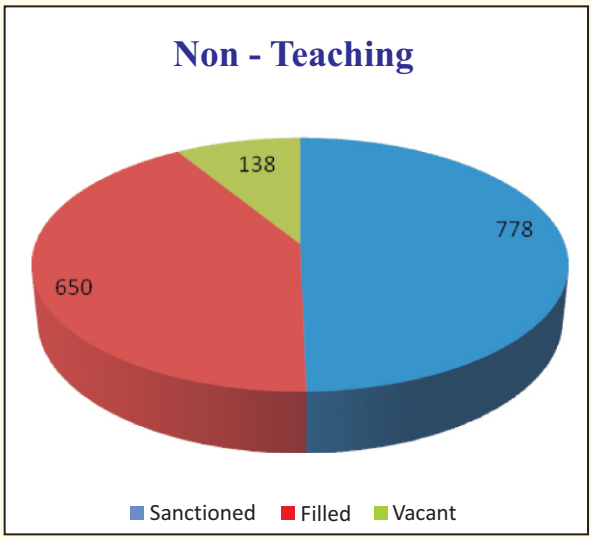
Out of unspent balance of previous year

STAFF POSITION 15

Staff Position (As on March 31, 2014)

Category		Sanctioned	Filled	Vacant
A.	**Teaching**			
	Dean	02	01	01
	Associate Dean	02	01	01
	Professor / Equivalent	34	18	16
	Assoc . Professor / Equivalent	86	71	15
	Asstt .Professor / Equivalent	220	193	27
	Total	**344**	**284**	**60**
B.	**Non-Teaching**			
	Administrative Officers	9	6	3
	Non-Teachning staff (Administrative	233	185	48
	Technical staff	36	31	5
	Auxiliary / supporting staff	510	428	82
	Total	**778**	**650**	**138**
	Total A+B	**1132**	**934**	**198**





16.1 Appointments

Governance

Vice-Chancellor SKUAST-J : Dr. Pradeep K. Sharma joined as Vice-Chancellor of SKUAST-Jammu on 10.03.2014

Dr. Sharma is an international Soil & Water Management expert and academician, and has university administration management experience in national agricultural universities. Dr. Sharma's professional career as a researcher, academician, and administration manager in national and international universities and institutions spans over 32 years.

Dr. Sharma, having graduated from CSK Himachal Pradesh Agricultural University, Palampur, has been groomed as a responsible researcher and academician in institutions of international repute, namely 'Indian Agricultural Research Institute, New Delhi', 'State University Gent, Belgium', 'International Rice Research Institute (IRRI), Philippines', 'Ubon Rice Research Centre. Thailand' and 'International Maize and Wheat Improvement Centre' (CIMMYT) in the field of Soil Physics and Water Management. He has served in national agricultural universities at several Senior Positions such as Chief Scientist (Water Management), Officer on Special Duty to Vice Chancellor, Dean (Postgraduate Studies), Dean (Home Science), and Dean (College of Agriculture), Assistant Director General (Edn. Div., ICAR), and Vice Chancellor of University of Agriculture & Technology, Kanpur.

Dr. Sharma was born at a small village Jasur, Tehsil Nurpur, District Kangra (HP) on January 11, 1955. He has published scientific literature, including a book, which has been well received by scientific community at national and international level. His scientific work has earned him several awards and recognitions. He has the experience of working with people of different ethnic groups, which makes him confident and capable of handling administrative issues with ease. Dr. Sharma has traveled in more than a dozen countries in connection with his professional pursuits. Dr. Sharma goes well with his colleagues.

Non - Teaching

1 01 No. appointment was made under SRO-43.
2 Promotion of 13 No. class IV employees as FCLA
3 Probation clearance of 51 Non-teaching employees
4 Selection scale to 01 ACT
5. Selection Grade to Statistical Officer

16.2 Superannuation:

Scientific Staff

S.No.	Name	Designation	Date of Superannuation
1	Dr. J. K. Khajuria	Assoc. Prof. Vety. Parasitology	31.07.2013
2	Dr. M. K. Khushu	Prof. Agrometerology	30.09.2013
3	Dr. Kalu Ram	Prof. Sericulture	31.10.2013
4	Dr. S.P.Devi	Assoc. Prof. Sericulture	30.11.2013
5	Dr. Mohd. Saleem	Prof. Agroforestry	28.02.2014
6.	Dr. Sudershan Kumar	Assoc. Prof. Vety. ARGO	28.02.2014
7	Dr. Ajay K.Koul	Prof. Sericulture	31.03.2014

Supporting Staff

1	Sh. Bram Dayal	FCLA, PRSS, Samba	30.04.2013
2	Sh. Pritam Dass	Gardner, DLRSS, Dhiansar	31.07.2013
3	Sh. Babu Ram	FCLA, FSR, Chatha	31.08.2013
4	Sh. Sat Pal	FCLA, Div. of Agronomy	31.10.2013
5	Sh. Kewal Krishan	FCLA, Div. of Vety. EPM	31.01.2014
6	Sh. A.K.Saproo	FCLA, AICWIP, Chatha	28.02.2014
7	Sh. Bachiter Singh	FCLA, WMRC, Chatha	31.03.2014
8	Sh. Harbans Singh	Driver, KVK, Bhaderwah	31.03.2014
9	Sh. Amar Jeet Singh	Driver, Vice-Chancellor Sectt.	31.03.2014
10	Sh. Suraj Parkash	Gardner, FOA, Udheywalla	31.03.2014

* Assistant Professor / Equivalent and above

Governance:

Vice - Chancellor's Office

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

Registrar's Office

S.No.	Name	Designation
1.	Dr. 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. Hancy Koul	Assistant Registrar (Est.)
6.	Sh. Tarsem 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.	Dr. Deepak Kher	PPMO
2.	Sh. Ajay Kumar	Asstt. PPMO (Officiating)

Comptroller's Office

S.No.	Name	Designation
1.	Sh. S.C.Bhandari	Comptroller
2.	Sh. Sohan Lal Sharma	Dy. Comptroller
3.	Sh. Ganesh Dass	Dy. Comptroller
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 Division

S.No	Name	Designation
1.	S. Iqbal Singh Sudan	Estates Officer (Officiating)
2.	Sh. Kewal Kumar Raina	Assistant Executive Engineer
3.	Sh. R.K.Kapoor	Assistant Comptroller

Directorate of Education

S.No	Name	Designation
1	Dr. R.M.Bhagat	Director Education (Officiating)
2	Dr. S.B.Bakshi	Dy.Director, Student Welfare
3	Dr. A.K.Gupta	Medical Officer
S.No	Name	Designation
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.	Dr. Ajay Koul	Director Research (Officiating)
2.	Dr. 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.	Dr. V.K.Razdan	University Librarian (Officiating)
2.	Smt. Shashi Prabha	Assistant Librarian
3.	Sh. Leela Dhar Mengi	Assistant Librarian

FACULTY OF AGRICULTURE, CHATHA

Dean's Office

S.No	Name	Designation
1.	Dr. J.P.Sharma	Dean
2.	Smt. Raj Kumari Aima	Administrative Officer
3.	Sh.Vijay Sharma	Account Officer (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. Sushil Sharma	Associate Professor & Head
2.	Dr. R.K. Srivastava	Associate Professor
3.	Dr. J.P. Singh	Assistant Professor
4.	Er. Hemant Dadhich	Assistant Professor
5.	Er. Sushmita M. Dadhich	Assistant Professor
6.	Dr. Manoj Kumar	Assistant Professor

Division 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. B.R. Bazaya	Assistant Professor
5.	Dr. Meenakshi Gupta	Assistant Professor
6.	Dr. Sarabdeep Kour	Assistant Professor
7.	Dr. R. Puniya	Assistant Professor

Division of 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 Professo
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. K.K. Sood	Associate Professor
3	Dr. N. S. Raina	Associate Professor
4	Dr. L.M. Gupta	Associate Professor
5	Dr. Sandeep Sehgal	Assistant Professor
6	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
8.	Dr. Amit Kumar Singh	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 & Post Harvest Technology

Fruit Science Section

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

PHT 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. Ajay Koul	Professor
2.	Dr. R.K. Bali	Associate Professor
3.	Sh. Darshan Singh	Assistant Professor
4.	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
6	Dr. Manmohan Sharma	Assistant Professor
7	Dr. Susheel Sharma	Assistant Professor

School of Genomics, Molecular Biology

S. No	Name	Designation
1	Dr. A. K. Bhat	Coordinator

School of Agriculture Business Managment

S. No	Name	Designation
1.	Dr. Jyotri Kachroo	Coordinator

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

Dean's Office

S.No.	Name	Designation
1.	Dr. S.K.Gupta	Dean (Officiating)
2	Dr. M.S.Bhadwal	Associate Dean
3	Smt. Veena Gupta	Assistant Comptroller

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
4	Dr P M Sawant	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
7.	Dr. Manoj Kumar Tripathi	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

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. Ashok Kumar	Assistant Professor
4.	Dr. Sharad Kumar	Assistant Professor
5.	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. Kafil Hussain	Assistant Professor
4.	Dr. Rajesh Agarwal	Assistant Professor
5.	Dr. Neelesh Sharma	Assistant Professor
6.	Dr. S.R. Upadhyay	Assistant Professor
7.	Dr. R. K. Bhardwaj	Assistant Professor
8.	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. Utsav Sharma	Associate Professor & Head
2.	Dr. Sanjay Agarwal	Assistant Professor
3.	Dr. Waquar Ahmed Abdul Razzaque	Assistant Professor
4.	Dr. Sudhir Kumar	Assistant Professor
5.	Dr. Anil Kumar Pandey	Assistant Professor
6.	Dr. Nishi Pande	Assistant Professor

Division of Veterinary Surgery & Radiology

S.No.	Name	Designation
1.	Dr. M.M.S.Zama	Professor
2.	Dr. A.K.Gupta	Associate Prof. & Head
3.	Dr. Ankur Sharma	Assistant Professor
4.	Dr. D.K.Dwivedi	Assistant Professor
5.	Dr. Pankaj Gupta	Assistant Professor

Division of Animal Genetics & Breeding

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

Division of Animal Nutrition

S. No.	Name	Designation
1.	Dr R. K. 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.Narinder Panotra	Junior Scientist, (Agnonomy)
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. Reena	Junior Scientist (Entomology)
3.	Dr. P.K.Rai	Junior Scientist (Soil-Science)

4.	Dr. V. K. Singh	Junior Scientist (Plant Pathology)
5.	Dr. Sonika Jamwal	Junior Scientist (Plant Pathology)
6.	Dr. Jai Kumar	Junior Scientist (Agronomy)
7.	Dr. Brinder Singh	Junior Scientist (Soil Science)
8.	Sh. Vikas Gupta	Junor Scientist (Agronomy)

Pulse Research Sub-Station Samba

S.No.	Name	Designation
1.	Dr. B.S. Jamwal	Senior 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	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

S. No.	Name	Designation
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

S. No.	Name	Designation
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

S. No.	Name	Designation
1.	Dr. S.K. Rai	Junior Scientist, (PBG)
2.	Dr. Rajeev Sangra	Junior Scientist, (Agronomy)

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

S. No.	Name	Designation
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. B. C. Sharma	Chief Scientist & Incharge

KRISHI VIGYAN KENDRAS

KVK, R. S. Pura

S.No	Name	Designation
1.	Dr. Sanjay Swami	Programme Coordinator
2.	Dr. Vinod Gupta	SMS (Agriculture Extension)
3.	Dr. Pardeep K. Rai	SMS (Soil)
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.	Sh. Manoj Kumar	SMS(Horticulture)
3.	Dr. Abhay Kumar Sinha	SMS (Agriculture Engineering)
4.	Sh. Rakesh Sharma	SMS (Agriculture Extension)
5.	Sh. Puneet Chowdhary	SMS(Agroforestry)
6.	Dr. Y.K.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. Navneet Kour	SMS(Horticulture)
5.	Dr. Julie Dogra	SMS (Home Science)
6.	Mr. Sanjay Khajuria	SMS(Agroforestry)
7.	Dr. Amit Singh Charak	SMS(Agronomy)

KVK, Reasi, Udhampur

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. Anil Kumar Sharma	SMS(Soils)

KVK, Poonch

1.	Dr. Shahid Ahmed	Programme Coordinator
2.	Dr. Neeraj Sharma	SMS(Horticulture)
3.	Dr. Arvind Kumar Isher	SMS(Entomology)
4.	Dr. Sanjeev Kumar	SMS(Plant Breeding)
5.	Dr. Vishal Mahajan	SMS(Agroforestry)
6.	Dr. Suraj Prakash	SMS (Agriculture Extension)
7.	Sh. Pawan Kumar Sharma	SMS (Economics)

KVK Kathua

S.No	Name	Designation
1.	Dr. Amrish Vaid	Programme Coordinator
2.	Dr. Berjesh Ajrawat	SMS (Agriculture Extension)
3.	Dr. Anamika Jamwal	SMS(Plant Protection)
4.	Dr. Rajeev Bharar	SMS(Soil Science)
5.	Dr. Ajit Gurt Manu Parmar	SMS(Horticulture)
6.	Dr. Avinash	SMS(Animal Sciences)

*Not as per seniority.

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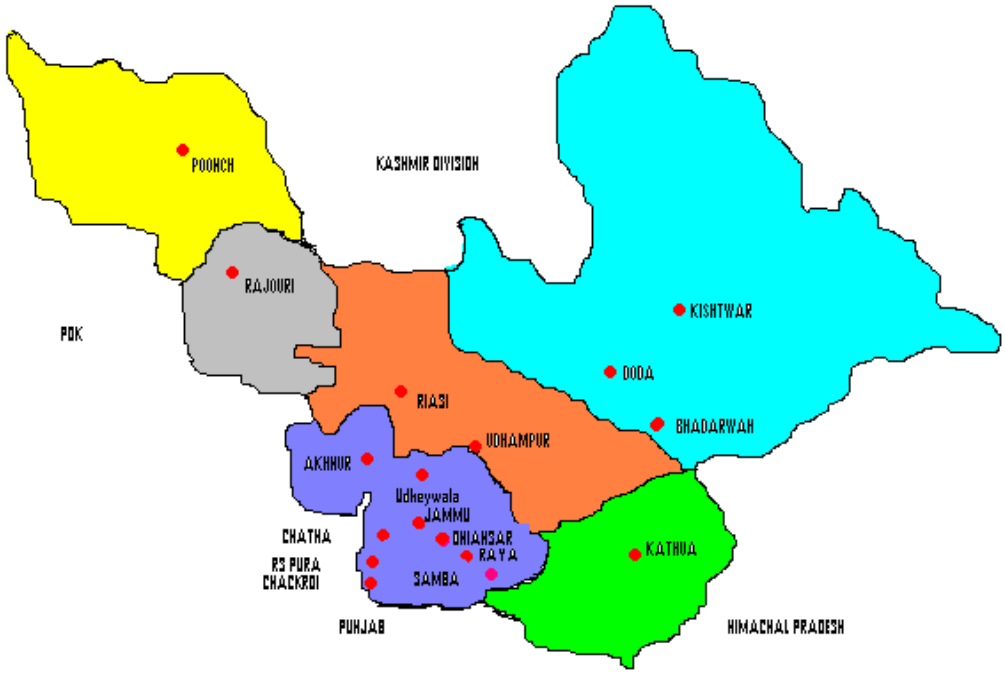
Territorial Jurisdiction of SKUAST - Jammu (Jammu Division)



Head Quarter:
Administrative Building
Main Campus, Chatha

Faculties:

Agriculture: Chatha/Udheywalla
Veterinary Sciences & AH: RS Pura

Schools:
School of Biotechnology
School of Agri-Business Management
School of Genomics, Molecular Biology and Microbiology

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

Research Stations/Sub Stations/Centre:

- Regional Agricultural Research Station, Rajouri
- Dry land Research Sub-Station, Dhiansar
- Rain fed Research Sub-Station for Sub-tropical Fruits, Raya
- Regional Horticulture Research Sub-Station, Bhaderwah
- Pulses Research Sub-Station, Samba
- Maize Breeding Research Sub-Station, Poonch
- Water Management Research Centre, Chatha
- Farming Research Centre, Chatha
- Seed Production Farm, Chakroi, RS Pura
- Maize Research Centre , Udhampur

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