

**10TH
ANNUAL REPORT**

2009-2010



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

CREDIT LINE

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PREFACE

I am pleased to present 10th Annual report of Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu (SKUAST-J) reflecting salient achievements made by the University for the year 2009-10.



The University has moved very fast and achieved many milestones in teaching, research and extension. The role of agriculture education in converting agriculture into a profitable proposition is worth mentioning. The University progressed in providing skilled human resource to meet the needs of farming community in the state in particular. The nomenclature of under graduate degree has been changed from B.Sc. Agriculture to B.Sc. (Hons.) Agriculture and external examination system introduced as per the recommendations of 4th Deans' Committee of Indian Council of Agricultural Research (ICAR). The common academic regulation has been adopted and modifications made in curricula and syllabi of both undergraduate and post graduate degree programmes to enable our students in keeping the pace with the advances in science and technologies in agriculture and allied sectors. The University has deputed scientists/teachers to participate in trainings, workshops, conferences, refresher courses, winter/summer schools in reputed national and international institutes to update their knowledge and expertise.

Agriculture in Jammu region plays a very important role in the economic and ecosystem stability, food and household security and contributes in employment generation. Although, it occupies only 52 per cent of State arable land with predominance of 74 per cent rainfed but contributes 70.7 per cent to its total food production. Agriculture is the way of life for more than 70 per cent of population in J&K. There is a vast scope to enhance productivity and production in the decades ahead to meet the anticipated demands, which requires paradigm shift in generating science based technologies for holistic development in this Himalayan region. However, there still exists a wide gap in achieving self sufficiency in food grain production in the State. The varied agro-climatic conditions support a variety of agricultural and horticultural crops, besides a large livestock wealth. SKUAST of Jammu has made sincere efforts to achieve excellence in developing technologies and making scientific interventions for achieving higher levels of production and productivity to realize atleast 4 per cent growth in state agriculture. Innovative techniques have been developed for improving production and quality of fruit crops as well as livestock products. Several useful and cost effective technologies have been developed and recommended for their adoption on the farmers' fields in horticulture, floriculture, olericulture, veterinary and animal husbandry sciences, which are economically viable, socially acceptable, technologically feasible and are area specific and have direct relevance to marginal and small resource poor farmers. Apart from successful stories in mushroom cultivation, beekeeping, production of seed and planting material, IPM, INM, water management, good initiatives have been taken in backyard poultry, fisheries, farm mechanization and post harvesting processing and value addition. In view of the severe shortage of pulses and oilseeds, better cereal based cropping system in combination with pulses, oilseeds, vegetables and other crops are being promoted in different micro-climatic situation viz. low, middle and high hills which will enhance per unit productivity and income apart from sustaining the natural resources. University is gearing the work on conservation agriculture, high-tech horticulture comprised of micro-irrigation, sprinkler and drip system, integrated farming system etc. . The period under report remained abuzz with activities to achieve the overall goals of providing boost to the agriculture. The research work conducted and technologies developed at the University are properly disseminated to the end users. The extension specialists of the University, in coordination with development departments of State government, have organized demonstrations, exhibitions, Kissan Melas, Kissan Goshtis, village visits and T&V to create awareness among the farmers regarding new crop varieties, farm technologies and improved animal husbandry practices.

Although significant progress has been made so far, much more still needs to be done. More innovations in teaching, research and extension methodologies would help to achieve excellence in Agriculture, Horticulture, Veterinary and Animal Husbandry Sciences.

At this juncture, I would like to thank the Govt. of Jammu & Kashmir, Indian Council of Agricultural Research and other funding agencies for assisting in over all integrated development of the University and complement members of the University Council and the Board of Management, Faculty Members, students and staff of this University and all those who have contributed in the building of the University to the present status.

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

B. Mishra.

(B. Mishra)

Vice Chancellor

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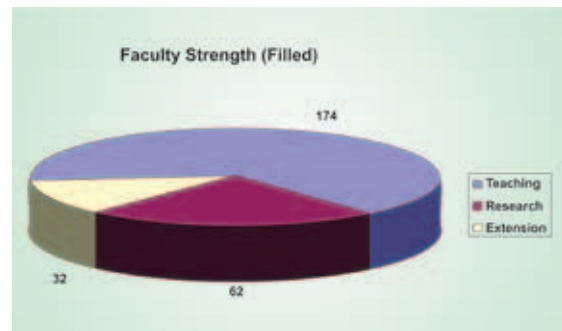
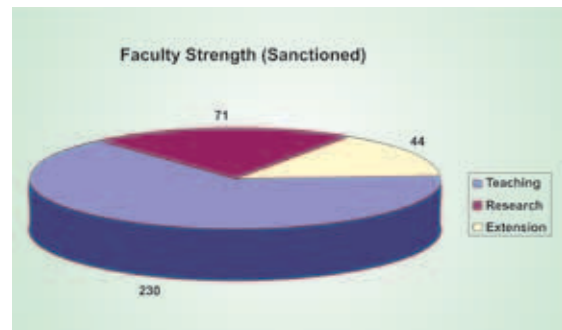
Sher-e-Kashmir University of Agricultural Sciences & Technology (SKUAST) was established in 1982, and subsequently bifurcated as SKUAST of Kashmir (SKUAST-K) and SKUAST of Jammu (SKUAST-J) in 1999. SKUAST of Jammu has completed 10 years of its existence in the service of the farming community particularly Jammu region. During a short span of 10 years the university has made rapid progress in education, research and extension services. The Academic excellence, need based research and support through extension services for enhanced livelihood security of the farmers, have made the presence of the university being felt. The endeavour has been facilitated through infrastructural development including essential buildings, equipment, farmlands and efficient research management system together with qualified and talented personnel for undertaking teaching, research, and extension.

The University has thirty one divisions, eight regional stations/substations, one seed multiplication farm at Chakroi, six Krishi Vigyan Kendras, ten all India coordinated research projects. It has sanctioned staff strength of 1110 comprising of 345 teaching/scientific and 765 technical, administrative and supporting personnel. Out of the total 345 faculty positions, the major component i.e. over 70 per cent is in teaching and the faculty distribution in veterinary sciences is in 60:40 ratios. Efforts are being made to expand dimensions of the university by way of having more faculties and matching human resource and infrastructure.

The University during 2009-10 under the dynamic leadership of Dr. B. Mishra, Hon'ble Vice-Chancellor continued its strive to achieve the goals for the development of competent and professional human resource, addressing farmers' problems through innovative research and transfer of technology in the fields of Agriculture and Veterinary Science. 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 Ph.D (Vety), carried out assigned research agenda as approved by the Research Council and undertook numerous initiatives for the transfer of technology to the farmers. The brief summary is given as under:

Resident Instructions

- The University has total sanctioned strength of 345 faculty position with 230, 71 and 44 in Teaching, Research and Extension Education, respectively. The University has 33 Professors, 60 Associate Professors and 107 Assistant Professor level positions in teaching besides 2 Deans and 2 Associate Deans. Out of 230 faculty members, 120 are in faculty of Veterinary Sciences and Animal Husbandry and 110 are in Agriculture. The academic and



the gender wise spectrum of the faculty reveal that two-third of the faculty holds Doctoral degrees and the female strength in the faculty is just about 15 per cent. There are as many as 634 non-teaching staff members including administrative, technical, auxiliary and supporting staff against 765 sanctioned posts.

- The admissions to the bachelor's degree programmes were made through Board of Professional Entrance Examinations of Jammu and Kashmir Government whereas for master's and doctoral degree programme, the university itself selected the candidates on the basis of merit. As many as 110 and 112 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 12, 67, 9, 8, 6 & 1, respectively. The total number of students on roll remained 645, out of which 433 were in Veterinary Sciences and 212 in Agriculture. The number of female students was about 25 per cent. .

- 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. 2353 OPDs were attended, out of which 72.95 per cent were the students.
- The main library at Chatha with another equally strong unit at R. S. Pura was further strengthened by way of adding 983 number of books this year raising the library acquisition to 25109. As many as 73 Indian and 90 foreign Journals are subscribed. Library is also equipped with LAN and CD-ROM facility with free downloading provision

Research

- The university has made important contributions in varietal improvements during the year. In Rice, the entry IET 19972 (SJR 5) showed promising performance in national trials from Kharif 2006 to 2008 and was proposed for release to varietal identification committee (VIC) during annual rice group meeting at Anand (Gujarat) and State Varietal Release Committee. It is resistant to leaf blast and moderately resistant to brown spot and bacterial leaf blight.
- Out of seventeen test entries developed at Chatha, genotype RSP 561 recorded highest yield (51.0 q ha⁻¹) outperforming PBW 343 by over 18%. The variety posses rust resistance genes Lr 23, Lr 26, Sr 31 and Yr 9.
- Two newly developed single cross maize hybrids were tested in zonal testing under coordinated system and six single crosses were tested in multi-location testing in Jammu region. One single cross hybrid PB9205 was found promising and is being evaluated under minikit trials by state agriculture department in Poonch district.

- Six private sector hybrids, four from Monsanto and two from Plant Gene Seed Company were evaluated at four locations. Monsanto hybrid, Double recorded highest grain yield of 59.33 q ha⁻¹ and exhibited 33.62 percent yield superiority over best check hybrid Kanchan517(44.40 q ha⁻¹). It was followed by Hishell (58.64 q ha⁻¹) and 900 MGold (52.47 q ha⁻¹) with 32.07 and 18.17 percent yield advantage over Kanchan 517.
- A high yielding variety RSPN 25 was evaluated and its performance in station and minikit trials has remained consistently better over the years (from 1998 to 2008) than check variety. It contains comparatively less erucic acid (40.6%) than check variety (43.0%). In minikits an average increase of 16.8 per cent was recorded.
- Raya (*Brassica juncea* L.) / toria (*B. campestris/B rapa*): Raya, RSPR 69 recorded its superiority in All India Coordinated Trials. In state minikits, it showed an increase of 13.5 percent during Rabi 2009.
- Gobhi sarson (RSPN-27) has been nominated for evaluation in All India Coordinated Rapeseed-Mustard Improvement Programme during Rabi 2008 -2009
- Knolkhol (G-40), broccoli (Early Green) and cauliflower (CCS-08) :- G-40, included in AVT-II of national trial, has excelled by 13% over the national check- White Vienna. This entry showed knob initiation just after 20 days after transplanting whereas White Vienna (Control) showed knob initiation in 40 days. Data regarding yield also projected G-40 as the best entry with 350.0q/ha yield as compared to 250.0q/ha yield in control (White Vienna)
- Of the 24 apple cultivars, the highest stem diameter was measured with Firdous (5.03 cm), while it was lowest with Tydeman's Early Worcester(2.33 cm). The average leaf area ranged between 46.14 sq cm to 50.14 sq cm being highest with H29 and lowest with Top Red. The overall survival rate of apple plantations is 80%.
- In Pears(Bartlett, Flemish Beauty, Kashmiri Nakh, Starkrimson, Manning Elizabeth, Max Red Bartlett and Red Bartlett), the overall survival rate has been recorded to be 76%, and highest (3.96 cm) and lowest (1.76 cm)

- stem diameter values were registered with Kashmiri Nakh and Red Bartlett, respectively.
- Highest grain yield of maize recorded (24.55q/ha.) in intercropping of Maize intercropped with mungbean C2 (Maize + Mungbean) followed by maize intercropped with cowpea(22.36q/ha). Among the mulching material used highest grain yield of (22.91q/ha.) was observed with FYM. In the Rabi year season, the highest grain yield of wheat (25.38q/ha.) recorded in the plot of Maize intercropped with mungbean C2 (Maize + Mungbean) followed by maize intercropped with cowpea (23.18q/ha). Among the mulching material used, highest grain yield of (24.80q/ha.) was observed with FYM and it was followed by leaf mulching (22.89q/ha.)
 - Significant decline in grain yield was observed only when sowing was delayed beyond 10th of November under sub-tropical conditions of Jammu. Among the cultivars, Bulland and Sheetal with grain yield values of 70.12 and 68.57, 56.54 & 54.70 and 63.34 & 61.62q/ha recorded during first and second years of experimentation as well as in pooled basis respectively, significantly out yielded cultivar Pratap.
 - Conventional method (25 days old seedling and 3 seedlings/ hill) and SRI (10 days old seedling & one seedling per hill) recorded similar rice grain (PR-113) yield. Irrigating rice crop 7 days after disappearance of water, registered the yield of 49.99q/ha which was superior to other irrigation regimes. However, depth of irrigation had no significant effect on grain yield. Among the establishment methods, irrigation regimes and depth of irrigation, conventional method, 7DADW and 4cm deep irrigation resulted in WUE of 2.72, 3.32 and 3.16 kg/ha/mm respectively.
 - Various weed control treatments like weed free (66.9q/ha), 2 HW at 20 and 40 DAT (59.2q/ha), application of pendimethalin @ 2kg a.i /ha +HW (56.2q/ha) produced significant variation in the spike yield of gladiolus and marked a superiority of 89.5, 67.7 and 59.2 percent over weedy check treatment by resulting in significant reduction of weed dry matter
 - Weed management treatments comprising weed free, fluchlorian @1.0kg a.i/ha PPI+1HW,alachlor @2.0kg a.i/ha PPI+1HW,alachlor @2.0kg a.i/ha PPI +1HW,oxyflorafen @0.35 kg a.i/ha PPE +1HW recorded green okra yield of 250.1,238.5,229.6,218.1 and 217.2q/ha respectively with superiority of 102.8,93.4,86.2,76.9 and 76.2 percent over weedy check treatment.
 - An effective low cost high volume propagation technique has been standardized for strawberry (*Fragaria x ananassa*) Cv. Chandler up to the extent of its commercialization.
 - The juice obtained by steam +basket press method was adjudged the best and was blended with mango pulp for developing squash and R.T.S. The developed product was analyzed after 2, 4, 6 months of storage period for its physico-chemical and organoleptic characters.
 - Micronutrient status of soils under rice growing areas of Jammu. Seventy-eight representative soil samples from different locations were collected from rice growing sub-tropical zone of Jammu region for the analysis of DTPA extractable Zn, Cu, Mn and Fe with mean values of 0.36, 0.59, 4.20 and 20.17 mg kg⁻¹ , respectively. Zinc deficiency was observed in 92% of the samples.
 - Essential oil derived from *Eucalyptus teretecornis* leaves through hydro distillation showed antifungal activity against *Alternaria brassicae*. The antifungal activities were detected using direct bioautographic procedure and *Alternaria alternata* as test organism. Antifungal compounds in *Eucalyptus teretecornis* essential oil were determined as oxygenated terpenoids β -fenchol and α -eudesmol, respectively using GC-MS analysis.
 - Under permanent plot experiment on integrated supply system in Rice-Wheat Cropping system, it was observed that after completion of 24 cycles of Rice-Wheat system, use of organics coupled with inorganic i.e. 50% recommended N through fertilizers + 50% N through FYM/paddy straw/green manuring in rice crop and 100% recommended NPK through fertilizer to wheat crop had stabilized the yield of rice and wheat in a system besides improved soil health.

- Results of an experiment on *Gloriosa superba* (Kalihari) fertilized with different doses of organic and inorganic fertilizers revealed significant increase in seed yield, which contains colchicine having medicinal value. Seed yield of 197.50 kg/ha was obtained with Vermicompost @ 4 t/ha along with N, P, K (40:16.6:7.25) kg/ha. It remained significantly higher as compared to the other fertilizer doses.
- Fungicides viz. Tilt (propiconazole), Folicur (tebuconazole), Baleton (triademefon), mancozeb (Dithane M-45) and bio-agents (*Trichoderma viride* and *T. harzianum*) were evaluated on wheat cultivar PBW-343. Propiconazole at 0.1 % proved most effective with highest per cent disease control (87.70 %) and increase in yield/ha (25.50 %), followed by tebuconazole and triademifon.
- Bacterial wilt by *Ralstonia solanacearum* in solanaceous crop Bacterial wilt (*Ralstonia solanacearum*) incidence varied from 5 to 30%. Out of nine antibiotics evaluated, six viz., Ampiciline, Nalidixic Acid, Ciprofloxacin, Penciline, Streptocycline sulphate and Amoxycline, inhibited the growth of pathogen at 100 and 200 ppm. The effective chemicals are being evaluated under field conditions.
- Twelve isolates each of *Trichoderma* spp. and *Pseudomonas fluorescence* were evaluated against *Rhizoctonia solani*, *Fusarium solani*, *F. oxysporum* f. sp. *capsici*, *Pythium* sp., *Phytophthora capsici* under *in vitro* conditions. Two isolates of *Trichoderma* spp. and one isolate of *Pseudomonas fluorescence* have been mass multiplied on sorghum grains and nutrient broth, respectively, whereas, the plant pathogens were mass multiplied on maize and sand mixture (3:1). The selected biocontrol agents were evaluated in pot culture and under field conditions and exhibited significantly superiority over control and check in brinjal, tomato and gladiolus.
- Seven insecticides were evaluated against termite damage in wheat. Among them, seed treatment with Fipronil 5FS @ 0.3g a.i/kg of seed resulted in termite suppression. Six insecticides were evaluated against the wheat Aphid and imidachloprid 20g a.i/ha, thiamethoxam 1.05 g ai/ kg and Imidacloprid 0.6 g a.i/kg seed treatment were effective against the aphid and produced maximum grain yield.
- During the year under report, 843 faecal samples of cattle, buffaloes, were examined and the positivity observed was 80.34 and 75.34 per cent, respectively. The predominant parasitic eggs observed were stroglylids followed by amphistomes and coccidian oocysts. The snail examination revealed mainly the presence of *Indoplanorbis exustus* which is mainly an intermediate host for amphistomes.
- Examination of faecal samples of dogs and cats of Jammu region showed high prevalence of zoonotic parasites (e.g. hookworm, ascarid etc.). Thus, deworming / population control of stray animals is recommended.
- Ten foliages available in Udhampur district of J&K state were analyzed for protein fractions and *in vitro* dry matter digestibility and variation regarding both the chemical constituents. It appears that N from *F. palmata* would be degraded quickly in the rumen because of its higher solubility. The IVDMD ranged from 38.00 per cent in *F. palmata* to 76.40 per cent in *G. optiva*. The results indicates that the present study, *D. strictus*, *F. virens* and *M. alba* seem to have good nutritional potential for ruminants.
- The poisoning with bifenthrin markedly altered the different pharmacokinetic parameters thereby, suggesting that the dose recommended for healthy animals (5.0 mg.kg⁻¹ followed by 4.7 mg.kg⁻¹ to be repeated after every 12h) would be significantly different from diseased animals (6.7mg.kg⁻¹



Seed Production Activity, Chatha

followed by 6.3 mg.kg⁻¹ to be repeated after every 12h).

- The Scientists of the University produced Nucleus Seed (As per requirement), Breeder Seed (159.73 q), Foundation Seed (1325.74q), Certified Seed/Truthfully labeled (718.75 q) and Participatory Seed Production (147 q)

Extension

- 4805 farmers/farm women and rural youth were imparted training through 216 different short courses. The trainings were organized in crop production, crop protection, horticulture, home science, and soil and fertilizer management.
- The University organized as many as 47 professional trainings for the benefit of farmers and departmental functionaries 105 scientists participated in different seminars/symposia/ workshops at state/national level.



Scientists interacting with farmers during "Village Visit and Stay Programme"

- 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

Other University Activites

- Among publications, the university brought out Journal of Research (Vol-8). As many as 1356 publications including book chapters/ bulletins/ manuals/ research papers etc. were published by the scientists in various journals of repute.

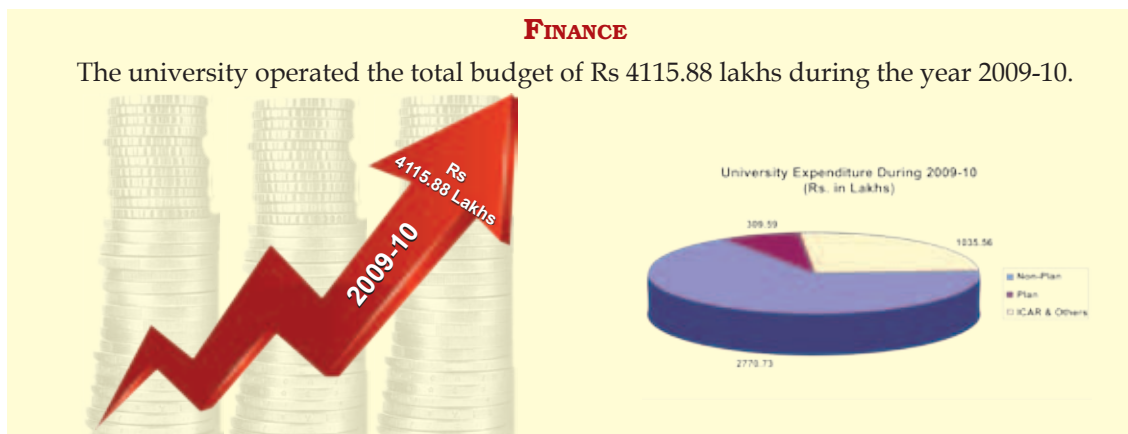


Inauguration of Administrative Block by His Excellency Sh. N.N. Vohra, Governor of J&K

- Among the various buildings inaugurated prominent ones are: Administrative Block and Farmers' Hostel at Main Campus, Chatha.
- Among various Statutory Meetings, University Council, Board of Management, Academic Council, Extension Council were held accordingly.

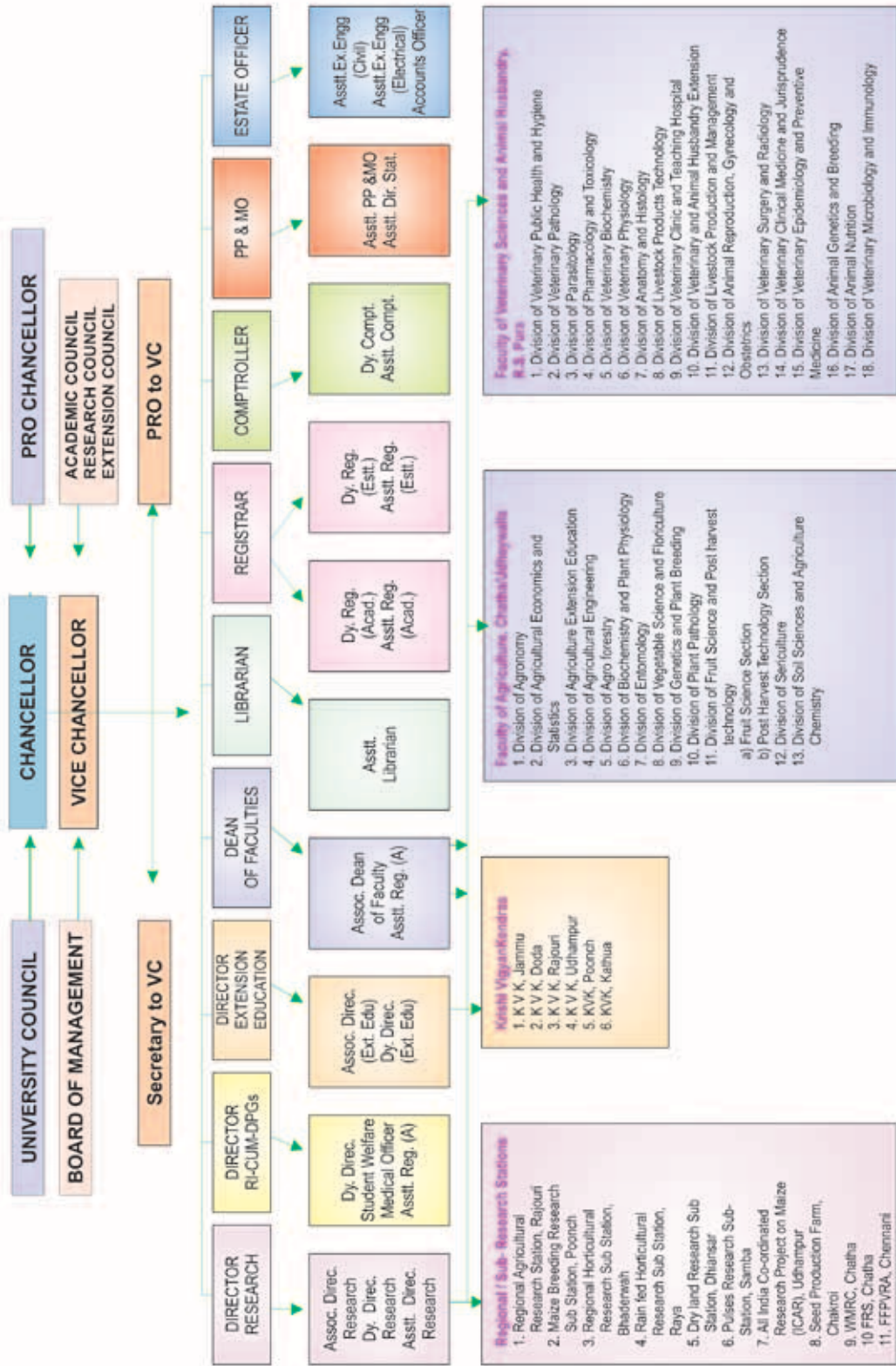
FINANCE

The university operated the total budget of Rs 4115.88 lakhs during the year 2009-10.



ORGANOGRAM

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



Resident Instruction 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 nomenclature of undergraduate degree has been changed from B.Sc (Ag) to B.Sc (Hons) Agriculture and the course curriculum revised

as per the recommendations of 4th Dean's committee. In post-graduate faculty, the revised ICAR syllabus has been implemented from session 2009-10. External examination for undergraduate programme has been introduced. Common Academic Regulations prescribed by ICAR have been adopted by the University. Regulations on Resident Instructions have been revised in light of the 4th Deans' committee recommendations and revised ICAR curriculum for PG programme.

2.1 ACADEMIC PROGRAMMES RUN BY THE UNIVERSITY:

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

PG Programme : M.Sc. (Ag) and M.V.Sc. Ph.D. (Ag) and Ph.D. (Vet)

2.2 DETAILS OF P.G. PROGRAMME:

S.No.	M.Sc.(Agricultural)	Ph.D.(Agricultural)	M.V.Sc.	Ph.D.(Veterinary)
1	Soil Science & Agricultural Chemistry	Soil Science & Agricultural Chemistry	Veterinary Animal Breeding & Genetics	Veterinary Animal Breeding & Genetics
2	Genetics & Plant Breeding	Genetics & Plant Breeding	Animal Nutrition	Animal Nutrition
3	Entomology	Entomology	Animal Reproduction, Gynecology & Obstetrics	Animal Reproduction, Gynecology & Obstetrics
4	Agricultural Extension Education	Agricultural Extension Education	Clinical Veterinary Medicine Ethics & Jurisprudence	Clinical Veterinary Medicine Ethics & Jurisprudence
5	Vegetable Science	Vegetable Science	Veterinary Microbiology & Immunology	Veterinary Microbiology & Immunology
6	Agriculture Economics	Agriculture Economics	Veterinary Parasitology	Veterinary Parasitology
7	Agronomy	Agronomy	Veterinary Pharmacology & Toxicology	Veterinary Pharmacology & Toxicology
8	Fruit Science	Fruit Science	Veterinary Public Health & Hygiene	Veterinary Public Health & Hygiene
9	Post Harvest Technology	Post Harvest Technology	Veterinary Surgery & Radiology	Veterinary Surgery & Radiology
10	Plant Pathology	Plant Pathology	Veterinary Livestock Product Technology	-
11	Statistics	-	Veterinary Biochemistry	-
12	Bio Chemistry	-	Veterinary Livestock Production & Management	-
13	Agro Forestry	-	Veterinary Epidemiology & Preventive Medicine	-
14	Sericulture	-	Veterinary Anatomy & Histology	-
15	-	-	Veterinary Pathology	-
16	-	-	Veterinary Animal Husbandry Extension	-
17.	-	-	Veterinary Physiology	-

2.3 FACULTY SPECTRUM

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

The classified information pertaining to the faculty strength cadre wise are given in the table. As evident there are 230 faculty positions as sanctioned strength for both the Faculties viz Faculty of agriculture and Faculty of Vety. Sciences & Animal Husbandry

2.4 STUDENT STRENGTHS

The strength of the students admitted to B.Sc(Hons) Agriculture programme was 53 during the academic session 2009-10 whereas for B.V.Sc and AH programme it was 57. The number of students admitted to M.Sc (Ag.) and Ph.D (Ag.) programme were 35 and 10, respectively in different divisions. In Veterinary faculty 61 MVSc and 6 Ph.D students were admitted during the academic session of 2009-10. The total strength of the students on roll in Post Graduate and undergraduate Degree programme was 212 and 433 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 the Faculty	Degree Programme	Students strength (2009-10)										Total	
			I Year		II year		III Year		IV Year		V Year			
			M	F	M	F	M	F	M	F	M	F	M	F
1.	Faculty of Agriculture.	B.Sc (Hons) Agriculture.	28	25	22	20	22	15	13	09	-	-	85	69
2.	Faculty of Vety.Sciences & Animal Husbandary.	B.V.Sc & A.H	35	22	35	11	46	19	40	14	49	08	205	74

Among these students who qualified for the award of the degree were 26 from agriculture and 76 were from the veterinary sciences.

2.6 POST GRADUATE PROGRAMME

S. No.	Name of the Faculty	Master's Programme				Sub Total	Ph.D. Programme						Sub Total	Total			
		I Year		II Year			I Year		II year		III Year						
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1.	Faculty of Agriculture	32	03	21	11	53	14	07	03	01	06	15	-	23	09	76	23
2.	Faculty of Veterinary Sciences & AH	47	14	33	09	80	23	05	01	01	01	02	-	08	02	88	25

2.7 ADMISSION FACULTY WISE (2009-10)

S.No.	Divisions	Master's Degree	Doctoral Degree
FACULTY OF AGRICULTURE			
1.	Agronomy	03	-
2.	Entomology	05	02
3.	Agricultural Ext. Education	01	02
4.	Agricultural Economics	-	02
5.	Vegetable science	01	-
6.	Forestry	04	-
7.	PHT/Food Science	04	02
8.	Fruit Science	04	01
9.	Soil Science & Agricultural Chemistry	04	-
10.	Biochemistry & Pl. Physiology	01	-
11.	Genetics & Plant Breeding	04	01
12.	Plant Pathology	04	-
FACULTY OF VETERINARY SCIENCES & AH			
1.	Animal Nutrition	04	01
2.	Veterinary Public Health & Hygiene	05	-
3.	Veterinary Pharmacology & Toxicology	05	02
4.	Veterinary Clinical Medicine & Jurisprudence	06	02
5.	Veterinary Pathology	06	-
6.	Animal Genetics & Breeding	04	01
7.	Animal Reproduction Gynaecology and Obstetrics	05	-
8.	Livestock Products Technology	04	-
9.	Veterinary Microbiology	03	-
10.	Veterinary Epidemiology & Preventive Medicine	01	-
11.	Veterinary Parasitology	04	-
12.	Veterinary Surgery & Radiology	05	-
13.	Animal Husbandry Extension	02	-
14.	Veterinary Biochemistry	02	-
15.	Veterinary Anatomy & Histology	02	-
16.	Veterinary Physiology	03	-

2.8 NUMBER OF STUDENTS WHO COMPLETED DEGREE DURING 2009-10:

S.No.	Degree	No. of Students	
		Male	Female
Post Graduate			
1	Ph.D (Agriculture)	03	03
2	Ph.D (Veterinary)	01	-
3	M.Sc. (Agriculture) & Allied Sciences	05	04
4	M.V.Sc.	06	02
Undergraduate			
1	B.Sc. (Agriculture)	9	3
2	B.V.Sc & AH	51	16

2.9 THESIS ACCEPTED

S.No	Name of the student	Name of the Major Advisor	Title of thesis	Degree
1.	Divya Sharma	Dr. Ramesh Bali	Evaluation of indigenous bivoltine silkworm (<i>Bombay x mori L.</i>) hybrids	M.Sc Sericulture
2.	Mudasir Iqbal	Dr. Jyoti Kachroo	Investmnet appraisal of Mango and Ber Fruit Production In Jammu District of J&K State	M.Sc (Agri. Economics)
3.	Sandeep Kumar	Dr. Lalit Mohan Gupta	Studies on germplasm evaluation and effect of fertilizers on growth and yield of <i>Gloriosa superba L.</i>	M.Sc Forestry
4.	Riazul Rehman	Dr. Raj Kumari Koul	Formulation and standardization of value added products from Papaya	M.Sc (Agri.) PHT
5.	Barinder Singh	Dr. Mahital Jamwal	In vitro propagation studies in grape (<i>Vitis vimifera L.</i>) cv. Perlette	M.Sc (Agri.) Fruit Science
6.	Kirti Jamwal	Dr. V.K.Wali	Bio-efficacy of herbicides on growth yield and quality of strawberry (<i>Fragaria x ananassa Duch.</i>) cv. Chandler	M.Sc (Agri.) Fruit Science
7.	Romisa Rafiq	Dr. Sandeep Chopra	Effect of integrated nutrient management on growth, yield and quality of potato (<i>Solanum tuberosum L.</i>) var. Kufi Badshah	M.Sc (Agri.) Vegetable Science)
8.	Jehangir Ahmad Baba	Dr. Ravi Kher	Effect of planting time and mulching material on fruit yield and quality of strawberry (<i>Fragaria x ananassa Duch.</i>) cv. Chandler	M.Sc (Agri.) Fruit Science
9.	Bandana Mazal	Dr. Ajay Koul	Morphology and silkworm bioassay on improved varieties of mulberry	M.Sc Sericulture
10.	Munaza Mushtaq	Dr. Deepak Sharma	Moleclular characterization of Indian goat breeds using RAPD-PCR	MVSc ABG
11.	Muneer Ahmad Dar	Dr. Rajinder Raina	Bifenthrin induced oxidative damage and biochemical alterations in rats and its attenuation with Vitamin C	MVSc VPT
12.	Amajadul Islam	Dr. SK Gupta	Clinico-therapeutic studies on sub-acute ruminal acidosis in diary cattle	MVSc VCM
13.	Abshiek Sharma	Dr. Rajeev Singh	Studies on prevalence, haemato-biochemical and mineral alterations during mastitis in cross bred cattle and its therapeutic management	MVSc VCM
14.	Sheikh Rafah Ahmad	Dr. Vikas Pathak	Effect of sorbic acid and milk fat levels on the quality of Kaladhi	MVSc LPT
15.	Syed Sambul Jan	Dr. K Barman	Effect of replacement of concentrate by mulberry leaves (<i>Morus indica</i> var. Suzanpur) on nutrient utilization in goats	MVSc Animal Nutrition
16.	Ishtiyag Ahmad Mir	Dr. Ravinder Kumar	Effect of locally available medicinal plants as feed additives on nutrient utilization in goats	MVSc Animal Nutrition
17.	Rajesh Kumar Kalha	Dr. Rajesh Agarwal	Epidemiological studies and evaluation of Oxyclosanide and Rafoxanide against bovine Parampistomiasis in Jammu district	MVSc VEP
18.	Muneeshwar Sharma	Dr. VK Razdan	Studies on leaf blight and fruit rot of brinjal (<i>Solanum melongena L.</i>)	Ph.D Plant Pathology
19.	Dalip Kumar Koul	Dr. Bikram Singh	Genetics of yield and drought related traits in bread wheat (<i>Triticum aestivum</i>)	Ph.D PBG

20	Shivali Sharma	Dr. V.K.Wali	<i>In vitro</i> propagation studies of strawberry (<i>Fragaria x ananassa</i> Duch) cv. Chandler	Ph.D Fruit Science
21	Rahul Gupta	Dr. M. P Sharma	Influence of organic and inorganic on soil characteristics and crop yield under rainfed maize - gobi sarson sequence.	Ph.D Soil Science
22	Veena Sharma	Dr. J. Prabhakara	Influence of puddling intensity and organic amendments on soil water availability and performance of rice under system of rice intensification and conventional transplanting	Ph.D Soil Science
23	Kuljeet Kour	Dr. Bikram Singh	Induction of Doubled Haploids in Bread Wheat (<i>Triticum aestivum</i> L.) through wheat x maize system	Ph. D PBG
24	Sudershan Kumar	Dr. M. Mutha Rao	Computation of judicious treatment of endometriosis in cows	Ph. D ARGO

2.10 STUDENTS WELFARE

2.10.1 Facilities available for sports/cultural activities

FOA, Chatha:

- Students Centre having facilities for indoor games like TT, Carrom, Ludo, Chess etc. , and a reading room..
- Sports Ground identified and under development
- Mini Conference Hall available for cultural activities

FVSc & AH, RS Pura:

- A covered stage and open air space for seating of audience.
- For literary activities, cultural events/conferences etc. a conference hall with capacity of 400 plus and mini hall with capacity of 60 persons.
- Sports play field for cricket, football, hockey, volleyball and athletics available and under use.

2.10.2 Sports and cultural activities undertaken during the year:

S. No.	Events	Venue	Date
1.	Inter-faculty sports meet	RS Pura	1-5 May, 2009
2.	Career counseling workshop	RS Pura	4 May, 2009

3.	Inter-faculty elocution contest	RS Pura	7 May, 2009
4.	North zone inter-university elocution contest	Chatha	14 May, 2009
5.	Annual day and prize distribution function with cultural programme	Chatha	27 May, 2009
6.	Orientation lecture and lecture on anti ragging rules	RS Pura	17 Aug, 2009
7.	Orientation lecture and lecture on anti ragging rules	Chatha	28 Aug, 2009
8.	Inter-faculty debating competition	RS Pura	29 Sep, 2009
9.	Intra-faculty sports - FVSc & AH	RS Pura	19-23 Nov, 09
10.	World Aids Day	RS Pura/Chatha	1 Dec, 2009
11.	Intra-faculty sports - FOA	RS Pura	3-6 Dec, 2009

2.11 PARTICIPATION IN INTER-UNIVERSITY COMPETITIONS

- North zone inter-university elocution contest at Chatha Campus 14th May, 2009
- Annual Inter University Youth Festival "REVERIE 2009" at National Dairy Research Institute, Karnal. Students won the overall Trophy-2009.



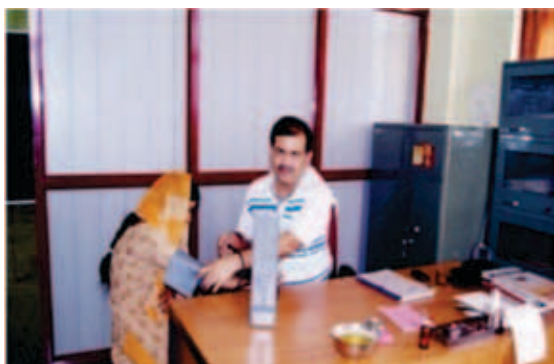
Interfaculty Volley ball match

NSS

- Programme initiated in the university with Dr. SB Bakshi as the programme coordinator during the year 2009-10.
- Registration of the volunteers was initiated in the Faculty of Agriculture and Veterinary Sciences with Dr. Vishal Gupta and Dr. Rajinder Bhardwaj as Programme Officers

2.12 HOSTELS AND HOSTEL FACILITIES

Separate hostel accommodation for boys and girls is available at RS Pura campus and one hostel is under construction at the main campus, Chatha. Male residents are housed in two hostels namely Boys Hostel and Students Hostel. The boys hostel has 44 rooms for housing 138 students at a time with adequate furniture and fixture facility. The students hostel has a capacity to accommodate 143 boarders; 29 rooms are single seater, 49 rooms are double seater and have 16 single room suites for foreign students with facility of kitchenette and attached rest rooms. The girl boarders are housed in Girls Hostel and an adjacent building comprising of four flats has also been provided for girl



Medical Officer, SKUAST-J examining a patient

boarders. Spacious and well furnished dining hall, common room, lawn, courtyard, CTV with cable/dish connection etc., have also been provided in the hostels. Facilities for indoor games like table tennis, chess, ludo, and carom boards, also have been made available.

2.13 HEALTH CARE FACILITIES

Medical facilities are available to the university staff, faculty members and students at both the campuses of the university. Two full time medical officers (which includes one lady medical officer), staff nurse and other para-medical staff are available to ensure health care facility. A 100 MA portable X-ray machine has also been installed in the health centre at R.S.Pura. The testing facilities are open to students, faculty members and staff of the University free of cost. The facility of dental and two bed indoor medical facility at RS Pura campus and Chatha campus of the university is also available.

The annual work done statement of the Health Centre is detailed below:

S.No.	Type of case	No.
1.	Total OPD	2353
2.	Students treated	1716
3.	Staff treated	637
4.	Hostlers	1204
5.	Non Hostlers	512
6.	Male	1809
7.	Female	544
8.	Surgical cases	749
9.	Medical cases	1604
10.	Patients referred to GMC	15
11.	Emergencies attended	77
12.	Indoor	54
13.	X-ray	18

2.14 SCHOLARSHIP

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

2.15 EDUCATIONAL TOUR

A tour comprising of 30 students of 3rd year B.Sc.(Ag) Batch 2007 along with two faculty members were sent to All India Educational Tour w.e.f 14-31st, January, 2010. Students were oriented with India's premier and prestigious institutions in the field of agricultural research and education, which included PAU, Ludhiana, IARI, New Delhi, ANGRAU, Hyderabad, UAS Bangalore, and UAS, Dhaward.



Students at PAU, Ludhiana

The All India Educational Tour of BVSc & AH 4th Year Students was initiated on 10 February 2010 to 2nd March, 2010. Total 50 touring students (36 Boys and 14 Girls) were accompanied by 4 staff members. The group visited various places of veterinary students interest viz IVRI at Bareilly; National Science Centre at New Delhi; Veterinary college of OAU



Students at IVRI, Bareilly

and Nandankana zoological park & wild life sanctuary at Bhubneswer; veterinary college at Vepery Chennai; Veterinary college at Mannuty, Trichur; ICAR Marine Fishery Institute at Cochin and Bombay Veterinary College at Parel.

2.16 RURAL AGRICULTURE WORK EXPERIENCE

As a part of regular curriculum in the faculty of agriculture, final year B.Sc. (Ag) students were placed in rural areas for one semester under Rural Agricultural Work Experience (RAWE) programme. Under this programme, students



are exposed to practical field training for real life situation of the profession. Each student is attached to one host farmer for mutual learning. During 2009-10, 22 students have undergone RAWE programme. The village adopted under this programme was Tanda, R.S.Pura, Jammu



Rawe Programme

2.17 INTERNSHIP PROGRAMME

Students of B.V.Sc&AH 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 2009-10, 67 students have successfully completed their internship programme in B.V.Sc&AH. The expenditure involved for one student for six months is Rs.10800/- & total expenditure for 67 students was Rs.7,23,600/-.

2.18 LIBRARY

Usage

Campus	Books Borrowed Books		Literature referred in the Library					
			Journals					
			Back Volumes		Current Issues			
	Per day	Total	Per day	Total	Per day	Total	Per day	Total
Chatha	11	2825	36	8645	32	7537	39	9235
R S Pura	15	3601	22	5200	18	4320	25	6000
Total	27	6426	58	13845	50	11857	64	15235

New Additions

Campus	Books	Journals	Thesis	Reports	Pamphlets/ Newsletter	Gift Books	ST
Chatha	722	104	35	61	195	NA	NA
R S Pura	261	59	<i>Sections only available at Central Library Chatha</i>			NA	NA
Total	983	163	35	61	195	NA	NA

Journal Subscription

Campus	Paid		Exchange	Gratis	Total
	Indian	Foreign			
Chatha	61	43	NA	NA	104
R S Pura	12	47	NA	NA	59
Total	73	90	NA	NA	163

Book Bank Services

Campus	No of Books Available		No of Books Issued		Special Issue for JRF Aspirants
	General	SC/ST	General	SC/ST	
Chatha	677		69		NA

Reprographic Services

Campus	No of exposures taken		
	Official purpose	On payment	Total
Chatha	10865	27224	38089
R S Pura	1525	339	1864
Total	12390	27563	39953

Receipts

Campus	Overdue charges	Collection from lost tickets	Cost recovered from lost books	Text book bank	Reprographic Service	Internet	Total
Chatha	2887	NA	NA	2217	20418	Free	25523
R S Pura	5518	180	165	Nil	254	Free	6117
Total	8405	180	165	2217	20672	Free	31640

Other Services provided

Campus	News Clippings	Internet	Journals online	CD ROM services	Miscellaneous (Documentation Service)
Chatha	Yes	Yes	Yes (2700 + e-journals through CeRA, CAB Abstracts Database Online etc.)	Yes	Yes
R S Pura	Yes	Yes	Yes (2700 + e-journals through CeRA, CAB Abstracts Database Online etc.)	Yes	Yes

Documentation Service

Resource Management: New books are being entered in the SOUL database and old books are being classified and catalogued. Task of assigning subject headings to all new and old books is completed.

Reference: Day to day reference service given to readers.

Stock Maintenance: Open shelves arrangement according to DDC is maintained.

Reprography Services: Photostat service on concessional rate of Re. 0.70/impression is available. Print out service is also available within the Library at subsidized rates.

Library Participation in Post Graduate teaching program: LIB-601 "Library Science and Technical Writing" 1+0 credit hour course is being taught to the PG students.

Library Automation Activity: Job of crating database of library holdings on SOUL database is in progress.

Online Library

Central Library, Chatha

Established with ten computers with access to more than 2700 e-journals through CeRA Consortium, CAB CD online etc.

University Library, R.S.Pura

Established with Six computers with access to more than 2700 e-journals through CeRA Consortium, CAB CD Online etc.

Cyber Library: Established with five computers to access internet, communication and data processing.

Solar Power Plant

Central Library, Chatha

Being installed with capacity of 30 KwA exclusively for the library building of FOA, Chatha.

University Library, R.S.Pura

Being installed with capacity of 20 KwA exclusively for the library building of FVSc&AH, R S Pura.

Training provided to Library Users:

S.No.	Organizer	Title	Participants	Year	Place
1	Elsevier Publisher, New Delhi	Online 2 nd Awareness / Training in accessing Science Direct http://www.sciencedirect.com	PG Students, JRF, Faculty Members & Employees	2009	Central Library, FOA, Chatha
2	Dr. V. Sreenivasulu, University Librarian	Online access to CeRA Consortium including 2700+ e-journals.	PG Students, JRF, Faculty Members & Employees	2009	Central Library, FOA, Chatha

Training of Library Professionals:

S.No.	Name of Professional	Title	Date	Place
1	Sh. Leela Dhar Mangi, Assistant Librarian, R S Pura	Refresher course on the theme of "Networking and automation of academic libraries" in Library & Information Science	15.07.2009 to 08.08.2009	ASC, University of Kashmir, Srinagar
2	Smt. Asha Rani, Library Assistant	Participated in Training program of existing SOUL software	12.08.2009 to 14.08.2009	Delhi Library Association, Ranganathan Bhawan, New Delhi.

Library Membership

Types of Members	Central Library, FOA, Chatha	University Library, FVSc&AH, R S Pura
Faculty	210	86
Ph.D Student	70	10
M.Sc Student	85	87
UG Student	185	221
Total	550	403

The research is being carried out by the scientists at Faculty of Agriculture, Faculty of Veterinary Sciences and Animal Husbandry and at different research stations/sub-stations/centres, spread over the entire Jammu province of Jammu & 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 coordinated research projects and other schemes of Indian Council of Agriculture Research (ICAR), state plan and non plan and various other sponsoring agencies *viz.* HTMM, DBT, DST, MES, NMPB, AYUSH *etc.*

The research outputs accrued from different disciplines are reported as under

3.1 CROP IMPROVEMENT

3.1.1 Rice

3.1.1.1 Development of non-basmati varieties for Jammu region

The entry IET 19972 (SJR 5) showed promise in national trials from Kharif 2006 to 2008 and was proposed for release to Varietal Identification Committee (VIC) during Annual Rice Group Meeting at Anand (Gujarat) and State Varietal Release Committee. It is resistant to leaf blast and moderately resistant to brown spot and bacterial leaf blight. This entry is promising for Jammu & Kashmir, Haryana, U.P., Gujrat, A. P. and T. N. Two new entries SJR 40 and SJR 51-1-2-1 were evaluated in AICRIP of DRR, during Kharif 2009 for IVT-IM (Irrigated Medium) and IVT-MH (Mid Hill) trials.

Basmati & non-basmati breeding materials planted during kharif 2009.

Generations	No of crosses	Single plant progenies
F ₁	20	-
F ₂ (BC ₁ & BC ₂)	35	128
F ₄	36	140
F ₅	28	62
F ₆	18	16



Exploitation of basmati and non-basmati rice hybrids using CMS system in rice

Various cytoplasmic male sterility (WA) lines of non-basmati rice were evaluated for stability during Kharif 2009. A set of 17 putative TGMS lines is being evaluated at different locations for their stability and seed multiplication

3.1.1.2 Development of introgression lines towards pyramiding of aroma QTLs in Basmati rice (*Oryza sativa* L.)

Eighteen accessions of aromatic germplasm lines have been collected, evaluated and stable ones used in hybridization programme. DNA extraction of the parental germplasm and F₁s for marker aided screening of introgression of aroma is being done.

3.1.1.3 Induction of doubled haploids for bacterial leaf blight resistance in basmati rice (*Oryza sativa* L.) through another culture.

Nine BLB resistant lines were crossed with six genotypes of basmati rice, their F₁s anthers were cultured on N₆ medium supplemented with different combinations of growth hormones (2,4-D and Kinetin) and amino acids (proline, cystine, glutamine and tryptophan). Response of anthers to callus induction was comparatively more in N₆ medium supplemented with amino acids such as proline, cystine, glutamine and tryptophan than N₆ medium having only growth hormones.

3.1.2 Wheat

3.1.2.1 Station Varietal Testing

Seventeen test entries developed at Chatha, were evaluated during Rabi 2008-09 and

Genotypes RSP 561 recorded highest yield (51.0q ha⁻¹) outperforming PBW 343 by over 18%. Release proposal of this variety submitted to State Varietal Release Committee



*A new wheat (Timely sown Irrigated condition)
RSP 561*

3.1.2.2 Varietal Nomination/Promotion at National Level

RSP 561 was promoted from AVT 1 to AVT 2 during Rabi 2009-10. It ranked 1st out of 22 national entries tested including four national checks in NEPZ of country. The zonal mean yield of this entry was 40.3q ha⁻¹ whereas the best check PBW343 yielded 39.5q ha⁻¹ recording an increase of 4.5% over it. RSP 561 is known to possess rust resistance genes *Lr 23, Lr 26, Sr 31 and Yr 9* thus showing multiple resistances.

RSP-566 promoted to AVT-IR-TS-TAS during Rabi 2009-10 for NEPZ. During Rabi 2008 -09 it ranked at second place in NEPZ out of 49 entries tested.

Two entries namely **JAUW 584** and **JAUW 585** have been nominated to NIVT -1A during *Rabi* 2009-10 on the basis of rust resistance found during IPPSN and one entry namely JAUW 584 was promoted to AVT-1 for NWPZ.

Eight newly stabilized homozygous lines were sent for observing their rust reaction in IPPSN during *Rabi* 2008-09. Out of these, three entries qualified for testing in NIVTs. Two entries RSP 581 and JAUW 595 were sent for testing in NIVT

3.1.2.3 Wheat Breeding Programme

S. No	Generation	No. of combinations/lines	Parentage
1	F ₁	21	Winter/ Spring
2	F ₂	30	Winter/ Spring
3	F ₃	106	Intervarietal, Winter/ Spring, Wild germplasm/ <i>T.aestivum</i>
4	F ₄	40	Winter/Spring
5	F ₅	50	Winter/Spring

During Rabi 2009-10, three trials (AVT-IR-TS-TAS, AVT-IR-LS-TAS and AVT-RF-TS-TAS) were conducted under AICRP on Wheat & Barley.

3.1.2.4 Germplasm maintenance:

Wheat germplasm (24 winter wheats and 20 wild wheats) is being maintained for use in breeding programmes.

3.1.3 Maize

3.1.3.1 Heterotic breeding in maize

Development of single cross maize hybrids of different maturity groups



Inbred hybrid breeding

Among 225 advanced inbred lines, 150 promising lines were advanced through selfing for seed increase. Eighteen single cross hybrids were generated from selected inbreds for further evaluation and phenotypic profiling.

3.1.3.2 Multi-locational Hybrid Evaluation Trials

Public Sector Evaluation Trial

Yellow grain

Fifteen maize hybrids were evaluated at 5 locations. Single cross hybrid Vivek Hybrid -25 recorded highest grain yield of 49.39q ha⁻¹ with 17.42 percent yield advantage over best check Kanchan 517 (42.06q ha⁻¹). This hybrid was also earlier in maturity.

White grain

Thirteen entries evaluated at four locations revealed single cross hybrid HM-5 recorded highest grain yield of 37.89q ha⁻¹ with yield superiority of 34.93 percent over hybrid check Kanchan 612 (28.08q ha⁻¹). It was followed by newly developed hybrid PB-9205 (35.31q ha⁻¹) of Poonch centre.



Maize Hybrid PB-9205

Private Sector Hybrid Evaluation Trial

Six private sector hybrids four from Monsanto and two from Plant Gene Seed Company were evaluated at four locations. Monsanto hybrid Double recorded highest grain yield of 59.33q ha⁻¹ and exhibited 33.62 percent yield superiority over best check hybrid Kanchan517(44.40q ha⁻¹ . It was followed by Hishell (58.64q ha⁻¹) and 900MGold (52.47q ha⁻¹) with 32.07 and 18.17 percent yield advantage over Kanchan 517.

Two newly developed single cross hybrids were tested in zonal testing under co-ordinated system and six single crosses were tested in multilocal testing in Jammu region. One

single cross hybrid PB9205 was found promising and is being evaluated under minikit trials by state agriculture department in Poonch district.

3.1.4 Oilseeds

3.1.4.1 Gobhi sarson (*Brassica napus* L.)

A high yielding variety RSPN 25 was evaluated and its performance in station and minikit trials has remained consistently better over the years (from 1998 to 2008) than check variety. It contains comparatively less erucic acid (40.6%) than check variety (43.0%). In minikits an average increase of 16.8 percent was recorded.

Gobhi sarson (RSPN-27) has been nominated for evaluation in All India Coordinated Rapeseed-Mustard Improvement Programme during Rabi 2008 -2009.



3.1.4.2 Raya (*Brassica juncea* L.)/toria (*B. campestris*/B rapa):

Raya, RSPR 69 recorded its superiority in All India Coordinated Trials. In state minikits it showed an increase of 13.5 percent during Rabi 2009.

3.1.4.3 Brassica Breeding

Fifty different accessions of wild relatives of *Brassicas* including *Camelina*, *Crambe*, *Eruca*, *Erucastyrum*, *Enarthrocarpus*, *Dpilotaxis*, *Hirschfeldia*, *Moricandia*, *Sisymbrium*, *Trachystoma* and *Sinapis* were procured from different sources.

Utilizing these species, a number of intergeneric/ interspecific crosses affected with *B. napus* and *B. juncea* have been planted for further genetic and cytogenetic analysis.

3.1.5 Vegetables

3.1.5.1 Cole crops

The promising lines have been selected in the cole crops. Some of the lines have consistently performed better over the years and their seed production has been made possible under subtropical conditions of Jammu, intermediate zone (Rajouri and Chenani). The important one includes knolkhol (G-40), broccoli (Early Green) and cauliflower (CCS-08). G-40, included in AVT-II of national trial, has excelled by 13 per cent over the national check- White Vienna. This entry showed knob initiation just after 20.0 days after transplanting whereas White Vienna (Control) showed knob initiation in 40 days. Data regarding yield also projected G-40 as the best entry with 350.0q ha⁻¹ yield as compared to 250.0q ha⁻¹ yield in control (White Vienna)

3.1.5.2 Tomato

Twenty seven hybrid combinations were evaluated in Kharif 2009. Highest yield was recorded in hybrid combination DVRT 2 x CGNT 12 (539.41q ha⁻¹) which was statistically superior to commercial hybrid Lehar (334.10q ha⁻¹) (check).

Some genotypes of tomato that have shown relative tolerance to frost during 2009–10 winters have been selected among the germplasm lines grown under open conditions .

Tomato AVT-I (Indeterminate): Among 7 genotypes tested, highest yield of 93.16q ha⁻¹ and fruit weight (72.83 g) was obtained in PAU-2372 which was statistically superior to all the other genotypes.

Tomato AVT- I (Determinate): Among 9 genotypes tested, none of the genotypes surpassed DVRT - 2 (check) in yield (147.36q ha⁻¹) and fruit weight (75.80 g).

Tomato AVT II (Determinate): Among 6 genotypes tested, maximum yield was obtained in DVRT-2 (check) (147.36q ha⁻¹) while maximum number of fruits per plant were obtained in VR 415(46.25).

3.1.5.3 Okra

Thirty F5 single plant progenies were evaluated on single plot basis against the check Varsha Uphaar. Nine outstanding progenies were identified on the basis of performance and these will be further evaluated in the next year. These lines are 705-1-2-3, 705-1-1(small), 705-1-1 (tall), 505-1-1 (hybrid No.505), 405-1-6, 905-1-4-1, 705-1-2-1, 705-1-1-1 and JBS-2406 (Seli Special).

Among eight genotypes in IET, including 2 checks (Parbhani Kranti and Pusa Sawani) tested, maximum yield was obtained in 08/3 entry (260.89q ha⁻¹) which was at par with entry (08/1) (257.02q ha⁻¹). Among ten genotypes tested including 2 checks (Parbhani Kranti and Pusa Sawani) maximum yield was obtained in JOH-05-09 entry (251.74q ha⁻¹) which was statistically superior to rest of the treatments including checks.

3.1.5.4 Bottle gourd

Among nine entries tested, PBOG-40, PBOG-90, VR-2 and JBG-50 recorded yield of 216q ha⁻¹, 200q ha⁻¹, 200q ha⁻¹ and 198q ha⁻¹, respectively. The entries namely PBOG-40, PBOG-90, VR-2 were having long type of fruits with an average fruit weight ranging from 0.9kg to 1.0kg. But maximum fruits per vine were recorded in PBOG-40 (12) and JBG-50 (11).

Among seven entries tested in IET, maximum yield of 200q h⁻¹ was obtained in BOGVAR-2 where the fruits were oblong with 22.5 cm length and 11.5 cm width as compared to local and regional check with (180q ha⁻¹). Maximum number of fruits per vine (12.0) were recorded in BOGVAR-4 having 198.3q ha⁻¹ yield.

3.1.5.5 Carrot

Highest yield of 395.07q ha⁻¹ was obtained in genotype IPC 125 which was statistically at par with IVCT-2 (347.53q ha⁻¹), IPC-126 (299.84q ha⁻¹) and IPC 122 (290.26q ha⁻¹). Maximum root weight was observed in IPC 125 i. e., 283.00 g which was statistically at par with IPC 126 (247.00 g) and IPC 122 (235.00 g). Maximum root length was observed in genotype IPC 125 i. e., 22.56 cm which was statistically at par with IVCT - 2 (22.40 cm), IPC 126 (22.10cm) and IPC 122 (21.86 cm)

3.1.5.6 Chilli

Among 9 genotypes tested for 2 years at RARS, Rajouri, higher yields were recorded in CCH-06-05 (132.55q ha⁻¹) and CCH-06-06 (121.3q ha⁻¹).

3.1.5.7 Peas

An experiment was conducted to evaluate twenty genotypes of garden pea for yield and yield contributing characters at RARS, Rajouri during Rabi season of 2007-08 and 2008-09. Pooled data for two years revealed maximum yield in P-89 (287.5q ha⁻¹) which was significantly superior to CPS-05-03 (255.7q ha⁻¹), Palam Priya (251.9q ha⁻¹) and AP-1 (243.8q ha⁻¹).

3.1.6 Fruits

3.1.6.1 Ber

Out of the Ber cultivars viz., Sanaur no.4, ZG - 2, Raya selection-1, Rangdi selection-1, Rangdi selection-2, Dandan, Walayati, Nalagarh, Macca, Gola, Small apple, Nuzuk introduced, Dandan, Walayati and Nalagarh cultivars have shown superiority over the other cultivars under evaluation.

3.1.6.2 Pomegranate

Eight cultivars of pomegranate viz. Bedana, Dholka, G-137, Jalore Seedless, Jyothi, Kandhari, Ganesh and wild pomegranate have been introduced and are in their second year of evaluation in terms of height and spread. Three new cultivars viz., Arka Mridula and Phule Arakta procured from MPKV, Rahuri have been introduced.

3.1.6.3 Mango:



Mango Nursery

Thirteen cultivars of mango are under evaluation at RRSS Raya to find out the most suitable cultivars under rainfed conditions as far as their growth, yield and quality is concerned.

3.1.6.4 Apple and Pear

Of the 24 apple cultivars (Golden Delicious, Lal Ambri, Starkrimson, Akbar, H60, 29, Firdous, Shireen, Vance Delicious, Royal Delicious, Red Chief, Golden Spur, Oregon Spur, Top Red, Silver Spur, Red Gold, Well Spur, Tydeman's Early Worcester, Mollies Delicious, Sparton, Scarlet Gala, Fuji, Gala Mast and Skyline Supreme), the highest stem diameter was measured with Firdous (5.03 cm), while it was lowest with Tydeman's Early Worcester (2.33 cm). The average leaf area ranged between 46.14 sq cm to 50.14 sq cm being highest with H29 and lowest with Top Red. The overall survival rate of apple plantations is 80%. In Pears (Bartlett, Flemish Beauty, Kashmiri Nakh, Starkrimson, Manning Elizabeth, Max Red Bartlett and Red Bartlett), the overall survival rate has been recorded to be 76%, and highest (3.96 cm) and lowest (1.76 cm) stem diameter values were registered with Kashmiri Nakh and Red Bartlett, respectively.

3.1.6.5 Peach/Nectarine, Plum and Apricot:

The cultivars of peach / nectarine (July Elberta, Red Heaven, Snow Queen, Silver King, May Fair, Red Gold and Snow Crest), plum (Santa Rosa, Mariposa, Frontier and Red Beut) and Apricot (New Castle, Kaisha, Moorpark, Tilton, Amba, Harcourt and Babcob) introduced are being evaluated for different traits. The average plant height, stem diameter, annual extension growth and leaf area of peach ranged from 213.6-280.4 cm, 180.2-229.8 mm, 45.1-51.7 cm and 40.6-49.1 sq. cm, respectively, whereas in nectarine, it was 90.66-143.1 cm, 180.7-183.4 mm, 27.7-31.0 cm and 41.2-48.3 sq. cm, respectively. In case of plum, the average plant height and stem diameter ranged from 227.5-263.3 cm and 192.7-213.2 mm, respectively, whereas average annual extension growth and leaf area range from 75.6-106.6 cm and 17.98-37.25 sq. cm, respectively. In apricot, average plant height, stem diameter, annual extension growth and leaf area ranged from 186.6-236 cm, 206.9-214.9 mm, 51.4-87.5 cm and 44.1-46.2 sq. cm, respectively.

The average fruit weight, size and TSS of New Castle ranged from 42.1-45.3 g, 25.7-27.0 X 31.2-32.30 mm (L X B) and 14.0-17.0⁰ Brix, respectively, whereas in Kaisha, the average fruit weight, size and TSS ranged from 41.3-43.9 g, 25.35-31.69 X 28.47-33.55 mm (L X B) and 16.1-18.3⁰ Brix, respectively. In case of and plums, the average fruit weight, size and TSS ranged from 33.8-45.4 g, 40.17-43.75 X 40.9-43.5 mm and 15.1-16.0⁰ Brix in Santa Rosa , 38.35 g, 38.40-44.56 X 39.01- 46.6 mm (L X B) and 11.9-15.0⁰ Brix in Mariposa and 36.19-52.2 g, 39.5-45.0 X 39.3-44.72mm (L X B) and 14.1-16.2⁰ Brix in Frontier, respectively.

3.1.6.6 Walnut, Almond and Pecan nut :

Two cultivars of walnut (SKU002 and Opex Dachaubaria), three of pecan nut (Mahan, Paunee and Choktou) and three of almond (Waris, Makhdoom and Non Pareil) introduced are being evaluated. During March 2009, three more cultivars of walnut (SKU 008, SKU0022, SKU 023) and two of almond (Parbat and Shalimar) were introduced. The average plant height, stem diameter and annual extension growth of walnut ranged from 70-155.6 cm, 183.5-191.3 mm and 14.3-36.42 cm, respectively. In case of pecan nut, the average plant height ranged from 50-185.75 cm, stem diameter from 177-186.5 mm and average annual extension growth ranged from 21.8-67 cm. In almond, average plant height ranged from 150-210 cm, whereas stem diameter and annual extension growth ranged from 192.4-305.8 mm and 38.6-50 cm, respectively.



Walnut Plantation

The bud burst in walnut, pecan nut and almond took place during 30th of March - 4th April, 23rd-25th of March and 20th Feb-10th March,

respectively. The full bloom in almond took place during 9-16th of March.

3.1.7 Agroforestry

3.1.7.1 Under-utilised medicinal tree species:

After identification and marking of superior trees of *Terminalia bellerica* (Bahera) in J&K and neighboring state of HP, vegetative propagation using bud wood from these identified trees has been standardized. Superior quality grafted planting material of Bahera is now being produced at Chatha for farming community.

3.1.7.1 Fodder trees and shrubs

Candidate Plus Trees (CPT's) of various fodder species viz. *Grewia optiva* (Dhaman), *Bauhinia variagata* (Kachnar), *Albizia* (Siris), *Celtis australis* (Khirak), *Oroxylum* (Gandhila) etc. have been marked in areas of districts Reasi, Samba and Udhampur. Germplasm (seeds) has been collected and nursery sowing is in progress for production of planting material.

3.1.7.2 Guggal (*Commiphora weightii*)

Two thousand fresh cuttings of the species has been procured from Dr. PDKV, Akola during March, 2010. Nursery planting has been completed for further evaluation and undertaking studies on propagation of the species.



Guggal

3.1.7.3 Shatavari (*Asparagus racemosus*)

Seed material of 10 accessions of *Asparagus racemosus* (Shatavari) from NBPGR, New Delhi; 01 each from GBPUAS&T, Pantnagar; HAU, Hisar; HPKVV, Palampur and UH&F, Solan has been procured for nursery evaluation and the same is in progress.



Plantation of Shatavari at Chatha Farm



Newly developed silkworm varieties

3.1.8 SERICULTURE

3.1.8.1 Mulberry

One more mulberry variety S-1635 has been introduced in the germplasm bringing the total number of varieties to 52.

3.1.8.2 Nutritional efficiency of indigenous silkworm hybrids.

Six crosses were analyzed for nutritional efficiency. The cross 3 x 1 and 6 x 1 were found efficient in nutritional parameters. The cross 6 x 4 and 6 x 3 showed comparatively low efficiency in terms of ECD and ECI values. The experiment will be repeated during the next season.

3.1.8.3 Evolution of temperature tolerant silkworm races

Provincial Race Authorization Committee approved two silkworm hybrids namely Udhey

3 x 1 and Udhey 4 x 6 for inclusion in the multilocation trials.

3.1.8.4 Breeding of high yielding silkworm lines for spring rearing

Under this programme, five hybrids were short listed. In the first instance, hybrid $PO_3 \times ND_5$ has been short listed for multi locational trials by National Race Authorization Committee of Central Silk Board, Bangalore.

3.1.8.5 Evaluation of different low cost local mounting materials and their impact on cocoon characters

Under this experiment, seven low cost mounting materials viz. plastic mountage, egg crates, plastic cones, pinus needles, card board mountage, bottle brush and paddy straw were tried for seriposition process. Plastic cones exhibited values at par with plastic mountage.

3.1.9 Seed Production

Particular	Target	Achievement	Justification
Field Crops			
A. Paddy			
Nucleus seed	0.00	(As per requirement)	
Breeder seed	4.00	20.00	
Foundation seed	160.00	Basmati370 270.00	
Certified/Truthfully Labeled Basmati 370, Jaya, Pusa1121, PAU 201, CSR30, RR 564	0.00	507.50	
Total	164.00	797.50	

B. Wheat			
Nucleus seed	0.00	3.80	
Breeder seed DBW-17, RSP81 PBW550, PBW502, PBW343, PBW175, PBW396, Raj3765, Raj3077, PBW373, DBW-16	87.50	132.00	
Foundation seed	1750.00	1010.00	Acute Drought conditions led to shriveled grains
Certified/Truthfully Labeled	0.00	208.00	
Total	1837.50	1353.80	
C. Maize			
Nucleus seed	0.00	As per requirement	Due to no demand of composites in maize, from this year Hybrid seed production programme was taken up as suggested by Dr Sain Dass, PD (Maize)
Breeder seed	2.50	0.60	
Foundation seed	151	0.00	
Certified/Truthfully Labeled	0.00	0.25	
Total	153.50	0.85	
D. Oilseeds			
Nucleus seed	0.00	As per requirement	
Breeder seed	0.041	0.51	
Foundation seed	4.144	4.24	
Certified/Truthfully Labeled	0.00	0.15	
Total	4.185	4.90	
E. Pulses(Gram, Field pea, Lentil, Mungbean & Urdbean)			
Nucleus seed	0.00	0.60	Suitable area for pulses seed production is lacking. Lack of manpower in pulses.
Breeder seed	11.22	5.62	
Foundation seed	112.20	5.00	
Certified/Truthfully Labeled	0.00	2.85	
Total	123.42	14.07	
F. Forages (Oats)			
Nucleus seed	0.00	NA	
Breeder seed	0.00	NA	
Foundation seed	0.00	Oats (Sabzar/ Kent) 36.50	
Certified/Truthfully Labeled	0.00	NA	
Total	0.00	36.50	

3.1.10 Horticulture crops

Vegetable Seed (Kg) & Planting Material (Numbers) Realization

Particulars	2009-10	
	Target	Achievement
Vegetables seed (T/S)	43.75	33.17
Floriculture	26200	23800
Fruit Plants	67400	69141
Medicinal & Aromatic Plants	23500 +296.5 kg	25775 +291.5 kg

3.2 CROP PRODUCTION

3.2.1 Agronomy

3.2.1.1 Maize

Highest grain yield of maize recorded (24.55 q ha⁻¹.) in intercropping of Maize intercropped with mungbean C2 (Maize + Mungbean) followed maize intercropped with cowpea (22.36 q ha⁻¹). Among the mulching, highest grain yield of (22.91 q ha⁻¹) was observed with FYM. In the rabi season, the highest grain yield of wheat (25.38 q ha⁻¹) recorded in the plot of Maize intercropped with mungbean C2 (Maize + Mungbean) followed maize intercropped with cowpea (23.18 q ha⁻¹). Among the mulching highest grain yield of (24.80 q ha⁻¹.) was observed with FYM and it was followed by leaf mulching (22.89 q ha⁻¹)

Significant decline in grain yield was observed only when sowing was delayed beyond 10th of November under sub-tropical conditions of Jammu. Among the cultivars, Bulland and Sheetal with grain yield values of 70.12 and 68.57, 56.54 & 54.70 and 63.34 & 61.62 q ha⁻¹ recorded during first and second years of experimentation as well as in pooled basis respectively, significantly out yielded cultivar Pratap.

Maize + peas (87.19 and 94.60 q ha⁻¹) and Maize + lentil (85.49 and 93.09 q ha⁻¹) were found statistically at par with each other and significantly superior over sole crops.

Among the fertility levels, the maize equivalent yield increased with the increase in fertility

levels upto 125 per cent recommended dose (81.43 and 88.07 q ha⁻¹) and statistically at par with 100 per cent recommended dose+ 12.5 per cent through F.Y.M +12.5 per cent through vermi-compost which was the maximum maize equivalent yield recorded during both the years (83.79 and 91.02 q ha⁻¹)

3.2.1.2 Rice

Conventional method (25 days old seedling and 3 seedling/ hill) and SRI (10 days old seedling & one seedling per hill) recorded similar rice grain (PR-113) yield. Irrigating rice crop 7 days after disappearance of water registered the yield of 49.99 q ha⁻¹ which was superior to other irrigation regimes. However, depth of irrigation had no significant effect on grain yield. Among the establishment methods, irrigation regimes and depth of irrigation, conventional method, 7DADW and 4cm deep irrigation resulted in WUE of 2.72, 3.32 and 3.16 kg/ha/mm respectively.



Border-strip method of irrigation

Results reveal non-significant differences in yield among different irrigation regimes under system of rice intensification on paddy variety Basmati, B-370. Maximum water use efficiency of 31.42 kg/ha-cm was recorded with irrigation of 3 cm depth with alternate wetting and drying cycle up to maximum tillering+ continuous irrigation of 3cm up to grain filling stage.

Recommended fertiliser application and different organic sources did not differ significantly among themselves in yield of Basmati B-370. However, application of irrigation once in 4 days is at par with application of irrigation once in 8 days both being significantly superior to

irrigating once in 12 days. Maximum water use efficiency of 15.90 kg/ha/cm was recorded with once in 8 days irrigation interval.

Potassium levels significantly influenced the rice yields of basmati than that of no potassium application. The rice yield was 2.79 t ha⁻¹ with potassium application @ 20 kg/ha which was almost at par with potassium application @ 30 kg/ha. Irrigating crop at every 7 days interval is beneficial as it can save the water without compromising the yield.

3.2.1.3 Sugarcane

The results of first cycle of two years (mean) data of sugarcane both main and ratoon crop showed that highest cane yield (1011.47 q ha⁻¹) was recorded in C2 (berseem green manuring (Oct.) - sugarcane- Ratoon) crop sequence. Different planting method of sugarcane showed that the highest cane yield (993.92 q ha⁻¹) was recorded in ring pit method, which was superior to skip row and flat methods.

3.2.1.4 Rajmash:

Pooled data of 2006, 2007, 2008, and 2009 reveals that there was statistically no significant difference in irrigation intervals or depth of irrigation in spring sown rajmash. However, irrigating every 15 days interval exhibited the best results and yielded 9.45 t ha⁻¹ compared to other irrigation intervals. Similarly, maintenance of 5 cm of irrigation gave the highest yield of Rajmash i.e. 9.68 t ha⁻¹ which was higher than other depths.

3.2.1.5 Forage grass species

Out of 22 perennial grass species collected from different sources in the country for their introduction and evaluation under sub tropical irrigated conditions of Jammu region was conducted carried out from the year 2007-08 to 2009-10, 15 grass species viz., lemon grass, Dicanthium, Guinea grass, Vetiver, Hamet grass, Bracheria grass, Orchard grass, Seteria (PSS-1, P-92), Cenchrus, Napier-7, Napier-3, Napier-37, Napier NB-21, Chrysopogon were found to thrive successfully under sub tropical Jammu conditions.

3.2.1.6 Cropping systems

3.2.1.6.1 Maize-wheat cropping system (Rajouri)

Two ploughings followed by line sowing of recommended seed rate followed by planking resulted in significantly higher mean maize grain yield (33.0 q ha⁻¹). Similar trend was observed in succeeding wheat crop

3.2.1.6.2 Maize- wheat cropping system

A long term experiment on maize - wheat cropping system was initiated during *kharif* season of 2009 to study the effect of tillage and weed control treatments on weed dynamics and yield of maize and wheat in maize - wheat system. Conventionally tilled maize applied with different weed control treatments recorded its superiority over zero tilled maize in suppressing weeds and recording higher maize grain yield. However, both conventionally and zero tilled maize applied with Atrazine@1kg/ha and two hand weeding recorded significantly less weed population and weed dry matter but higher grain yield as compared to their respective weedy checks.

3.2.1.6.3 Rice-berseem system (Rajouri)

Maximum mean grain yield of rice (31.32 q ha⁻¹) was obtained with double ploughing followed by planking which was 19.5 and 25.1 per cent higher over the ploughing followed by planking and recommended practice of one ploughing followed by two harrowing followed by planking respectively. Double ploughing followed by planking in rice crop resulted in higher yield of succeeding berseem crop (480 q fodder per ha) that was 5.2 and 19.1 per cent higher compared to single ploughing and recommended practice, respectively.

3.2.1.6.4 Rice - wheat cropping system

In the long term experiment of Rice - wheat cropping system, highest rice grain yield (32.08 q ha⁻¹) was recorded in the treatment with herbicide application of butachlor @1.5kg/ha and it was closely followed by rice yield realized under two mechanical weeding and

anilophos @ 0.5kg/ha treatments. The lowest weed population and dry matter of weeds was recorded in the treatment with herbicide application of butachlor @ 1.5kg /ha which was closely followed by mechanical weeding and anilophos @ 0.5kg/ha.

3.2.1.7 Chickpea cropping system

3.2.1.7.1 Nutrient management

The recommended dose of fertilizer, (60-30-10) of N.P.K and $ZnSO_4$ under rainfed condition, when applied in wheat recorded highest grain yield (19.55 q ha⁻¹) while in chickpea the application of organic nutrients recorded maximum seed yield (6.25 q ha⁻¹).

3.2.1.7.2 Plant population.

Seed sown at 10 cm depth after seed treatment and soaking gave highest seed yield of 6.94 q ha⁻¹ while unsoaked seeds sown at 7.5 cm depth gave more seed yield (5.95 q ha⁻¹) than those sown at 10 cm depth (4.55 q ha⁻¹).

3.2.1.7.3 Weed management

One year data on screening of post emergence herbicides in chickpea under rainfed conditions revealed that two handweeding at 25-30 and 50-55 DAS recorded maximum seed yield of 6.84 qha-1 and was followed by post emergence herbicidal application of Imazethapyr @ g/ha at 30 DAS.

3.2.1.8 Sustainable Farming Systems

In three clusters of 15 villages adopted under NAIP in erstwhile Doda Districts of Jammu region the progress / major achievements of these clusters are as under :-

- Seed replacement of about 80% in maize, rice, wheat & oats has been achieved.
- Introduction of proven technologies increased productivity of field crops viz. cauliflower, rice and maize.
- Adoption of floriculture (marigold and gladiolus) was found encouraging by realizing an income of Rs. 1.5 to 2.0 lacs per

hectare during off season coinciding with Dusshera and Diwali festivals.

- Popularization of mushroom cultivation by providing technical knowhow and spawns for raising Dingri generated a profit of Rs.90 to 120 per kg by just incurring Rs. 20 per bag
- In spite of drought situation, saffron crop in Kishtwar cluster has shown enhancement in yield to the tune of 1.5 to 2.0 kg/ha with adoption of proper agronomy and corms protection against corm rot by adoption of IPM modules involving *Trichoderma* spp.
- Introduction of Rams of breed Corridale helped in improving the breed status in local sheep in all the clusters.

Introduction of Van Raja as backyard poultry has boosted the morale of women farmers by picking and selling more number of eggs than local breeds.

Artificial insemination programme running successfully in all the clusters. Veterinary services are provided at the doorstep of farmers.

Introduction of Kala Zeera as a medicinal cum spice herb and 9000 suckers of strawberry have been willingly adopted by the farmers of Kishtwar and Assar clusters.

3.2.2 Agrometeorology

3.2.2.1 Monthly water budget of Jammu region

The monthly water balance of Jammu region was computed using Thornthwaite Book Keeping procedure from the analysis of long term data (30 years) of different stations

Jammu region receives 950 to 2050 mm of rainfall during a year as against the potential evapotranspiration (PET) of 1000 to 1900 mm.

The PET in Jammu and Kathua exceeds 300 mm in the month of June and July because the area falls under **low altitude subtropical zone**

The annual water deficiency exceeds about 1000 mm between onset of SW monsoon and winter season.

Annual water surplus is more than 700 mm in Katra and Batote which is lying on the northern

periphery of low altitude subtropical zone receiving precipitation both in summers and winters through SW monsoon and western disturbances.

3.2.2.2 Irrigation scheduling in maize through climatic approach

In this study, the PET in maize were calculated for twelve seasons using FAO's Cropwat model window version 4.2 against the corresponding values of actual evapotranspiration (ETc) measured with the help of lysimeter.

3.2.2.3 Crop Pest weather relationship in mustard

Population build-up of mustard aphid of Varuna and Pusa Bahar under different micro-climatic conditions and dates of sowing in both irrigated and un irrigated conditions for three consecutive *rabi* seasons show that maximum & minimum and mean temperatures during preceding ten days have significant relation with aphid population. However, afternoon relative humidity during five and seven preceding days also showed highly significant positive relation with aphid population.

3.2.3 Soil Science & Agricultural Chemistry

3.2.3.1 GIS based soil fertility mapping of Jammu district.

The maps for the delineated areas viz RS Pura, Bishnah, Satwari, Marh and Vijaypur blocks have been prepared by using kriging technique.

3.2.3.2 Micronutrient status of soils under rice growing areas of Jammu

Seventy-eight representative soil samples from different locations were collected from rice growing sub-tropical zone of Jammu region for the analysis of DTPA extractable Zn, Cu, Mn and Fe with mean values of 0.36, 0.59, 4.20 and 20.17 mg kg⁻¹ respectively. Zinc deficiency was observed in 92% of the samples.

3.2.3.3 Nitrogen availability through non-symbiotic Biofertilizer to strawberry

Field experiment was laid at research farm Udheywalla by growing strawberry (*Fragaria x*

annanassa Duch cv chandler) in collaboration with Fruit Science section to monitor the availability of Nitrogen in soils through the use of non-symbionts. The weekly available Nitrogen ranged from 2.2ppm to 3.6ppm.

3.2.3.4 Soil moisture conservation studies in high density orchard of apple

Use of forest soil @ 20 kg/ pit in the tree basins of Mollies Delicious apple tended to show the best results and showed the highest soil moisture (29%), fruit weight(140.7 g), fruit size(62.55 mm x 72.60 mm), TSS(16.2 %) and fruit firmness(9.4 Kg),

3.2.3.5 Long term effect of fertilization and manuring on the physico-chemical properties of soil in maize wheat cropping system

Results of 6th year of wheat cultivation in maize-wheat rotation suggest a significant yield advantage of 72 to 311 per cent in terms of total above ground biological yield and 17 to 123 per cent in terms of grain yield due to fertilization and manuring in comparison to control.

3.2.3.6 Integrated nutrient management for rice-wheat cropping system in intermediate zone of Jammu and Kashmir.

Observations revealed that maximum grain yield for wheat and rice crops was recorded at 5.44 t ha⁻¹ and 5.31 t ha⁻¹ respectively, with the application of N₁₀₀P₆₀K₃₀+FYM @ 10 t ha⁻¹.

3.2.4 Farming System Research

3.2.4.1 Cropping system under assured irrigated conditions

Among the different rice based cropping systems, the total production in terms of rice equivalent yield (REY) was significantly higher (38.3 t ha⁻¹) in Rice (IET-1410) -Garlic/Local)-Cowpea (Pusa Komal) followed by Rice (IET-1410) -Potato (Kufri badshah) - Onion (N-53) (32.70 t ha⁻¹) and Rice (IET-1410) -Merigold (Pusa narangi)- Frenchbean (Contender) (27.10 t ha⁻¹), respectively over the existing rice-wheat system, which recorded REY of 9.46 t ha⁻¹. Rice-Marigold-Frenchbean with total net return of Rs.190510 had highest B:C ratio of 2.83, while Rice -Garlic-Cowpea recorded maximum

total net return (Rs. 268773) with B: C ratio of (2.80) followed by Rice-Potato- Onion with total net return and B: C ratio of Rs. 223128 & 2.54, respectively over existing rice -wheat system, which produced the net return and B: C ratio of Rs.53980 and 1.50, respectively. Rice -Cabbage- Onion (2.65), Rice-Berseem (for fodder) last cut allowed for seed (2.18), Rice - Methi - Radish (2.13), Rice-Pea-Bhindi (1.70) and Rice-Potato-Maize+ Green gram(1.65) also performed better than the existing rice-wheat system (1.50) in respect of B: C ratio. In term of energy use efficiency the Rice-Berseem-Seed cropping system showed more energy use efficiency (30.86 MJ/ha) followed by Rice-Wheat (10.95 MJ/ha) while low energy use efficiency was recorded in Rice-Potato-Onion sequence (3.90). Available N, P & K contents of the soil did not show any improvement over initial status while soil organic carbon content was slightly improved in Rice-Berseem-Seed and Rice-Potato-Maize+ Green gram cropping system, respectively.

3.2.4.2 Rice-wheat cropping system

3.2.4.2.1 Integrated nutrient supply

Under permanent plot experiment on integrated supply system in Rice-Wheat Cropping system, it was observed that after completion of 24 cycles of Rice-Wheat system, use of organics coupled with inorganic i.e. 50% recommended N through fertilizers + 50% N through FYM/paddy straw/green manuring in rice crop and 100% recommended NPK through fertilizer to wheat crop had stabilized the yield of rice and wheat in a system besides improved soil health.



IET-1410

3.2.4.2.2 Production model

The sustainable production of rice-wheat cropping system aims to identify the key non-sustainable agronomic practices. Among the varying treatments T3 where 120:60:30 kg NPK/ha + 5t Green Manuring was applied with maintaining 25% higher plant population, gave higher productivity of 8.07 t ha⁻¹ and total net return of Rs. 59632.88 with the higher B: C ratio of 2.20 over the recommended package of practices adopted to both rice and wheat crop with productivity of 7.21 t ha⁻¹, total net returns of Rs 51016.55 and B:C ratio of 1.92. The soil properties in terms of available N, P & K was found to be increased in T4 treatments while organic carbon was recorded higher in treatment T3 where recommended package of practices was adopted with increasing 25% higher plant population along with green-manuring.

3.2.4.3 Tillage and planting

Among various establishment methods for transplanting of paddy, hand transplanting during 2008-09 produced significantly higher grain yield of 43.68 q ha⁻¹ over wet seed sprouted rice through 8 row drum seeder (40.72 q ha⁻¹), which were at par with paddy hand transplanter (38.30 qha⁻¹). Maximum B: C ratio was observed in hand transplanting (1.65) which was closely followed by drum seeder (1.61). During *rabi* season the wheat crop established through bed planting method produced significantly higher grain yield of 38.00 q ha⁻¹ over strip till (33.66 qha⁻¹) and zero till methods (34.18 q ha⁻¹), respectively. Soil bulk density, available NPK and organic carbon content in soil did not show any significant changes over initial values at the end of six crop cycle.

3.2.4.4 On-Farm Research Programme

Kathua

The experiment was conducted at 8 locations in the blocks of Billawar and Basholi. Application of balanced dose of fertilizers in terms of recommended N, P, K increased the yield of Maize (3223kg/ha) and wheat (3092 kg/ha) significantly with higher net return of Rs 49395/ha with B:C ratio of 1.96 over N alone, NP and NK, respectively.

Udhampur

At block Majalta and Udhampur the balanced application of NPK in Maize- Wheat cropping system realized MEY of 84.72 q ha⁻¹ with net return of Rs 51235/ha and B: C ratio of 2.05

Reasi

At block of Reasi and Pouni, balanced application of NPK exhibited maximum total system productivity of 64.69 q ha⁻¹ with obtaining B: C ratio of 2.04

3.2.4.5 Intensification and/or diversification of the existing cropping system

Kathua

At Billawar and Basholi blocks, Maize+okra-potato-onion yielded highest MEY of 277.36 q ha⁻¹ with B:C ratio of 2.44 as compared to existing Maize-wheat system producing MEY of 76.08 q ha⁻¹ and B: C ratio of 1.39

Udhampur

At blocks of Majalta and Udhampur, the diversified cropping system (Maize+okra-potato-onion) produced the higher MEY of 305.83 with the B: C ratio 2.72

Reasi

At blocks, Reasi and Pouni diversified cropping system of Maize+okra-potato-onion not only yielded highest MEY (303.95 q ha⁻¹) but also realized maximum B: C ratio 2.74

3.2.5 Agroforestry

3.2.5.1 Rauwolfia serpentina and Gloriosa superba

Results of an experiment on *Gloriosa superba* (Kalihari) fertilized with different doses of organic and inorganic fertilizers revealed significant increase in seed yield, which contains colchicine having medicinal value. 197.50kg/ha seed yield was obtained with Vermicompost(VC) @ 4 t ha⁻¹ along with N,P,K(40:16.67:25) kg/ha. It remained significantly higher as compared to the other fertilizer doses.

3.2.5.2 Kala zeera(*Bunium persicum*) (Boiss.):

Multi-locational trails on farmer's field in Kishtwar district has been established with planting material (tubers) procured from a superior source i.e. village Shong of Himachal Pradesh.

3.2.5.3 Raj Harad

Data on fruit yield of grafted Raj Harad(*Terminalia chebula*) planted on farmers' field at village Ranjan Ghrota (Bhalwal Block) has been recorded during December, 2009. An average of 1.5 kg fresh fruit yield of similar size and other characteristics of the mother tree (Raj harad) has been recorded in 03 years old plantation on farmer's field.

3.2.5.4 Herbal Garden

This project was funded by National Medicinal Plant Board, New Delhi for 03 years upto ending 2008. More than 130 species of medicinal and aromatic plants has been collected and established in the herbal garden. Now planting material of a few potential species *Terminalia chebula*(Raj Harad), *Aloe barbadensis*(Kwargandhal), *Withania somnifera*(Ashawagandha), *Asparagus racemosus*(Shatavar), *Rauwolfia serpentina*(Sarpagandha) is being produced for distribution to farmers and development departments. The species are maintained for demonstration to visiting farmers, students and field functionaries of the development departments.

3.2.6 Vegetables

3.2.6.1 Cabbage

The experiment was laid on cabbage variety Golden Acre with 15 treatments. Maximum yield was recorded in conventional plots where FYM along with recommended dose of NPK was applied. Among organically maintained plots, mustard cake along with dipping of seedlings in *Azotobacter* for half an hour recorded significantly maximum yield but it was statistically low than the recommended practice of crop nutrition.



Cabbage grown in organically managed field

3.2.6.2 Potato and Okra

Irrigation application through drip and 75 % fertigation of recommended dose produced significantly higher yield both in Potato and Okra crop over control. Similarly, irrigation through sprinkler irrigation and 75 % fertigation equally produced better yield of potato and okra over control. Third crop (mash) was also possible due to micro irrigation

3.2.6.3 Weed management in Okra

Weed management treatments comprising weed free, fluchlorian @1.0kg a.i/ha PPI+1HW,alachlor @2.0kg a.i/ha PPI +1HW,alachlor @ 2.0kg a.i/ha PPI +1HW,oxyflorafen @0.35 kg a.i/ha PPE +1HW recorded green okra yield of 250.1, 238.5, 229.6, 218.1 and 217.2qha-1 respectively with superiority of 102.8, 93.4, 86.2, 76.9 & 76.2 percent over weedy check treatment.

3.2.6.4 Trench cultivation of vegetables

Trench demonstration on cucurbits and solanaceous crops has been laid out at village Bhagatpur and Sandhwa of Marh block as per the mandate of the project.

Survey of potential areas suitable for trench vegetable farming is under documentation.

3.2.7 Ornamentals

3.2.7.1 Chrysanthemum:

The experiment was laid out in the second week of August, 2009 for standardization of

doses of nitrogen and spacing requirement in chrysanthemum. Preliminary observations indicated that nitrogen application @ 200 kg/ha with spacing of 20 x 30 cm spacing gave the best results.

3.2.7.2 Marigold:

The research trial was laid out in Oct. 2009 using 4 different treatment combinations that included two herbicides (Stomp and Goal). Preliminary observations indicated that stomp is more efficient and economical for weed management in marigold

Highest marigold flower yield recorded under weed free treatment was significantly followed by the treatments involving 2 hand weeding (HW) at 20 and 40 days after transplanting (47.3 q ha⁻¹) and application of trifluralin @1.0 kg a.i/ha PPI+1HW (46.2 q ha⁻¹) which in turn were at par but significantly superior than weedy check treatment (32.42 q ha⁻¹).

3.2.7.3 Gladiolus.

Various weed control treatments like weed free (66.9 q ha⁻¹), 2 HW at 20 and 40 DAT (59.2 q ha⁻¹), application of pendimethalin @ 2kg a.i /ha +HW (56.2qha-1) produced significant variation in the spike yield of gladiolus and marked a superiority of 89.5,67.7 and 59.2 per cent over weedy check treatment by resulting in significant reduction of weed dry matter

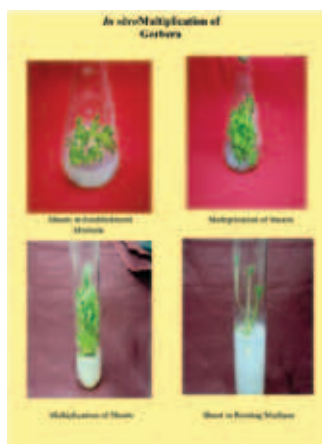
3.2.7.4 Quality planting material

Gladiolus : Total number of corms and cormels produced in gladiolus were 14500 and 32000. (Gunjan - 4500 corms and 8000 cormels; White Prosperity - 2000 corms and 7000 cormels; Jyotsana - 3000 corms and 5000 cormels; Novalux - 3000 corms and 8000 cormels and Eurovision - 2000 and 4000 corms and cormels).



3.2.7.5 Gerbera

Best results were observed in MS medium supplemented with BAP 2 mg/l, Kinetin 0.5 mg/l and GA₃ 1mg/l. Sprouted shoots were further sub-cultured on MS medium with BAP 1 mg/l, Kinetin 0.5 mg/l and GA₃ 1mg/l resulting in maximum number of shoots (6 shoots per explants).



In-vitro Propagation of Gerbera

3.2.8 Fruits

3.2.8.1 Strawberry

An effective low cost high volume propagation technique has been standardized for strawberry (*Fragaria x ananassa*) cv. Chandler up to the extent of its commercialization. A protocol has been developed using vegetative buds as explants and sterilization with HgCl₂ (0.1

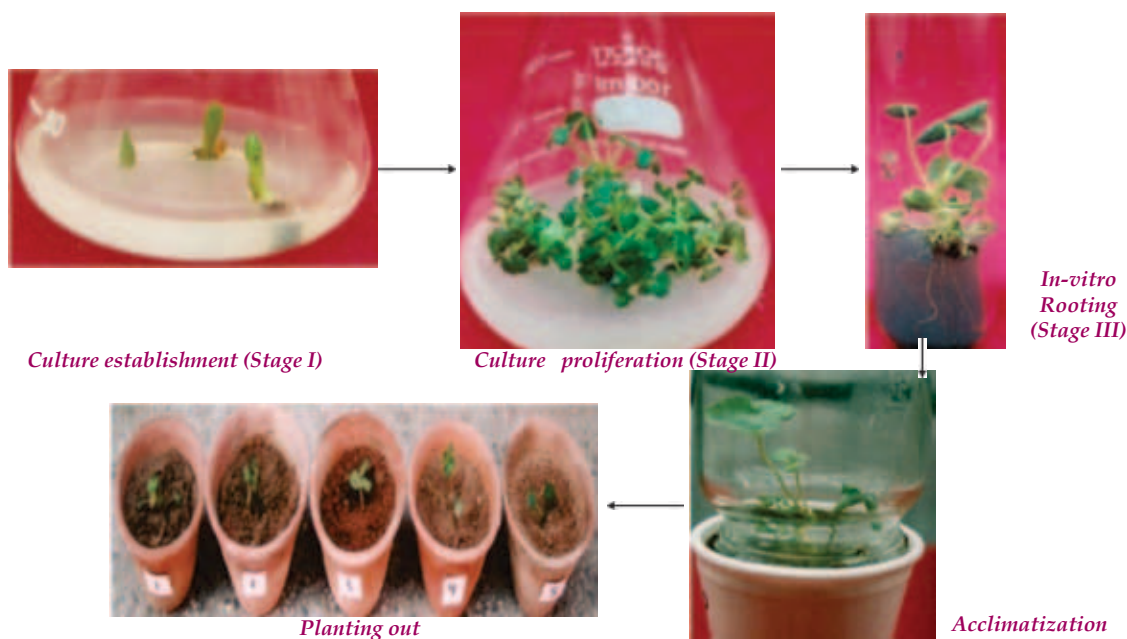
%) for 3 minutes has given minimum culture contamination Murashige and S.koog (MS) medium + BAP 1.0 mg/l with GA₃ 2.0 mg/l resulted in maximum establishment of cultures in lesser time as well as sub-culturing on MS medium + BAP 2.0 mg/l with GA₃ 2.0 mg/l gave maximum multiple shoots. Maximum rooting was obtained on MS medium (half strength) supplemented with IBA 1.0 mg/l and activated charcoal 200 mg/l.

3.2.8.2 Crop regulation in guava

Guava plants of cultivar L-49 and Allahabad safeda growing have been pruned (1, 2 and 3 pair leaf) and sprayed with GA₃ (100, 150 and 200ppm) and with NAA (200ppm) as control in order to find out the most suitable method for crop regulation in guava. Two pair pruning followed by one pair pruning has been found to be effective and suitable method compared to already recommended method.

3.2.8.3 Quality planning material -

During 2009-10, planting material of different fruit crops has been distributed amongst the orchardists through development departments of horticulture. Plants have also been provided to different defence units in the Jammu province for their plantation programmes. A total of 64496 quality planting material has been distributed which include 50645 strawberry runners and 13851 number of other fruit plants.



IN-VITRO PROPAGATION METHOD DEVELOPED FOR STRAWBERRY

3.2.9 Post Harvest Technology

3.2.9.1 Strawberry :

For developing preserves, the strawberry fruit was first treated with different concentrations of CaCl_2 viz 0.5 , 1.0, 1.5 and 2.0% followed by dipping in various levels of sugars syrup i.e 66, 68 and 70 °Brix. On the basis of organoleptic scores, 2 % CaCl_2 +66 ° Brix sugar syrup was found to be the best treatment followed by 2 % CaCl_2 +70 ° Brix sugar syrup as the CaCl_2 increased the firmness of the fruit.

In case of sauce, the product was developed using different ingredients viz vinegar , sugar, honey and corn starch. On the basis of overall

acceptability, the product developed using vinegar was adjudged the best followed by sauce prepared using sugar.

3.2.9.2 Jamun

- Different methods viz :- pressure + basket press, Hand crushing + Pressing, Screw extraction, Pressure cooking + Hand Press, Steaming + Basket Press, Hand crushing + Heating (50° C) +Pressing were tried for extracting the good quality juice from Jamun fruit and the same juice was analyzed for its physico-chemical and organoleptic attributes.
- The juice obtained by steam +basket press method was adjudged the best and was



Processing of Strawberry



Jamun ready to serve beverage

blended with mango pulp for developing squash and R.T.S. The developed product was analyzed after 2, 4, 6 months of storage period for its Physico-chemical and organoleptic characters.

3.2.9.3 Potato:

Six varieties of potato i.e Kufri Chipsona-I, Kufri Chipsona-II, Kufri Badshah, Kufri Chandramukhi, , PG-08-02 and PG-08-03 were analyzed for physico-chemical parameters and used for preparation of chips. Of the several varieties, chips made from Kufri Chipsona-I and Kufri Chipsona-II were rated the best on the basis of colour card and sensory evaluation.

3.2.9.4 Mango

The effect of postharvest application of polyamines on shelf life of mango was studied. The treatment improved the storage life upto 28 days in refrigerated storage and maintained quality. Polyamine treatments prevented chilling injury under refrigerated storage.

3.2.10 Plant Pathology

3.2.10.1 Standardization and promotion of rice straw based compost for button mushroom

In Jammu and Kashmir, wheat straw is being used as base material for compost making for button mushroom. Whereas, it is also a preferred cattle feed in the region, thus high price and none availability at times is a big limiting factor in its use in mushroom cultivation. Rice straw with little feed value, comparatively less priced and available with ease was attempted to replace wheat straw as major/sole component of base material for compost making. Four formulations were tried with four commercial strains of *Agaricus bisporus* viz., S-11, S-791, S-310 and U-3 and the yield data was compared with conventional wheat straw based compost (control). The biological efficiency of the test formulation was comparable to control. However, Formulation where sole paddy straw was used as base material gave lesser biological efficiency.

3.2.10.2 Value addition in mushrooms

Different post harvest products such as mushroom sauce, pickles, dried dhingri



nuggets, biscuits etc. were prepared and standardized in order to impart value addition to the mushrooms of different varieties.

3.2.10.3 Promotion of year round cultivation of mushrooms for self employment in Jammu Division

Fourteen training programmes, each of three days duration, on mushroom cultivation were conducted in collaboration with the Department of Agriculture, in which more than 350 farmers participated.

3.2.11 Agricultural Engineering

3.2.11.1 Energy utilization pattern in cereal crops

A typical dryland village near Samba was selected and data on inputs used such as seed, fertilizer, chemicals, human, animal and prime movers and output in the form of yield was collected in a predevised proforma. Human (57%) and animal (43%) formed the chief sources of energy for maize production and operation wise primary, secondary tillage and sowing utilized 54% of total energy followed by weeding/interculture (36%). However, weeding/ interculture consumed (63%) of total human energy and is the major critical operation for maize production which needs technological intervention.

3.2.11.2 Energetics of animate and inanimate power sources for potato cultivation

Three villages of district Jammu were selected and data such as inputs used in the form of seed, fertilizer, chemicals, irrigation, human,

animal and prime movers was collected periodically and output in the form of yield recorded based on a pretested proforma devised for the purpose. Land preparation (36%) and transportation (30%) consumed main energy for potato production followed by digging and uprooting (17%). The overall input- output energy ratio was 1:1.8.

3.2.12 Biochemistry & Plant physiology

3.2.12.1 Brassica

Six varieties of *Brassica* belonging to 3 different species viz. *B. carinata* (PC-5), *B. napus* (DGS-1, RSPN-25, RSPN-27) and *B. juncea* (RSPR-69, RH-30) were used in the study. Two years data reveal that under moisture stress conditions (at 50% flowering till harvesting) the relative water content (RWC) was highest in PC-5 and lowest in RH-30 and RSPN-25. In all the 3 species RWC decreased with age from flowering to pod formation and reduction in total number of pods per plant, total number of seeds/pod, 100 seed wt. and seed yield/plant compared to normal irrigation was recorded. Biochemical parameters viz. foliar proline, levels of superoxide dismutase and catalase in all the 3 *Brassica* species under moisture stress conditions were appreciably higher as compared to normal irrigation.

3.2.12.2 Wheat

Biochemical analysis of SKUAST-J developed wheat lines reveal that RSP-529 composed of highest total sugar, lysine (2.92% in protein), iron (7.15mg/100g), carotenoids, total polyphenol, PPO and antioxidant in grain and RSP-561 having highest protein (12.1%), starch, zinc, iron, phosphorus and sediment volume showed high quality in nutrition and bread making property respectively. RSP-561 showed better quality than national variety PBW-343 but RSP-566 was much close to RSP-561 in these aspects.

Three different wheat cultivars recommended for rainfed and irrigated condition viz., PBW 175, PBW 396 and RSP81 were sown in 30 cm dia cemented pots with soil and FYM in 3 replications on 26th Nov'2009. After fifteen days of panicle initiation three water stresses of seven days, twelve days and seventeen

days were given to screen the efficient and elite cultivar which can survive stress till seventeen days on the basis of biochemical determinants so that in subsequent year APX gene cloning from efficient variety can be done.

3.2.12.3 Medicinal plants

- Antioxidant activities of 10 selected north-western Himalayan medicinal plants reveal that the plants *Cinnamomum camphora* (L.) T. Nees & C.H. Eberm., *Picrorhiza kurroa* Royle ex Benth., *Syzygium cumini* (L.) Skeels, and *Oscimum sanctum* L. possessed higher antioxidant activities. The phenolic compounds detected (using High Performance Liquid Chromatography (HPLC) with diode array detector (DAD) were gallic acid, chlorogenic acid, *p*-hydroxy benzoic acid, caffeic acid, vanillic acid, syringic acid, *p*-coumaric acid and ferulic acid.
- Essential oil derived from *Eucalyptus teretecornis* leaves through hydro distillation showed antifungal activity against *Alternaria brassicae*. The chemical composition of the essential oil was determined using Gas Chromatography Mass Spectrometry (GC-MS) analysis. The oil contained 10 monoterpenes (57.58%), 28.46% oxygenated monoterpenes, 1.09% sesquiterpene hydrocarbons and 2 oxygenated sesquiterpenes (4.21%). The antifungal activities were detected using direct bioautographic procedure and *Alternaria alternata* as test organism. Antifungal compounds in *Eucalyptus teretecornis* essential oil were determined as oxygenated terpenoids β -fenchol and α -eudesmol respectively using GC-MS analysis.
- Essential oil was extracted from leaves of plants namely *Zanthoxylum alatum*, *Murraya koenigii* and *Vitex negundo* and the yield of the essential oil was 0.083%, 0.05% and 0.06% respectively on fresh weight basis. Further studies are in progress.

3.2.12.4 Olive

Studies on factors affecting olive oil quality and characterization of olive oil are being carried out in collaboration with Horticulture Department at Advanced Centre for Horticulture Development, Govindpura, Ramban. The data showed that

fruit length ranged from 17.52 mm (Etnea) to 26.43 mm (Picholina) and width from 13.37 mm (Coratina) to 19.46 mm (Picholina). Pulp:stone ratio ranged from 1.27 (Coratina) to 3.7 (Zaituna). Moisture content showed variation from 23.01% to 59.93%, which indicated the olive trees were experiencing, water deficit condition at different periods. Oil content in the seven varieties in the month of October ranged from 32.0% (Leccino) to 35.5% (Messinese) while in case of Picholina highest (34.0%).

3.2.12.5 Rajmash

Fifteen Bhadrawah collections of Rajmash analyzed for RAPD analysis to see the similarity among the germplasm as well as to get fingerprint of the germplasm, which will be used further for identifying efficient variety. Isolation and purification of DNA was done and till date 20 decamers primers OPX series of Operon Tech., California, USA are screened for RAPD analysis. Primer OPX 6 amplified 4 bands and 105 in total among 15 Rajmash germplasm.

3.2.12.6 Rice

To assess environmental response on physiological attributes and the yield, plant transplantations of 4 varieties of basmati rice viz Ranbir basmati, Sanwal basmati, Basmati-564 and Basmati-370 were performed at three different dates viz. 15th June, 1st July and 15th July. On the basis one-year data, 1st date of transplanting i.e. 15th June was judged as most favourable for all test basmati varieties in which plant health and grain yield were significantly high and the days required for 100% flowering (range 97- 127 days) and physiological maturity (range 113.0-141.0 days after sowing) were less.

3.3 CROP PROTECTION

3.3.1 Plant Pathology

3.3.1.1 Spot blotch of wheat

Morphological and pathogenic variability among the isolates of *Bipolaris sorokiniana* causing spot blotch of wheat were studied and ten isolates were collected from different areas of Jammu division. The average infection index (AIDX) of the disease ranged from 25.33 to 38.5 per cent. Fungicides

viz., Tilt (propiconazole), Folicur (tebuconazole), Baleton (triademefon), mancozeb (Dithane M-45) and bio-agents (*Trichoderma viride* and *T. harzianum*) were evaluated on wheat cultivar PBW-343. Propiconazole at 0.1 % proved most effective with highest per cent disease control (87.70 %) and increase in yield/ha (25.50 %), followed by tebuconazole and triademefon.

3.3.1.2 Bacterial wilt by *Ralstonia solanacearum* in solanaceous crop

Bacterial wilt (*Ralstonia solanacearum*) incidence varied from 5 to 30 per cent. Out of nine antibiotics evaluated, six viz. ampicillin, nalidixic Acid, ciprofloxacin, penicillin, streptocycline sulphate and amoxycillin, inhibited the growth of pathogen at 100 and 200 ppm.

3.3.1.3 Tomato leaf curl virus

The incidence of leaf curl virus disease in tomato ranged from 18.67 to 62.66 per cent. While screening different varieties against the disease under natural field conditions, PS-II was found resistant, Punjab Chauhara, CGNT-13, CGNT-15 and Pant T-17 moderately resistant, Pusa Ruby, DT-2, L-285, Marglobe, Red Glory, Selection-31, Arka Vikas and PAU-2371 susceptible and Kuber Geeta highly susceptible.

3.3.1.4 Bio-control

- Twelve isolates each of *Trichoderma* spp. and *Pseudomonas fluorescense* were evaluated against *Rhizoctonia solani*, *Fusarium solani*, *F. oxysporum* f. sp. *capsici*, *Pythium* sp., *Phytophthora capsici* under *in vitro* conditions. Two isolates of *Trichoderma* spp. and one isolate of *Pseudomonas fluorescense* have been mass multiplied on sorghum grains and nutrient broth, respectively, whereas, the plant pathogens were mass multiplied on maize and sand mixture (3:1). The selected biocontrol agents were evaluated in pot culture and under field conditions and exhibited significantly superior control over check in brinjal, tomato and gladiolus.
- Six hundred kilograms of talc based formulation of biocontrol agent (*Trichoderma* spp.) was produced and distributed among the vegetable and fruit growers of Jammu province. Two hundred farmers were trained

during six one-day training programmes on “Bio-intensive integrated disease management of soil borne pathogens in horticultural crops” at different location in Jammu province.

3.3.2 Entomology

3.3.2.1 Wheat

Seven insecticides were evaluated against termite damage in wheat. Among them seed treatment with Fipronil(5FS @ 0.3g) a.i.per kg of seed resulted in termite suppression and six insecticides were evaluated against the wheat Aphid and found that imidachloprid 20g a.i/ha, thiamethoxam 1.05 g ai per kg and Imidacloprid 0.6 g a.i./kg seed treatment were effective against the aphid and produced maximum grain yield.

Grain samples were collected and screened for the prevalence of seed galls of *Anguina tritici* in different localities of Jammu, Samba, Kathua, and Udhampur districts. None of the samples observed showed incidence of ear cockle nematodes. Important plant parasitic nematode genera encountered were *Helicotylenchus*, *Tylenchorhynchus*, *Hoplolaimus*, *Pratytylenchus*, *Hirschmanniella*. Nematode population in the maize-wheat cropping areas showed that there was higher population of *Tylenchorhynchus* and *Hoplolaimus* in wheat. However, the population of *Pratytylenchus* and *Helicotylenchus* was found in higher numbers in maize crop.

3.3.2.2 Rice

The light trap catch of green sting bug remained low with maximum catch in the month of August, while very low population of another grain-sucking bug i.e. rice sting bug was recorded first time in Jammu..

3.3.2.3 Vegetables

3.3.2.3.1 Management of *Pieris brassicae*

The trials were laid in the field to test the efficacy of entomopathogenic nematodes for management of *Pieris brassicae*. The results obtained in field show that the number of *Pieris brassicae* increased within 3 weeks from 24.0 to 129.5. The treatments with Bt alone and with alternating treatments of entomopathogenic

nematodes and Bt reached the highest mortality with 80.7 and 84.2 per cent control, respectively.

3.3.2.3.2 Management against pest complex of cucurbits

Survey and surveillance of insect pests and disease in cucurbits growing areas of Jammu revealed that sucking pests like aphids, whiteflies, jassids, mites and caterpillar pests like *Spodoptera*, *Helicoverpa*, cutworms, melon



worm, and dipteran pests like maggot fly and fruit fly were found damaging the cucurbit crops in the field conditions.

3.3.2.3.3 IPM module in temperate vegetable crops

The observations revealed that brinjal fruit and shoot borer, okra fruit borer and jassids were the major insect pests associated with brinjal and okra. Apart from the insect pests, damping off of brinjal, wilt complexes in brinjal and yellow vein mosaic in okra were recorded in brinjal and okra crops, respectively.

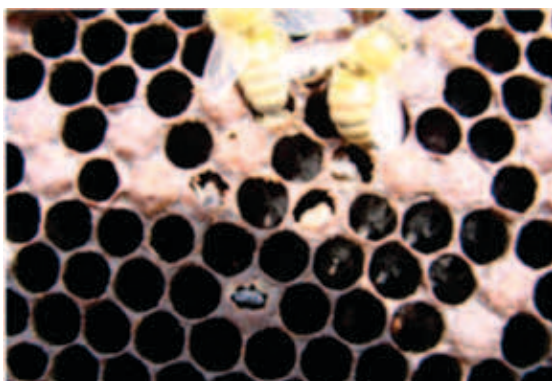
3.3.2.4 Apiculture

3.3.2.4.1 Honeybee morphometrics

The samples of honeybees *Apis cerana*, *A. dorsata* and *A. florea* have been collected from 9 locations and 45 grids at different altitudes ranging from 327 m altitude to 3000m. Detailed morphometric studies have been conducted. The samples are being processed for DNA sequencing for identification of races/species

3.3.2.4.2 Honeybee diseases

Survey of different apiaries of *Apis mellifera* and *Apis cerana* in Jammu, Kathua, Samba and Udhampur revealed the presence dreaded European foul brood disease in 10–15 per cent colonies of both *A. mellifera* and *A. cerana*. The



Diseased Brood

studies further revealed the presence of *Varroa destructor*, *Tropilealaps clareae*, some stored product mites and wax moths. The predatory wasps have been identified as *Vespa velutina*, *V. orientalis* and *V. cincta*. Two trainings on bee keeping awareness among farmers have been conducted at Hira Nagar and Chak Shian villages.

3.3.2.4.3 Pollination requirements of some oilseed crops

Among pollinating insects, honeybees *Apis dorsata*, *Apis mellifera*, *Apis cerana* and *Apis florea* were the major flower visitors and constituted more than 80 per cent of the pollinating insects visiting toria. Other important pollinators included andrenid bees such as *Andrena flavipes*, *A. ilerda*, *Halictus sp.* and dipteran flies etc.

3.3.2.5 Management of store pests

Three samples of each crop weighing 250g were collected from different locations in the first week of every month. 200 grains from each sample were randomly picked for larval count. The larvae of *Troboium castaneum*, *Sitophilus oryzae*, *Sitophilus zeamisi* was recorded in samples. The peak period of *Troboium castaneum* was found to be in August whereas peak period of *Sitophilus oryzae*, *Sitophilus zeamisi* was recorded in June, July and August, respectively.

3.4 SOCIAL SCIENCES

3.4.1 Agricultural Extension Education

3.4.1.1 Major cereal crops (rice, wheat and maize)

In the year 2009-10, the data regarding adoption pattern of production recommendations was

collected from irrigated belt of Samba and Kathua districts (rice-wheat crop rotation). In samba districts 02 blocks were surveyed and from each block 04 villages were randomly selected for collection of data. Thus, a total number of 08 villages have been covered in samba districts. From district Kathua, the irrigated blocks of Barnoti, Hiranagar, Kathua were covered and a total number of 12 villages have been surveyed. A total number of 200 farmers were sampled for the data collection.

3.4.2 Agricultural Economics & Statistics

3.4.2.1 Resource Use Efficiency and Economic Analysis of Major Fruit Crops

3.4.2.1.1 Mango

The inputs involved in the production of mango cultivation varied significantly at different age groups. The regression coefficient values of selected inputs mainly human labour, manures & fertilizers, plant protection and pruning & training varied significantly at the six age groups of five years from 5th to 28th year. The overall values obtained were 0.453, 0.674, 0.009 and -0.003 for human labour, manures & fertilizers, plant protection and pruning & training, respectively, out of which human labour and manures & fertilizers were statistically significant, indicating that that one per cent increase on expenditures of these inputs could increase the returns from mango to the extent of 0.45 per cent, 0.67 per cent and 0.01 per cent in case of human labour, manures & fertilizers and plant protection respectively, while as in case of pruning + training one per cent additional investment could decrease the production by 0.003 per cent. On an average the per acre first year establishment costs of mango were worked out to Rs. 5517.42, total establishment costs of mango were Rs. 10159.36 per acre. The study on per acre operational costs of mango indicated that on an average cost A, cost B and cost C were Rs. 609.58, Rs. 1782.48 and Rs. 5164.32, respectively. The overall per acre returns per year from mango orchards were Rs. 7794.97. The average net present value of mango orchards worked out to be Rs. 4802.52 with internal rate

of return of 18.85 per cent, 1.51 benefit cost ratio and payback period of 6.4 years. The coefficient of variation in mango was highest (98.94 per cent in case of area, 83.03 per cent in case of yield and 82.02 per cent in case of net returns).

3.4.2.1.2 Ber

The inputs involved in the production of ber cultivation varied significantly at different age groups. The regression coefficient values of selected inputs mainly human labour, manures & fertilizers, plant protection and pruning & training varied significantly at the six age groups of five years from 5th to 28th year. The overall values were 1.119, -0.013 and 0.004 for human labour, manures & fertilizers and pruning & training in case of overall orchards of ber out of which human labour was statistically significant, indicating that one per cent increase on expenditures of these human labour could increase the returns from ber to the extent of 1.119 per cent. On an average the per acre first year establishment costs of ber were worked out to Rs. 3869.89 with per acre total establishment costs to Rs. 9123.44. The per acre average operational costs of ber indicated that on an average cost A, cost B and cost C were Rs. 266.91 and Rs. 1434.62 and Rs. 3917.12, respectively. The per acre average returns per year from ber orchards were Rs. 5769.11. The net present value of ber orchards worked out to be Rs. 3951.34 with internal rate of return of 16.17 per cent, 1.54 benefit cost ratio and payback period of 6.7 years. The coefficient of variation in ber also was highest in case of area (83.82 per cent), whereas it was low in case of yield (20.44 per cent) and net returns (31.07 per cent).

3.4.2.1.3 Cabbage

An adequate characterization of soil heterogeneity in an experimental site is a good guide, and at times even a pre-requisite to choose a good experimental technique. For efficient planning of experiment, choice of suitable size and shape of plots as well as blocks is one of the important factors. In this regard the project was undertaken to determine optimum size and shape of plots and blocks for field experiment with cabbage, one of the popular grown vegetable crops in Jammu division.

In the first phase of the project, the cultivation of crop was done and all the cultural and management practices were adapted uniformly to all study area. The crop was grown in area of 20m x 25m with Golden Acre variety of cabbage. The yields were recorded for individual cabbage head after its maturity taking total weight as well as net weight. The total weight of cabbage head ranged between 2.930 kg to 0.400 kg. with an overall average of 1.189 kg. The overall average net weight was 0.750 kg. per cabbage head. Thus the ratio of total weight to net weight was computed as 1.585:1.

After harvesting the crop of the entire area, the data were arranged for basic units of 0.90m length containing two contiguous cabbage head in the same ridge. Then, the data were analyzed using two approaches, namely, Maximum curvature Method and Fairfield Smith's Variance Law.

The observations were further put in different sizes and shapes of plots, taking suitable combinations of rows and columns with net plots sizes ranging between 0.54 m² (1 basic unit) to 43.20 m² (80 basic units). The coefficient of variation (C.V.) and other statistics were computed for each plot size. The C.V. values ranged between 27.91% to 11.45%. The curve was plotted by taking the plot sizes (in terms of basic units) and C.V. values, and with the help of maximum curvature method the optimum plot size was obtained as 12 basic units (net area of 6.48 m²). This net size was having three shapes viz. 2x6, 4x3 & 6x2 with C.V. values as 14.74, 16.17 and 15.45 percent, respectively. Hence, a plot having 6 ridges with 4 plants per ridge is recommended. Smith equation regarding law of variance has been fitted to the data. Mathematically, the equation is $y = 25.374 x^{-0.1953}$ with $R^2 = 0.9277$, which is statistically highly significant. The value of smith index i.e. 0.1953 indicates that there is relatively high degree of correlation between contiguous unit.

The block efficiency was also worked out for all possible combinations with block sizes 4, 6, 10, 12 and 15 plots. The C.V. values for smaller block size remained comparatively at par as compared to larger block size, that is, beyond 12 plots per block. Therefore, in order to maintain homogeneity within the block, a block size of 12 plots is recommended for cabbage crop.

3.5 VETERINARY SCIENCES & ANIMAL HUSBANDRY

3.5.1 Veterinary Surgery & Radiology

3.5.1.1 Study of different combinations of opioids, NSAIDs and some active principles derived from aromatic plants for their antinociceptive efficacy in domestic and pet animals

The present study was conducted using different combinations of opioids, NSAIDs and some active principles derived from aromatic plants for their antinociceptive efficacy in domestic and pet animals. The study was performed on 20 healthy female dogs randomly divided into four groups of five animals each. In Group I, tramadol was administered (2mg/kg, IM), group II, was administered nimesulide (4mg/kg, IM), group III, was administered tramadol (2mg/kg, IM) and nimesulide (4mg/kg, IM) in combination and tramadol (1mg/kg, IM) and nimesulide (2 mg/kg, IM) was administered in combination in group IV. All drugs were administered immediately after completion of surgery. Tramadol was repeated at same dose rate after every six hours and nimesulide was given as a single dose. Premedication was done with atropine (0.04 mg/kg, SC) and diazepam (0.3mg/dl). In all groups, ovariohysterectomy was performed through mid-ventral incision under general anaesthesia induced and maintained with 5% thiopentone sodium. The result of study indicated that both the combinations were equally effective in controlling post-operative pain. The combination of the drugs was better than the use of the drugs alone in controlling pain induced by ovariohysterectomy.

3.5.1.2 Isolation and characterization of equine myogenic satellite cells

Equine myogenic satellite cells characterized with specific markers such as pax-7 and CD-34 for claiming the potential of these cells as stem cell like. Differentiation mixture directed these cells to form myotubes (as evident by the presence of myosin heavy chain -immunohistochemistry)

that shows that they proliferate and differentiate towards their specific myogenic lineages.

3.5.2 Veterinary Biochemistry

3.5.2.1 Serum biochemical and enzymatic profile changes in ETT Lambs associated with urolithiasis.

The present study was undertaken to investigate the cause of urolith related deaths in ETT lambs of Ramboiullet, Corridale & Dorper males being maintained at SBF, Painthal. A total of 33 serum samples & 13 urine samples were analyzed to determine the cause of urolith related deaths. The blood samples & urine samples were collected from lambs 3 months of age presented with painful micturation & hydronephrosis. The blood samples were analyzed for aspartate transaminase (AST), alanine transaminase (ALT), total cholesterol, urea, creatinine, calcium, phosphorus & magnesium. The serum aspartate transaminase (AST), alanine transaminase (ALT), total cholesterol, urea, creatinine, calcium, phosphorus & magnesium ranged between 37.28-131.06 IU/L, 2.97-80.60 IU/L, 28.05-222.62 mg/dl, 7.45-62.35 mg/dl, 1.19-7.00 mg/dl, 0.14-7.12 mg/dl, 2.34-12.6 mg/dl and 1.05-4.71 mg/dl respectively. These parameters were compared with the biochemical profile of the healthy animals. All the urine samples tested negative for presence of glucose, proteins, blood, bile salts and bile pigments. Of the 13 samples, 9 tested positive for presence of ketone bodies. Microscopic examination of the same urine samples revealed presence of calcium phosphate crystals (Fig. No. 1) in all the urine samples. A few degenerated epithelial casts, granular casts as well as waxy casts (Fig. no. 2) were also seen in the urine sample indicating chronic nephritis.

3.5.2.2 Serum enzyme and biochemical profile of buffaloes in Hemorrhagic Septicemia.

The present investigation was under taken to evaluate the influence of Hemorrhagic septicemia on serum enzymes and metabolites of buffalo. The study included 20 murrh cross & non-descript buffaloes. The animals were

selected at random based on the appearance of clinical symptoms as they were presented to R.C.D. Centre, Pargwal (Block Khour). The animals were between 5 to 6 years of age. A total number 20 serum samples were collected from the animals and transported on ice (4°C) to the laboratory for further analysis. The blood samples of infected were analyzed

for aspartate transaminase (AST), alanine transaminase (ALT), total protein, albumin, urea. The serum aspartate transaminase (AST), alanine transaminase (ALT), total protein, albumin, urea ranged between 127.87-140.82 IU/L, 43.71-46.57 IU/L, 3.54-3.94 g/dl, 0.72-0.74 g/dl & 18.82-20.39 mg/dl respectively in infected animals.

Scientist demonstrative *agaricus bisporus*



Calcium phosphate crystals



Waxy cast

3.5.3 Veterinary Public Health and Hygiene

3.5.3.1 Hygienic quality of milk

The present investigation was carried out to assess the adulteration of marketable fresh milk adulterated with water, skim milk powder, detergents, carbonates/bicarbonates, cane sugar/starch in and around Jammu. A total of one hundred fifty five samples (55 from cows, 70 buffalo, 30 commercial sources) were collected from 23 different localities in and around Jammu city. The milk samples (100 ml) were got collected from house hold supplies and properly transported to laboratory for further investigations. The average total acidity for cow and buffalo milk was 0.14% (Range 0.12 - 0.16%) and 0.15% for milk from commercial sources. The fat percentage ranged between 1.8 - 3.9% (Average 2.45%) in cow milk and 2.2- 5.8% (average 3.27%) for buffalo milk. The fat percentage in commercial milk samples ranged between 2.3 - 3.0% (2.25%). The 8 samples (14.5%) of cow milk, 5 (7.1%) buffalo and 5 (24.3%) samples of commercial milk tested positive for carbonates/bicarbonates. Overall 11.6% of samples tested positive for carbonates/bicarbonates and found to be the



Scientist demonstrating milk sample analysis

most common preservatives being used. None of the samples tested positive for boric acid, H₂O₂ or formalin, cane sugar / starch. However, milk from commercial sources tested positive for milk powder. In the 155 milk samples tested the detergent could not be detected to suggest the supply of synthetic milk

On the basis of these studies it may be recommended to introduce control measures at appropriate level with creation of awareness amongst producers, distributors and consumers regarding the impact of adulterants on the health of consumers.

3.5.4 Veterinary Parasitology

3.5.4.1 Empowerment of rural women through backyard poultry farming in Jammu region:

Two hundred families were assessed in the Jammu region. It was observed that backyard poultry farming is practiced more in Kandi (30%) area, as compared to plain irrigated areas (5%). It was further observed that economically poor people with small land holding were practicing poultry farming. Majority of the birds reared were of Aseel breed and of nondescript breed, which had poor egg laying. Control of ecto and endo parasites in few backyard units helped in increase body weight gain and egg laying capabilities.

- Backyard poultry unit was established at the Faculty of Veterinary Sciences & AH, SKUAST-J, R.S.Pura, Jammu and appropriate services and infrastructure was created at faculty for imparting training of 2 days to women farmers.
- Training was imparted to 180 women farmers (Target 200). The training (Theory and Practical) was delivered on scientific lines by experts of the faculty from various disciplines i.e. Health, nutrition, management and production. The women farmers were also made aware regarding loan and other welfare schemes for women by the Manager of J&K Bank. The women farmers were also provided with 10 birds each (40 day old) to establish backyard poultry unit. Health facilities to these 180 units were regularly provided by the division. Assessment of the birds i.e. body weight gain, egg laying, income generation etc. The different observations were made i.e. average age at egg laying was 25 weeks, average body weight gain was 75g/week. The body weights at 40, 100, 200, and 240 days was 210, 730, 1880 and 2550 gm respectively.

3.5.4.2 Prevalence of helminth parasites affecting livestock

Ruminants

During the year 843 faecal samples of cattle, buffaloes, were examined and the positivity observed was 80.34 %, 75.34 %, respectively. The predominant parasitic eggs observed were

strongylids followed by amphistomes, coccidian oocysts. The snail examination revealed mainly presence of *Indoplanorbis exustus* which is mainly an intermediate host for amphistomes. Prevalence studies of helminthes. based on coprological examination in sheep and goats were carried out in low altitude subtropical zone of Jammu region of J&K state. A total of 1920 faecal samples (Sheep=960 and goats960) were examined and 1442 (75.10%) of samples were positive for ova of different helminthes viz, Strongyles (57.91 %), *Strongyloides spp.* (10.46%), *Trichuris spp.* (14.53%), *Fasciola spp.* (5.88%), *Dicrocoelium spp.* (3.90%) and *Amphistomes* (20.75%). In total 728 (75.83%) sheep were found infected with ova of different helminthes and the corresponding figures were 59.06%, 11.04%, 15.10%, 6.35%, 4.79% and 22.19%. In case of goats 74.38%, were positive for helminthic infection and corresponding figures were, 56.67%, 9.90%, 13.96%, 4.90%, 3.02% and 20.10%. The highest rate of infection (83.96%) was recorded during monsoon and lowest (62.50%) during winter. Similarly highest EPG (1473.3 ± 98.24 to 2266.5 ± 92.40) was recorded during monsoon and lowest (486.6 ± 92.51 to 740 ± 66.78) during winter. The rate of intake of infection did not differ significantly in both the species and could be attributed to mixed grazing and sharing of pasture/ sheds.

Epidemiological and resistance survey on prevalence of gastrointestinal nematodes (GIN) in sheep and goats of stationary flocks of Jammu Province was carried out during the period of July, 2008 to June, 2009. Out of 5760 faecal sample (sheep 2880 Goat 2880) examined, 61.86 % animals were found positive for helminthic ova. Among them 46.97 % revealed strongyle eggs, 12.04 % *Trichuris* and 4.14 % *Strongyloides*. The other helminthic ova recorded were *Fasciola* 6.28 %, amphistomes 10.53 %, *Dicrocoelium* 3.95 % and anoplocephalids 1.57 %. Highest prevalence of helminthic infection (75.10%) and strongyles (57.86%) was observed in animals of low altitude subtropical zone (I) as compared to middle agro-climatic zone (II) (67.24%) and (50.10%) and high altitude temperature zone (III) (43.22%) and (32.96%). Prevalence of amphistome and *Fasciola* eggs were higher in zone I and II, respectively. Season wise significantly (P<0.05) higher prevalence of strongyles was recorded

in monsoon and lowest in winter season in all the three zones. Coproculture studies revealed infective larvae of *H. contortus*, *Ostertagia*, *Trichostrongylus*, *Oesophagostomum*, *Bunostomum* and *Strongyloides* spp. Percent larvae count showed *H. contortus* to be the highest in all the three zones. *Trichostrongylus* and *Ostertagia* larvae were higher in animals of high altitude temperate zone as compared to other zones. Month wise data of eggs per gram of faeces showed two peaks of strongyles in zone I (April and August) and zone II (May and August) where as only one peak was observed in zone III (July). Age wise analysis showed higher infection of strongyles in young animals as compared to adults, irrespective of zones. Average worm count was higher in zone I (sheep 955.39 ± 101.25 and goats 867.81 ± 103.37) as compared to zone II (sheep 831.88 ± 108.48 and goats 790.25 ± 111.28) and zone III (sheep 531.93 ± 65.12 and goats 428.0 ± 70.46). Like wise positivity of GIT for infection was higher in zone I (85%) as compared to zone II (80%) and zone III (67.5%). *H. contortus* was predominant in all the three zones. Young animal s` GIT revealed higher number of worms as compared to adult. Like wise GIT of females has higher load as compared to males.

Resistance studies based on egg hatch assay using Thiabendazole revealed highest ED₅₀ (0.6423) in Sheep Breeding Farm, Billawar, followed by animals of zone I (sheep 0.6104 and goats 0.5926), zone II (0.5820 and 0.5307), zone III (0.5014 and 0.4201) respectively. Faecal egg count reduction test using fenbendazole @ 5 mg/kg showed resistance against strongyles in all the three zones including Sheep Breeding Farm, Billawar.

The percent reduction was the highest in animals of zone III (67 to 68%) as compared to zone II (64 to 66%) and zone I (62 to 67%). The lowest percent reduction was observed in sheep of SBF Bilawar (45%). Allele specific PCR revealed higher frequency of heterozygous resistant (rS) alleles (56.25%) as compared to homozygous susceptible (SS) (31.20%) and homozygous resistant (rr) 12.5% irrespective of zones.

Majority of sheep and goat breeders do not follow scheduled deworming in Jammu region. The findings of present study provide a

database for devising an effective GIN control programme in Jammu Province.

Canine and Feline

In order to evaluate various parasitic infections in dogs, freshly voided faecal samples in parks, agriculture fields, road side and colonies were collected and further subjected to qualitative and quantitative faecal examination using standard methods. Further 12 dogs died in road accidents were brought to the laboratory and examined for the presence of parasites. Collected parasites were examined as per standard protocols. A total of 168 freshly voided faecal pats of dogs were collected from in and around Jammu. Qualitative examination using concentration (floatation and sedimentation) revealed presence of one or more types of parasitic eggs in 80 % animals. The infection observed were strongyles, taenid, ascarid, *Dipylidium caninum* segments trichurids, *Strongyloides*, *Isospora* spp. oocysts, *Diphylobothrium latum* and mixed infection. Data revealed high infection of parasitic eggs of zoonotic importance, suggesting that in order to reduce parasitic zoonoses prophylactic measures in form of deworming should be adopted both by pet owners as well as by government organizations. Twenty five faecal samples of cats were screened to record the incidence of parasitic infection. All the samples examined were found to be positive for one or other type of parasitic infection including *Toxoplasma/Hammondia* oocyst, *Isospora* oocyst and *Cryptosporidium* oocyst (ZN staining). Eggs of *Strongyle* were found predominant and the percent was recorded 80% and Mean \pm SE EPG was recorded 56.25 ± 7.77 . Followed by prevalence of Taeniid eggs 40% and *Toxocara* eggs 32% and Mean \pm SE EPG of *Toxocara* eggs was recorded 102.5 ± 10.13 . *Strongyloides* eggs were recorded 28% and Mean: SE EPG was found to be 87.14 ± 13.75 . *Dipylidium caninum* eggs and *Spirometra* eggs were recorded 20% and 8% respectively. Besides these, prevalence of *Toxoplasma/Hammondia* oocyst (88%), *Isospora* oocyst (80%) and *Cryptosporidium* oocyst (4%) was recorded. A cat carcass lying open was also collected and brought to the laboratory for post-mortem examination. While opening the carcass, three different parasites were found and they were identified as *Ancylostoma tubaeforme*, *Taenia taeniaeformis* and *Dipylidium caninum*.

3.5.4.3 Bovine cryptosporidiosis and its zoonotic potential

Examination of 684 faecal samples of bovine calves revealed 48.39 % (331/684) prevalence of *Cryptosporidium* infection. Higher prevalence was observed in cattle (55.55%) than the buffalo calves (36.11 %). Calves of 0-1 month age group (59.64 %) showed highest prevalence. Winter recorded the highest infection rate (71.92 %), however summer recorded the lowest rate. Higher prevalence of *Cryptosporidium* spp. oocysts in diarrhoeic faeces having mucus (76.07%), than those showing presence of blood (15.55 %) was recorded. The relationship between intensity of infection and various epidemiological factors showed that higher intensity was observed in calves of 0-1 month age group, having diarrhoea, in winter season and animal faeces having mucus. Out of 120 diarrhoeic faecal samples of children examined, 17 (14.17%) were positive for *Cryptosporidium* (5; 4.17 % by microscopy, 10; 8.33 % by ELISA and 17; 14.17% by PCR). Highest prevalence was in the age group of six months to one year (19.15%) and was very low (6.45%) in less than six months of age. As per residing status a very high but non significant difference was observed in infection rate of *Cryptosporidium* in rural (16.95%) and semi urban (14.29%) from urban children (5.26%). Both male (14.71%) and female (13.46 %) were almost equally susceptible to *Cryptosporidium* spp. Higher infection was observed in children having persistent (20.83 %) type of diarrhoea then acute (11.76 %) and chronic (4.76%). Season prevalence revealed significant ($P < 0.05$) higher infection during monsoon season (33.33 %; July to September) as compared to post monsoon (15.00 %; October and November) winter (6.66%; December to February), and summer (5.00 %; March to June). Examination of 52 samples of HIV positive patients revealed, 15 (28.84) were positive for *Cryptosporidium* spp. Higher prevalence was observed in symptomatic (with diarrhoea) patients (39.28%) and that too in chronic type of diarrhoea (40.0%) Genetic characterization using PCR- RFLP revealed higher prevalence of *C. parvum* in children (76.47%) whereas *C. hominis* was more in HIV positive patients (60%).

Ectoparasites

A goat herd of 20 animals, aged between 1 to 5 years were presented to the division with the history of alopecia, erythema, roughness of skin and itching symptoms with marked dermatitis. The skin scrapping were collected and examination revealed infestation of *Sarcoptes* in all 20 animals. Infested animals were divided into two groups i.e. infected treated and infected untreated control group, each having 10 numbers of animals. Infected treated group animals were treated with pour on Eprinomectin on day 0 of trial where as other group animal served as control group. The efficacy of the acaricide was evaluated based on reduction in number of mites in skin scrapping on day 7, 14, and 21 post treatment. The severity of lesions, presence or absence of eggs, and live mites in skin scrapings were the other criteria for evaluation. The examination revealed that in 20 percent of cases live mites and eggs were present up to 7th day of post treatment. Treatment of these *Sarcoptes* infested goats with same preparation on 7th day post treatment resulted in absence of eggs and live mites on day 14th of first treatment.

3.5.5 Animal Nutrition

3.5.5.1 Nutritional evaluation of feedstuffs available in Jammu

Ten foliages viz. *Syzygium cuminii* (Jamun), *Linnea grandis* (Campbell), *Grewia optiva* (Dhaman), *Morus alba* (Toot), *Pyrus pashia* (Kainth), *Ficus virens* (Pakh), *Ficus palmata* (Fakoda), *Dendrocalamus strictus* (Bamboo), *Flacourtia indica* (Cocoa) and *Flueggea virosa* (Pandrah) available in Udhampur district of J&K state were analyzed for chemical constituents, protein fractions and *in vitro* dry matter digestibility. There was variation in chemical constituents. The CP content was maximum in *F. virens* (22.75 %) and minimum in *P. pashia* (9.24 %). The NDF content varied from 41.80 % in *F. virens* to 68.77 % in *D. strictus*, whereas ADF content was maximum in *D. strictus* (53.22 %) and minimum in *M. alba* (25.38 %). The ADIN (% of total N) was highest in *F. palmata* (38.05 %). It appears that N from *F. palmata* would be degraded quickly in the rumen because of its higher solubility. The IVDMD (%) ranged from 38.00 % in *F. palmata*

to 76.40 % in *G. optiva*. On the basis of present study, *D. strictus*, *F. virens* and *M. alba* seem to have good nutritional potential for ruminants.

3.5.5.2 Use of tannin as a natural binder to improve protein utilization from forage silage in ruminants

Tree leaves viz. *Mangifer indica* (mango), *Acacia nilotica* (kikkar), *Embllica officinalis* (aonla), *Zyzyphus nummularia* (ber), *Melia azadirachta* (neem), *Fiscus religiosa* (peepal), *Syzygium cuminii* (jamun), *Leucaena leucocephala* (subabul), *Morus alba* (mulberry), *Bauhinia variegata* (kachnar), *Albizia lebbbeck* (sirin), *Grewia optiva* (dhaman) and *Salix alba* (Bedoh) were analyzed for proximate composition, fiber fractions, tannin fractions and protein precipitable phenolics. Crude protein content was found highest in Sirin (28.01 %) and lowest in aonla (10.58 %). NDF content was found highest in Kachnar (47.12 %) and lowest in Neem (17.22 %). *A. nilotica*, *M. indica*, *E. officinalis* and *F. religiosa* contained higher level of total phenol and tannin. Protein precipitable phenolics (mg/100 mg tannin) were highest in *S. cuminii* (94.11). Silage was prepared using maize fodder, mango and jamun tree leaves in glass jar. Depending upon content of protein phenolics and easy availability, jamun and mango leaves were selected for silage preparation. The protein content of maize - tree leaves silages decreased with increased proportion of tree leaves in the silages. The *in sacco* disappearance of dry matter (%) was increased with increased time interval with the exception of silages containing maize or Jamun leaves. The disappearance of dry mater within time interval was also decreased with increased proportion of tree leaves in the silages. Mango and jamun tree leaves can be used @ 25 % level along with maize fodder for preparation of silage without affecting its quality.

3.5.6 Veterinary Clinic & Teaching Hospital

3.5.6.1 Diagnostic ultrasonography for affections of Bovine gastrointestinal tract

Ultrasonographic examination of reticulum, omasum, abomasum, liver and small intestines was carried out in 20 animals to locate and identify the organs in normal animals. Reticulum was scanned through the intercostals

spaces (usually 6th) at the right ventral aspect of the thorax from the Xyphisternum to just above the elbow. The normal reticulum appeared as smooth crescent shaped structure situated quite adjacent to the diaphragm and the ventral thoracic wall. Biphasic reticular motility could be identified in all the animals. However, different layers of reticular wall and the honeycomb structure of the mucosa could not be identified. The omasum was scanned through the 8th-9th intercostals spaces on the right side as a semi lunar structure, however, the omasal leaves were not often identified because of the ingesta. The abomasum could be scanned about 4 inches caudal to the xyphoid cartilage, with most of its part lying on the right of ventral mid line. Abomasal wall appeared as thin echogenic line. Normal small intestine could be scanned from the right side from the lumbar transverse processes to the ventral mid line and tuber coxae to the 8th rib. The ingesta filled intestines appeared as hyperechoic mobile structures of various shapes and size. Fluid filled intestinal loops gave somewhat hypoechoic image with acoustic shadow. The liver could be scanned through 10th-12th I/C spaces on the right side. The liver margins, hepatic and portal veins, gall bladder could be identified. The liver parenchyma appeared as structure with weak echoes. Bile ducts could not be identified. Ultrasonography was also used to scan these organs in bovines with various GI tract disorders in 25 clinical cases. The foreign body in cases of TRP could be identified in 2 out of 5 positive cases as hyperechoic line in reticulum, moving with the diaphragmatic movements and through the 4th I/C space on the left ventral thorax at the level of elbow in the pericardium moving with the heart beat. However, reticular motility was not seen in any of the five cases, the reticulum moved with the respiratory movements. The intestinal intussusceptions could be identified only in 30% of the cases as a multilayered structure in longitudinal scans and as bull's eye pattern in cross sectional scans. It could be identified only in those cases in which the affected part was lying close to the abdominal wall, because of the limited penetration of the ultrasound beam.

3.5.7 Animal Reproduction, Gynaecology & Obstetrics

3.5.7.1 Molecular basis of capacitation like changes in the assessment and prevention of cryo damage due to cryopreservation in crossbred and Buffalo Bulls

The post thaw motility of the cryopreserved buffalo semen is poor and success rate of *in vitro* fertilization (IVF) is 10-20% compared to cattle (30-35%). The *in vitro* capacitated spermatozoa are the prime requirements of IVF. Poor fertility in buffaloes is due to the lack of basic information on sperm capacitation and cryocapacitation (cryodamage). The cryopreservation of the buffalo semen causes irreparable membrane damage leading to excessive production of ROS that ultimately cause oxidative damage to healthier sperm in the vicinity and sperm also suffers from premature capacitation. There is increasing demand of buffalo semen for AI and lot of semen is lost because of the poor fertility rates of the frozen/thawed semen particularly in buffaloes. A better understanding of the signalling events during sperm functions in cryopreserved spermatozoa and spermatozoa produced under adverse weather conditions will be useful to improve protocols/extendors for semen preservation/cryopreservation and improved fertility rates to combat the huge economic losses because of the wastage of semen and genetic potential in buffaloes

3.5.8 Veterinary Pharmacology and Toxicology

3.5.8.1 Pharmacokinetics of antibacterial drugs

The pharmacokinetics of moxifloxacin was worked out in healthy and diseased (poisoned) goats. The poisoning with bifenthrin markedly altered the different pharmacokinetic parameters thereby, suggesting that the dose recommended for healthy animals (5.0 mg.kg⁻¹ followed by 4.7 mg.kg⁻¹ to be repeated after every 12h) would be significantly different from diseased animals (6.7mg.kg⁻¹ followed by 6.3 mg.kg⁻¹ to be repeated after every 12h).

3.5.8.2 Toxicological studies of pesticides

Studies on subacute toxicity of bifenthrin in rats

Subacute toxicity of bifenthrin, type-I pyrethroid was conducted in rats following its daily oral

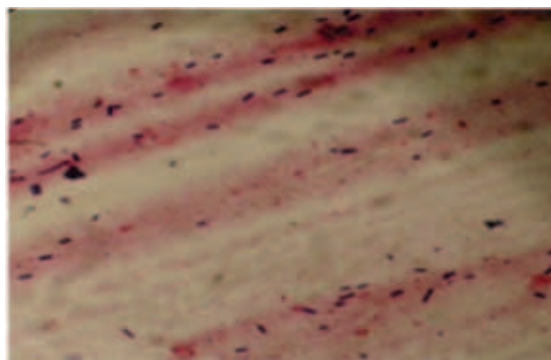
and dermal applications for 30 days. The role of vitamin C as attenuating agent for the toxic signs, hemato-biochemical alterations including parameters related to oxidative stress were studied.

- Daily oral administration of bifenthrin @ 5.8mg/kg BW (1/10th LD₅₀) produced signs of in coordination, nervousness and abnormal gait in exposed animals. Significant hematological changes in Packed Cell Volume (PCV), Haemoglobin (Hb), Total Erythrocyte Count (TEC), Mean Corpuscles Volume (MCV) and Total Leukocyte Count (TLC) were observed. Plasma enzymes like Aspartate Transaminase (AST), Alanine Transaminase (ALT), Alkaline Phosphatase (ALP), Acid Phosphatase (ACP) and Blood Urea Nitrogen (BUN) were elevated after 30days of oral exposure. Marked changes in oxidative stress parameters like lipid peroxidation, glutathione, superoxide dismutase (SOD), glutathione peroxide (GPx), glutathione s-transferase (GST), and catalase were seen in tissues of exposed rats.
- Application of bifenthrin @ 45mg/kg BW on inter scapular region of rats did produce transient toxic signs like scratching, licking and biting on exposed rats. These signs were seen immediately after application of bifenthrin and lasted for the 15-20mins post administration. There was decline in values of hematological parameters like Hb, PCV, MCV and TEC after 30days of dermal application of bifenthrin. Biochemical changes like elevated activities of AST, ALT and ALP were seen after 30days of exposure. Other biochemical indices like BUN, creatinine, and total protein did not vary significantly. Marked changes in the oxidative stress parameters were seen after dermal application of this insecticide thereby indicating the potential of bifenthrin to induce oxidative damage.
- Effect of Vitamin C administered orally @60mg/kg BW along with bifenthrin @5.8mg/kg BW had an attenuating effect on toxic signs, haemato-biochemical indices and oxidative stress related parameters. The attenuating effect of Vitamin C on altered biochemical parameters including oxidative stress may be due to free radical scavenging

effect of the Vitamin C. Therefore Vitamin C can be useful in attenuating the toxicobiochemical changes induced by bifenthrin.

3.5.9 Veterinary Microbiology

- Isolation, characterization and virulence determination of enteric bacterial pathogens in lambs. Samples are being collected from various sheep farms of Jammu and Kashmir.
- Processing of samples for isolation and identification of bacterial pathogen received from various sheep farms and animal husbandry division.
- Isolation and identification of bacterial pathogens from different animal presented with different clinical conditions in the college clinics.



3.5.10 Veterinary Pathology

3.5.10.1 Mycotoxin detection

The division had undertaken a University funded project on aflatoxicosis, its diagnosis and amelioration in livestock and poultry. In its first year of inception, 132 feed samples (broiler starter, finisher, grower and layer feeds) from 24 private and government poultry farms were collected and screened for mycotoxins. In compounded feed, the level of aflatoxin B1 (AFB1), ochratoxin A (OTA) and citrinin (CTN)

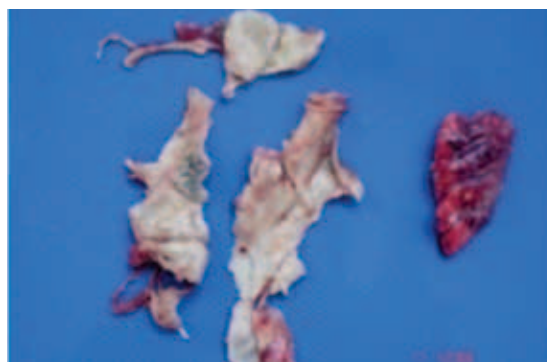
were up to 0.216, 0.144 and 0.189 ppm, with AFB1 levels highest in broiler finisher ration. Amongst feed ingredients (maize, jowar, rice, ground nuts, etc.), AFB1, OTA and CTN were up to 0.452, 0.368 and 0.542 ppm, the highest being found in ground nuts.

3.5.10.2 Poultry diseases in Jammu region

An outbreak of Turkey pox was investigated in the faculty farm as part of another University funded project, on poultry disease occurrence in Jammu region. This perhaps was the first incidence of the disease in this region. Necropsy examination revealed presence of classical pock lesions on the non-feathered parts of the body (cutaneous form) including the head, neck, axilla, wings and legs.



Pock lesions in a turkey bird



Caseous lesions in airsacs and lungs affected with Aspergillus sp. in turkey

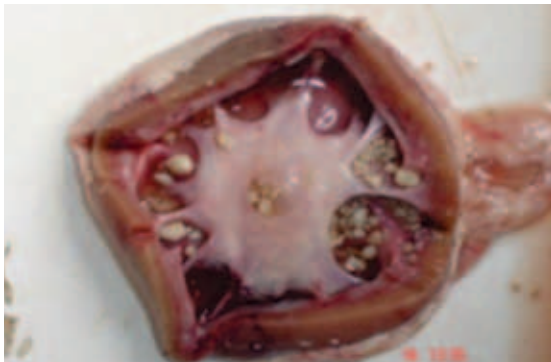
Concurrent infection with aspergillosis was also recorded which further aggravated the condition. Prominent lesions were caseous nodules in lungs and other viscera and thickened airsacs. Organisms were isolated and identified as *Aspergillus* sp.

3.5.10.3 Investigative pathology for early diagnosis of urolithiasis

Mortality in government sheep breeding farm amongst ETT (embryo transfer technology) lambs was investigated. Detailed necropsy and laboratory examination confirmed urolithiasis being prevalent in the farm, and cause for



Penile phosphatic calculi in sheep leading to urine retention and acute renal failure

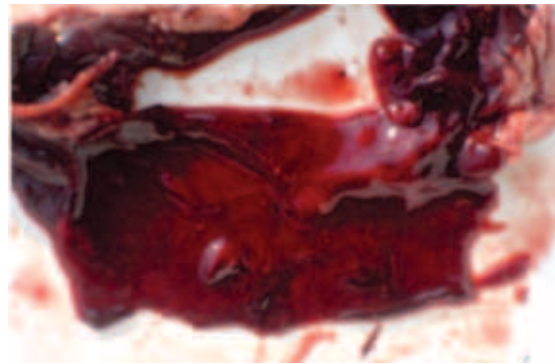


Kidney stones in sheep leading to hydronephrosis and acute renal failure

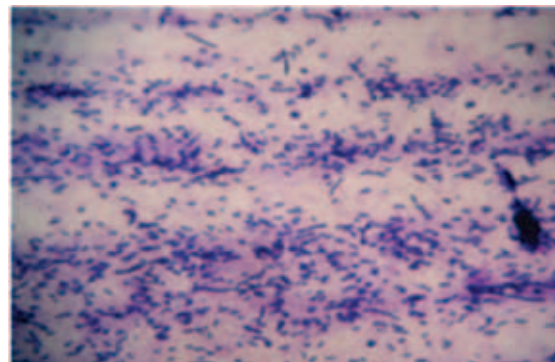
many deaths amongst the animals. Serum chemistry indicators like Blood Urea Nitrogen (BUN) and Creatinine values have been found to be a very reliable indicators of pre, post or intra-kidney lesions in the early field diagnosis of urolithiasis. The calculi contained mostly phosphates. Urinary acidifiers, balanced feed regime and other preventive measures advised helped control the problem.

3.5.10.4 Miscellaneous conditions

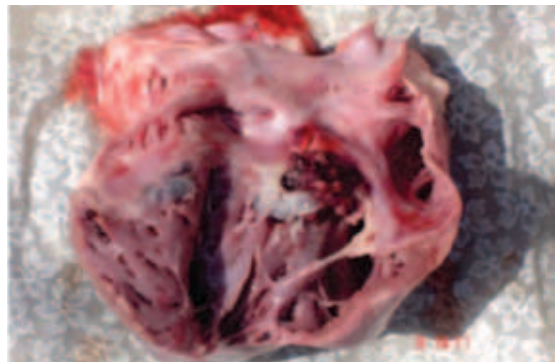
Routine necropsy examinations also revealed a number of diseases including clostridial



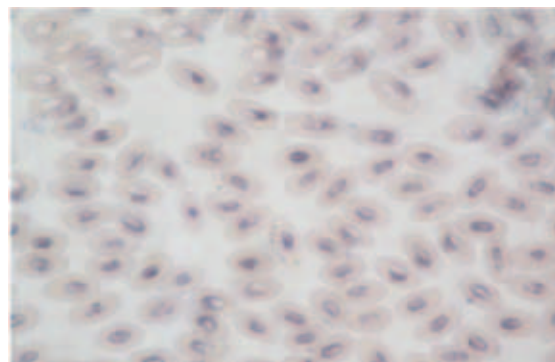
Severe haemorrhagic enteritis in sheep enterotoxemia



Isolation of Clostridium sp. causing enterotoxemia in sheep



Valvular vegetative endocarditis in a dog



Intra- erythrocytic stages of Haemoproteum columbae in pigeon

enterotoxemia in sheep with isolation of organisms, *Haemoproteus columbae* infection in an outbreak amongst pigeons in Jammu, vegetative endocarditis in dogs, besides other noteworthy cases from other outbreaks and animals. Many interesting cases have been displayed in the divisional museum also.

3.5.11 Livestock Products Technology

3.5.11.1 Comparative effect of incorporation of egg albumin liquid and skim milk powder in chevon patties

The comparative effects of incorporation of skim milk powder and egg albumin liquid on physico-chemical and sensory characteristics of chevon patties were studied. Chevon patties were prepared by using egg albumin liquid as a binder at 5, 10 and 15% levels and skim milk powder as a binder at 3, 5 and 7% levels of inclusion. Among the various levels of inclusions the 10% level of egg albumin liquid and the 5% level of skim milk powder were found to be best suited levels. Then the better binder and fat replacer among the two selected levels was analyzed. The emulsion stability and the product yield were significantly ($P < 0.05$) higher in patties incorporating egg albumin liquid. The moisture and the protein contents were significantly ($P < 0.05$) higher in the chevon patties by incorporating skim milk powder. Both the binders have evoked a marked enhancement in sensory attributes. Based upon physico-chemical and sensory attributes, the egg albumin liquid was considered better than the skim milk powder as a binder in chevon patties.

3.5.12 Epidemiology & Preventive Medicine

3.5.12.1 Epidemiological studies of bovine paramphistomosis in Jammu district

A total of 3252 faecal samples and 1719 snails were collected. Direct smear and sedimentation methods were used to detect amphistome eggs in faecal samples. The snails were dissected to identify the intramolluscan stages. Disease epidemiology was assessed block wise with respect to age, sex and season. Overall prevalence of bovine paramphistomosis in Jammu district was 32.3 per cent with a non-

significantly higher prevalence in buffaloes (33.8 per cent) as compared to cattle (30.8 per cent). Sex wise analysis showed a higher prevalence in females (33.5 per cent) than males (22.7 per cent). Age wise analysis showed highest prevalence in 1-3 years age group (44.7 per cent) followed by >3 years age group (37.2 per cent), and lowest in bovines of less than 1 year age group (12.1 per cent). Seasonal analysis of the data revealed highest disease prevalence in monsoon (39.3 per cent) and lowest in summer (25.7 per cent). Snails were identified as *Indoplanorbis exustus* and had highest prevalence in August (21.4 per cent), lowest in December (1.6 per cent) and nil in January and February. Overall 34.5 per cent snails were positive for *Cercariae pigmentata* and redia; with highest infection in July (44.2 per cent), lowest in December (7.1 per cent) and nil in March. The prevalence was highest in the monsoon (42.5 per cent) and lowest in winter (7.14 per cent). A positive correlation of disease prevalence with rainfall, minimum temperature and relative humidity was found.

3.5.12.2 Association of brucellosis with abortion, retention of placenta and repeat breeding in bovines of organized and unorganized dairy farms of Jammu

The present study was conducted to investigate the seroprevalence of brucellosis in relation to abortion, retention of placenta (ROP) and repeat breeding in cattle and buffaloes from organized and unorganized dairy farms. A total of 81 serum samples (50 from buffaloes and 31 from cattle) were subjected to rose bengal plate agglutination test (RBPT) and serum tube agglutination test (STAT). The overall prevalence of brucellosis was found to be 14.81%. The prevalence was non-significantly higher (chi-square=0.069, $P=0.793$) in cattle (16.12%) as compared to buffaloes (14.0%). The risk of brucellosis was 2.059 times more in organized farms than in unorganized farms (95% C.I 0.644-5.557). The disease was found to be non-significantly associated with abortion (chi-square=0.0649, $P=0.420$) and retention of placenta (chi-square=0.069, $P=0.793$), however there was no association with repeat breeding (chi-square= 1.572, $P=0.210\%$).

3.5.13 Livestock Production & Management

3.5.13.1 Evaluating the laying performance of *Vanaraja* birds with restricted levels of feed under different systems of rearing

A study was undertaken to evaluate the laying performance of *Vanaraja* birds with restricted levels of feed under different systems of rearing. *Vanaraja* layers (n=60) were divided into 3 groups and reared in deep litter system & semi-intensive system of housing. The amount of feed for Deep litter rearing system was 140g/head/day (T_0), Semi intensive rearing system 110g/head/day (T_1) and 80g/head/day (T_2). Average egg weight & number of eggs laid recorded were 49.29g, 50.92g & 47.79g and 1542, 1382 & 1010 in T_0 , T_1 & T_2 for a period of 10 months.

3.5.13.2 Study of management practices and morphometric characterization of Bakerwali goats in its migratory tracts"

The studies are being conducted on morphometric traits of Bakerwali goats under the migratory route of Bakerwali goats at their base camps in the different places of Kathua district where the numbers of flocks are available during halt period in winters. A total 750 animals were studied for different parameters. The weight of animals at different age groups along with other parameters till date collected is as under:

Body weight (Kg) at birth, 6 months, 10-12 months, 2tooth, 4 tooth, and full mouth for male was recorded as 3.55, 23.72, 27.83, 36.95, 50.36, 71.01 respectively and for females as 3.36, 23.81, 26.15, 33.72, 42.98, 60.14 respectively.

Heart girth(cm) at birth, 6 months, 10-12 months, 2tooth, 4 tooth, and full mouth was recorded as 33.39, 62.29, 67.59, 68.56, 68.78 and 92.00 respectively in males and 33.12, 58.18, 64.08, 67.65, 67.75 and 86.25 respectively in females.

Punch girth(cm) at birth, 6 months, 10-12 months, 2tooth, 4 tooth, and full mouth was recorded as 30.32, 64.29, 60.59, 72.56, 73.78, 94.00 respectively for males and 29.18, 56.18, 63.08, 68.65, 69.75, 82.25 respectively for females.

The information regarding the managerial practices was collected through personal

interactions with the 30 flock owners and also by visiting the different flocks. The studies are in progress to evaluate the performance of Bakerwali goats at 3 months and birth.

3.5.13.3 Performance of turkey birds under different systems of rearing

Turkey farming is quite suitable for upliftment of small and marginal farmers as the birds can be easily reared in free range or semi intensive system with minimal investment for housing, equipments and management. With this objective the performance of turkey bird (n=48) was evaluated under intensive and semi-intensive system of rearing for a period of twelve weeks (8-20 weeks of age) to determine the effects of rearing systems on live performance and carcass yield of birds. Body weight attained was 4448.09 g in intensive system and 3525.28 g in semi intensive system at the end of twelve weeks. Feed consumption and FCR in intensive and semi intensive system were significantly different ($p < 0.05$), however, system of rearing had no effect on dressing percentage ($P > 0.05$).

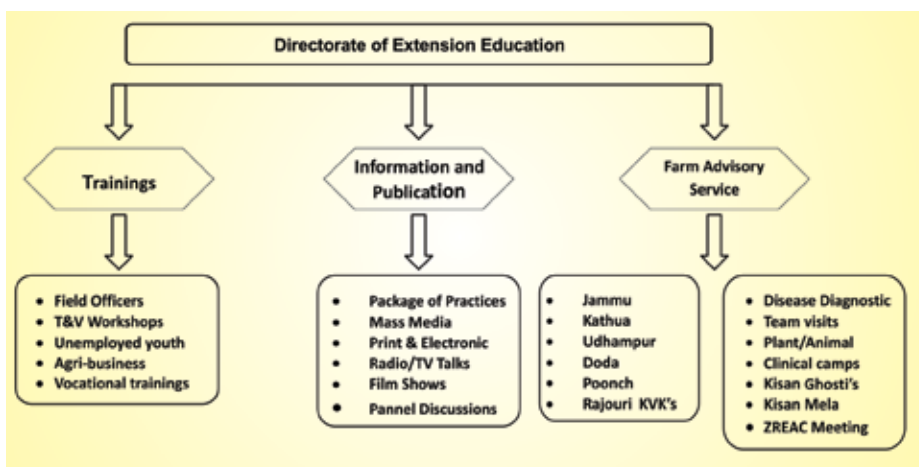
3.5.13.4 Heat stress ameliorative effect of synthetic and household antioxidants on performance of *Vanaraja* chicks

The performance of *Vanaraja* birds (2-8 weeks of age) was evaluated under Hot-humid season for a period of six weeks (June -July) by supplementing some house hold anti-stress and anti-oxidant agents viz. *Emblica officinalis* (Amla) and Lemon juice @ 0.2% and 2%, in the feed & water, respectively, to determine their heat ameliorating effects on the birds. At the end of experiment gain in live weight was 9.05% & 11.26% more but average daily water intake was significantly higher ($P < 0.05$) in synthetic vitamin C than amla and lemon juice supplemented group. Hemoglobin, total protein, albumin, globulin and albumin globulin ratio differed non significantly among the treatment groups. Carcass quality parameters like live weight, carcass weight and dressing percentage were statistically comparable among three treatment groups. The results suggest that natural ascorbic acid source like amla and lemon juice can be used more effectively than synthetic ascorbic acid to alleviate heat stress in *Vanaraja* chicken.

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 Education popularly known as the “**Field Extension Wing**”, is taking care of the farm advisory services among a few villages, surrounding the headquarter campus of the university and at different districts through Krishi Vigyan Kendras. The responsibility for planning, organizing, conducting and coordinating the extension education activities of the university in the Jammu region of Jammu & Kashmir State lies with the Directorate of Extension Education. Its main aim is to transfer the well proven/ tested technologies to the farmers, livestock owners, rural youth, field staff of State Govt. and other personnel engaged in developmental and professional agencies in the fields of agriculture, animal husbandry, horticulture, home science and other allied areas through its well planned,

skill-oriented and need based programmes. The Directorate acts as bridge between the research scientists and the farmers and other stakeholders to provide feedback.

Farm Science Services (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 the 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.



4.1 MAJOR WORKSHOPS AND MEETINGS

4.1.1 Zonal workshop of KVKs of Zone I

The Zonal workshop of KVKs of Zone I was held at Chatha w.e.f. November 15 to 18, 2009. This was the first time that the combined workshop of KVKs of zone-I was organized in SKUAST-Jammu. Dr. B. Mishra, Hon’ble Vice Chancellor of SKUAST-Jammu inaugurated the workshop in presence of Dr. K.D.Kokate, DDG (AE), ICAR, Directors of Extension Education from J&K, H.P., Punjab, Haryana and Delhi and Scientists of 61 KVKs of zone-I. The workshop was organized to review the activities of KVKs



Hon'ble Vice-Chancellor, Dr. B. Mishra chairing the Zonal Workshop of KVKs of Zone-1

of zone I vis-à-vis their already approved action plans besides reporting/planning of OFTs



Hon'ble Vice-Chancellor, Dr. B. Mishra chairing the Zonal Workshop of KVKs of Zone-1

and constraints encountered by each KVK in implementation of Action Plans were discussed and resolved. The proposed Action Plans for 2010-11 were also discussed with modifications as advised by participants.

4.1.2 Workshop on Extension Management Skills

Five days workshop on "Extension Management Skills" was organized by the Directorate of Extension Education in collaboration with Extension Education Institute, Ministry of Agriculture, Department Agriculture and Cooperation, Govt. of India, Nilokheri (Haryana) w.e.f **June 02 to 06, 2009** for the master trainers and scientists of the University. The programme was attended by twenty two master trainers / scientists of the SKUAST- Jammu.



Workshop on Extension Management

4.1.3 Zonal Research and Extension Advisory Committee (ZREAC) meetings

4.1.3.1 ZREAC meeting for kharif, 2009 of Zone-III

The Zonal Research and Extension Advisory Committee (ZREAC) meeting for *kharif*, 2009



ZREAC meeting for kharif, 2009 of Zone-III

of Zone-III (Doda, Kishtwar, Ramban, Reasi and Udhampur districts) was held under the Chairmanship of **Dr B. Mishra, Hon'ble Vice Chancellor, SKUAST of Jammu on April 27, 2009** in the conference hall of District Development Commissioner's Office, Udhampur. The meeting was attended by Dr. K.S.Risam, Director Extension Education, officers/ scientists of the university and Directors, officers of the departments of agriculture, Command Area Development, horticulture etc. The field problems faced by the officers were discussed and finalized the technologies developed by researchers for dissemination to the farmers during *kharif* season.

4.1.3.2 ZREAC Meeting for Kharif Crops of Zone-I & II

A Joint Zonal Research and Extension Advisory Committee (ZREAC) meeting for kharif , 2009 of Zone-I (Rajouri and Poonch districts) and



ZREAC meeting for kharif, 2009 of Zone-I & II

Zone-II (Jammu, Samba and Kathua districts) was held under the Chairmanship of Dr B. Mishra, Hon'ble Vice Chancellor, SKUAST of Jammu on May 20, 2009 at Chatha. Dr K.S Risam, Director Extension Education ; Dr N.A. Sudhan, Director Research; Dr A.R.Nazki , Dean, F.V.Sc & A.H., Mrs Vinod Bala Sharma, Director Agriculture, Jammu; Mr J.L.Sharma , Director Horticulture , Jammu; Mrs Nirmal Sharma, Director Command Area Development (CAD), Jammu; Mr Dorje, Joint Director Agriculture(Extension) and Mr V.K.Bakhri, Joint Director Agriculture (Inputs), Heads of the divisions of the Faculty of Agriculture, resource persons of monthly T&V workshops of both the zones, Chief Agriculture/Horticulture Officers as well as other officers of the line departments participated in the meeting and finalized the technologies developed by researchers for dissemination to the farmers during kharif season.

4.1.3.3 ZREAC meeting for *Rabi* crops 2009-10

The ZREAC meeting for *Rabi* crops 2009-10 of Jammu division was organized on December 08, 2009 at Chatha under the chairmanship of Dr. K.S. Risam, Director Extension Education, SKUAST-Jammu. The meeting was attended by the officers/ scientists of the university



ZREAC meeting for *Rabi* crops 2009-10

and directors, officers of the departments of agriculture, Command Area Development, Horticulture etc. The field problems faced by the officers were discussed and finalized the technologies developed by researchers for dissemination to the farmers during *Rabi* season.

4.2 TRAININGS

4.2.1 Training Programme for cultivation of Saffron in Kishtwar

A training programme on cultivation of Saffron for the farmers of district Kishtwar was organized w.e.f August 11-13, 2009 in collaboration with Division of Plant Pathology. Nearly 100 farmers including ten farmers from nontraditional areas participated in the training programme.

4.2.2 Officers training programme under ISOPOM

Three training programmes on Integrated Scheme on Oilseed, Pulses, Oil palm and Maize (ISOPOM) were organized by the Directorate of Extension Education, SKUAST-Jammu on March 8-9, 2010. The programme was sponsored by the



Training programme under ISOPOM

Directorate of Maize Research (ICAR), New Delhi. The training was imparted to one hundred forty (140) officers of agriculture department of Udhampur, Reasi, Doda, Kishtwar, Rajouri, Poonch and Ramban districts and thirty four scientists from KVKs of SKUAST-Jammu. Dr. Sain Dass, Project Director, Directorate of Maize Research, ICAR, and New Delhi stressed on use of hybrids especially single cross hybrids for increasing the productivity of maize in the state as well as income of farmers. It will also provide enough fodder to the livestock. He also asked for developing seed village concept in the state so

that our state does not remain dependent upon on other states for seed requirement. During the technical session, integrated technologies for seed production, quality maize production, baby corn as well as disease, insect/pest management and post harvest technology was discussed at length. Dr. K.S. Risam, DEE stressed on self-sufficiency in seed production of maize for timely and sustainable availability of seed to the farmers.

4.2.3 Training programmes on “Training of resource persons of KVKs of SKUAST-Jammu”

Two training programmes for capacity building of the scientific staff (Subject Matter Specialists and Programme Assistants) of KVKs of SKUAST-Jammu sponsored by Zonal Project Directorate, Zone-I (ICAR), under strengthening of the Directorate of Extension Education for providing backstopping of resource persons of KVKs were organized by the Directorate of Extension Education on 29th and 30th March, 2010 under the chairmanship of Dr. K.S.Risam, Director Extension Education on following topics:

(a) **Integrated farming system for increasing livelihood under present agriculture situation**

(b) **Seed production of *Kharif* field crops**

Thirty five scientists of KVKs attended each training programme in which scientists of the Faculty of Agriculture and Faculty of Veterinary Sciences & Animal Husbandry delivered lectures.

4.2.4 University level workshop of KVKs organized on March 31, 2010.

The workshop is organized annually in which activities of KVKs vis-à-vis their approved action plans for the year 2009-10 are reviewed. Besides reporting / planning of OFTs and constraints encountered by each KVK in implementation of Action Plans are discussed and resolved. The proposed Action Plan for 2010-11 were also discussed with modifications as advised by participants. The programme was attended by thirty five scientists of KVKs. The programme was sponsored by the Zonal Project Directorate, Zone-I, ICAR, PAU, Ludhiana under strengthening of Directorate of Extension Education.

4.3 FLDs LAID ON MAIZE UNDER ISOPOM DURING 2009

Four hundred frontline demonstrations sponsored by the Directorate of Maize Research (ICAR), New Delhi under Integrated Scheme on Oilseed, Pulses, Oil palm and Maize (ISOPOM) were laid on farmers fields through different KVKs in Jammu division.

4.4 SPECIFIC COMMODITY VILLAGES

Different villages have been identified by different KVK's under their jurisdiction as specific commodity village.

- a) **Kurotana village** in Jammu district and **village Sanoora** in Kathua district has been identified as specific commodity villages for **mushroom** cultivation.
- b) **KVK-Doda** has identified **Puchhal and Matta villages** for **Saffron** cultivation;
- c) **KVK-Doda** has also identified **Jatti village** for **vegetables**; **Assar (Doda) and Chanderkote (Ramban)** for **Anardana**. The technical backstopping for establishment of units and regulars / routine guidance to improve the productivity is provided by KVKs. The commodity specific villages for various crops; animal husbandry and fisheries are being identified

4.5 T & V MONTHLY WORKSHOPS

The Directorate has conducted 76 T&V Monthly Workshops at various district headquarters of the province during the period. The workshops were attended by the district and sub-divisional level officers from Department of Agriculture, Command Area Development and Department of Horticulture.

4.6 KRISHI VIGYAN KENDRAS

These innovative science based institutions have been established mainly to impart vocational skill training to farmers and field level extension workers not only in agriculture and allied sectors but also in other income generating activities that may supplement the income of farm families. The training programmes are designed to

impart the latest knowledge to the farmers through work experience by applying the principles of “**Teaching by Doing**” and “**Learning by Doing**”. The effectiveness of KVK has further been enhanced by adding the activities related to on-farm testing and front line demonstrations on major agricultural technologies in order to make the training programmes of farmers location specific, need based and resource oriented. Presently,

six Krishi Vigyan Kendras are working under the administrative control of Directorate of Extension Education. With the objectives of having a KVK in each district, the Govt. of India / Indian Council of Agricultural Research, New Delhi has already approved the establishment of KVKs in four newly created districts of Samba, Kishtwar, Ramban and Reasi subject to provision of the land by the host state.

4.7 TECHNOLOGY TRANSFERRED AND ASSESSED

S.No.	Name of the technology	Technical Intervention Benefit or difficulty	Economic benefit (return per rupee spent)	Feedback
KVK, R.S. Pura				
1	Application of ZnSO ₄ in Maize	yield increased up to 35 per cent	2.3	Farmers of that area are ready to adopt this practice.
2	Seed treatment with <i>Rhizobium</i> in Gram	Yield increased upto 20 per cent	2.2	Farmers are interested to inoculate Seed with <i>Rhizobium</i> culture
3	Use of Sulphur in Gobhi Sarson.	Yield and quality of oil increased	2.0	Farmers are now much aware about this technology.
KVK, Poonch				
1.	Line sowing and nutritional management in maize	Optimum plant population is maintained which leads to good yield but there is a problem of un-availability of labour during sowing season at Poonch	B:C ratio is 1.63 in demonstrated plots compared to 1.24 in traditional plots	Farmers are ready to adopt the scientific cultivation but non-availability of maize planter is a limiting factor in view of labour shortages at peak season.
2.	Introduction of improved varieties of pulses (Chickpea, lentil)	PBG-5 variety of chickpea and LL-699 variety of lentil performed very well under Poonch conditions and were demonstrated on the fields of farmers on large scale	B:C ratio in case of chickpea was found to be 1:72 and of lentil was 1:65	Farmers are ready to diversify their agriculture by adopting pulses especially during rabi season when the major area of Poonch remains uncultivated.
KVK, Rajouri				
1	Integrated weed management in wheat	Isoproturon@ 0.75 kg a.i. per hectare + hand weeding (45 DAS) Suppression of weed growth	1.67	Fully satisfied with technology assessed
2.	Integrated nutrient management and planting geometry in maize	Line sowing at 75 cm apart (Hybrid) (recommended dose of fertilizers & 60 cm apart for local optimum plant population, robust plant growth	1.75 (Hybrid) 1.47 (Local)	Fully satisfied with technology assessed
3.	Improved method of seed placement and fertilizer application in wheat	Placement of seed and fertilizers in line @ 22.5 cm uniform seed and fertilizer distribution at proper depth	1.72	Fully satisfied with technology assessed

4.	Application of improved farm implements in maize	Tractor operated disc plough + subsequent three time disc harrow Better soil tilth	1.85	Fully satisfied with technology assessed
5.	IDM module of loose smut in wheat	Seed treatment with Vita Vax + roughing Better disease management	1.78	Fully satisfied with technology assessed
6.	White rust disease management in mustard through fungicide application	Seed treatment with Carbendazine @ 0.1 % + spray of Redomil @ 0.2% Better disease management	1.52	Fully satisfied with technology assessed
7.	IDM module of head smut in maize	Seed treatment with Captan @ 0.3% + roughing Better disease management	1.91	Fully satisfied with technology assessed

KVK, Kathua

1	Year round cultivation of mushrooms	Introduction of button, dingri and milky mushroom	Additional income of Rs 30000/ to Rs 40000/ per annum	Farmers are accepting the technology and growing different species of mushroom
2	Resource conservation Technology	Zero tillage technology in wheat	Saving of Rs 3000/ha as compared to conventional tillage	Farmers are using and appreciated the technology
3	Nitrogen management	Use of Leaf Colour chart	Saving of 50% nitrogen as top dressing	Farmers are fully satisfied with the technology

KVK, Reasi

1.	Promotion of maize hybrids in the district.	Introduction of hybrids have resulted in increasing the yields upto 35 percent of local varieties.	1:2.1	Farmers are ready to adopt the scientific cultivation but non-availability of maize planter is a limiting factor in view of labour shortages at peak season.
2.	Introduction of improved varieties of pulses (Moong, Black gram(mash) and chickpea)	SML-668 var of moong , KUG-114 var. of black gram (mash) and HC-1 var. of chickpea performed exceptionally well in Reasi conditions.	Moong 1:2.37 Black gram 1: 2.79 Chick pea 1:1.17	Farmers of the area had stopped cultivation of moong but are now interested in pulses especially the rainy season and rabi pulses.
3.	Promotion of new varieties, and seed treatment	PBW-527 performed very well in rainfed condition of Reasi.	PBW 527 1:3.40	Farmers showed keen interest in these demonstrations which yielded higher than the PBW-175 plots.
4	Promotion of Fodder crops in the district	Introduction of Vadaan variety in Reasi resulted in increasing the yields by upto 35 percent.	Barseem 1:4.21	Farmers are adopting the variety in the district.
5	Promotion of vegetable cultivation in the district.	Vegetables like bottle guard, cucumber and chilli were promoted in the district. Kitchen gardening has been promoted to supplement their diet.	-	Farmers have started to grow these vegetables especially for their home needs.

Division of Veterinary Parasitology				
	Backyard Poultry farming	Supply of Chicks	Net benefit Rs. 860 per bird	Response from farmers is good.
Division of Agricultural Engineering				
1	Seed cum Fertilizer Drill	Benefit	5 times economic benefit than traditional practice	Excellent
2	Zero Till Drill	Benefit	5 to 7 times benefit than traditional practice	Good
3	Weeding Tools (Wheel Hoe, Medium cultivar and V-blade Hoe	Benefit	3 to 5 times benefit than traditional practice	Good
Division of Sericulture				
1	Recent trends in silk worm rearing technology	Benefit	15 to 20% in cocoon crop production	Good
Division of Agronomy				
1	Lopping in Basmati 370	Lopping at 45 DAT helped to overcome the loses.	15.7% increase in yield over conventional method	-
2	SRI techniques in Rice	Established better yield advantage but proper training of the technique needed for better adoption	28.86% increase in yield over traditional method	-
3	Zero tillage technique in wheat	Zero till drill reduces the field preparation operations	Cost of cultivation reduced by Rs 1500 to 2000 per hectare	-
4	Vermi-composting	Vermi-composed is an alternate of inorganic fertilizer	Farmer can get Rs 3.5 per rupee investment	-

4.8 TRAINING PROGRAMMES

S. No.	Type of training	No. of trainings	No. of Participants
KVK, R. S. Pura			
1	Farmers Training Programme	27	601
2	Vocational Training for rural Youth	7	126
3	Training for Extension Personals	6	72
KVK, Poonch			
1.	Farmers/Farm Women trainings	37	627
2.	Vocational/Rural youth trainings	02	44
3.	In-service trainings	12	185

KVK, Rajouri

1.	Farmers training	41	933
2.	In-service training	07	119
3.	Vocational training	2	77
4.	Sponsored training	2	88

KVK, Kathua

1	Farmer/farm women	20	757
2	Rural youth (Vocational)	4	56
3	Extension functionaries	7	116

Sponsored training Programme

1	7 days Farmers training programmes in collaboration with WMRC, Chatha, SKUAST Jammu	2	120
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KVK, Doda

1	Farmers	38	668
2	Rural youth	4	68
3	Extn. Functionaries	6	94

KVK, Reasi

1.	Farmers/Farm Women trainings	37	780
2.	Vocational/Rural youth trainings	05	109
3.	In-service trainings	10	192

Division of Biochemistry & Plant Physiology

1	Olive cultivation for benefit of farmers at Assar	1	17 farmers
2	Olive crop production technology at Udampur	1	40 farmers & 11 field functionaries of Horticulture Deptt.

Division of Fruit Science

1	Protection of young fruit plants against adverse weather conditions	1	53
2	Propagation of Fruit Plants	1	73
3	Establishment of orchards	1	42

Division of Agricultural Engineering

1	Caliberation of Seed cum Fertilizer Drill	3	50
2	Drip and Sprinkler Irrigation System	2	37

Division of ARGO

1	Infertility management health care in animals	3	86
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Division of Sericulture

1	Technical and Practical training to field functionaries of sericulture development department and farmers	10	36 Field functionaries 150 farmers
2	Scope and Potential of multiple cocoon cropping	1	17

Division of PHT

1	Processing of Aonla	1	40
2	Processing and Preservation of Mushroom	1	35
3	Processing of Citrus	1	40

Division of Agro-forestry

1	Field day on Raj Harad	1	55
2	Farmers training	3	112

4.9 DEMONSTRATIONS

S.No.	Technology demonstrated	Area in ha	No. of participants	Crop	Impact
KVK, R.S.Pura					
1	Improved cultivation practices recommended by SKUAST-J	04	18	Toria	By and large, the variety has been liked by the farmers because of its synchronous maturity, tremendous yield and taste of oil and less incidence of aphid during the season.
2	Application of recommended practices	10	39	G. Sarson	Though the Gobhi Sarson is under cultivation for the long time, pure crop cultivation is picking up slowly and farmers were highly impressed with the field performance of this crop due to its higher yield potential.
3	Introduction of crop management practices in Gram in New Area of District Jammu	04	18	Gram	Farmers have liked this variety very much because of its bold seed, profuse branching, less incidence of pod borer and above all good crop yield as compared to local check. Framers of adjoining areas were also very much impressed with the performance of this variety and requested the Demonstration plot holders for providing them some quantity of improved seed for sowing during next season.
4	Recommended cultivation practices of Paddy	06	18	Paddy	Farmers are now adopting the improved cultivation practice of new variety of paddy also).

5	Recommended cultivation practices of Wheat	12	30	Wheat	New Improved varieties are now very popular among farmers and they are trying to adopt the recommended package of practices.
6	Improved cultivation practices recommended by SKUAST-J	04	20	Maize	Hybrid maize variet with scientific method of cultivation is very popular among farming community.

KVK, Poonch

1.	Line sowing technology & Nutrient Management	4.00	98	Maize (KH-612)	50% increase in yield over farmer's practice
2.	Nutrient and Integrated disease Management	28.00	11	Paddy (K-343)	17.65% increase in yield over farmer's practice
3.	Varietal, Nutrient and Weed Management	2.00	09	Wheat (PBW-527)	31.86% increase in yield over farmer's practice
4.	Varietal Evaluation and Nutrient Management	2.00	22	Chickpea (PBG-5)	14% increase in yield over farmer's practice
5.		2.65	24	Gobhi Sarson (GSL-1)	35.53% increase in yield over farmer's practice
6.		2.50	22	Mustard (RSPR-1)	31.81% increase in yield over farmer's practice
7.		2.00	24	Lentil (LL-699)	20.83% increase in yield over farmer's practice
8.		2.00	19	Green Gram (SML-818)	30.90% increase in yield over farmer's practice
9.		2.00	17	Black Gram (Uttara)	58.89% increase in yield over farmer's practice
10.	Nutrient and Integrated Pest Management	2.00	22	Rajmash	15.40% increase in yield over farmer's practice

KVK, Rajouri

1.	Introduction of improved scientific package of practices	6	30	Maize	32.65 % increase in yield
2	Introduction of improved scientific package of practices	2	17	Mash	33.00 % increase in yield
3	Introduction of improved scientific package of practices	0.8	06	Moong	40.89 % increase in yield
4	Introduction of improved scientific package of practices	1.2	11	Rajmash	41.35 % increase in yield
5	Introduction of improved scientific package of practices	6	32	Wheat	36.31 % increase in yield

6	Introduction of improved scientific package of practices	5	27	Mustard	64.26 % increase in yield
7	Introduction of improved scientific package of practices	5	24	Gobhi Sarson	48.70% increase in yield
KVK, Kathua					
(a) Cereals					
1	Production Technology	4.0	10	Maize	Farmers are satisfied with performance of KH-612
2	Varietal demonstration	4.0	6	Paddy	Large area covered under new varieties
3	Varietal demonstration	2.0	7	Okra	Varsha Uphar variety was suitable under existing farming situations
4	Varietal demonstration	5.0	21	Wheat	New varieties PBW 502, 550 and DBW 17 were highly suitable under existing farming situations as replacement of PBW 343
5	Varietal demonstration	2.0	4	Berseem	Farmers are satisfied with performance of KH-612
B Oilseed and pulses					
1	Production Technology	2.0	6	Sesamum	Farmers are satisfied with performance of PB Til 1
2	Varietal Demonstration	5.0	14	Toria	Significant increase in Yield of RSPT-2 as compared with RSPT-1 and T-9
3	Varietal Demonstration	5.0	21	Gobhi sarson	Farmers are satisfied with performance of DGS-1
4	Varietal Demonstration	5.0	16	Urd bean	Farmers are satisfied with performance of Mash 114
5	Production technology	5.0	17	Gram	Farmers are satisfied with performance of HC-1
KVK, Doda					
1	Recommended practices of mustard	5 ha	20	Mustard	42.4 % increase in yield
2	Recommended practices of Gobi sarson	2ha	12	Gobhi Sarson	32.9 % increase in yield
3	Recommended practices of linseed	1 ha	5	Linseed	New introduction Yield was 3.76 q/ha
4	Recommended practices of black gram	2ha	11	Black gram	38.7 % increase in yield
5	Recommended practices of green gram	1ha	5	Green gram	50.7 % increase in yield
6	Recommended practices of rajmash	1ha	5	Rajmash	24.3 % increase in yield
7	Recommended practices of oats	5ha	21	Oats	38.0 % increase in yield
8	Recommended practices of berseem	2ha	10	Berseem	31.7 % increase in yield

9	Recommended practices of soybean	2 ha	9	Soybean	20.2 % increase in yield
10	Recommended practices of sunflower	2 ha	8	Sunflower	28.2 % increase in yield
11	Recommended practices of maize	1 ha	4	Maize	17.7 % increase in yield
12	Recommended practices of field pea	1 ha	7	Field pea	32.7 % increase in yield

KVK, Reasi

1	Promotion of improved varieties	2	21	Barseem-Vardaan	39.67
2	Promotion of improved varieties	2	17	Oats-Kent	32.71
3	Improved varieties & balanced doses of fertilizers	5	20	Maize-K 612,K 517, GS 2	42.85
4	Improved varieties & balanced doses of fertilizers	2	10	Til-Punjab Til 1	28.5
5	Improved varieties & balanced doses of fertilizers	2	9	Moong-ML 668	36
6	Improved varieties & balanced doses of fertilizers	7	42	Mash-KUG 114	70
7	Improved varieties & balanced doses of fertilizers	1	15	Okra-Varsha Upahar	50
8	Improved varieties & balanced doses of fertilizers	5	25	Wheat-PBW-175,527, Raj-3077	40
9	Improved varieties & balanced doses of fertilizers	2	15	GobiSarson-DGS-1	36.8
10	Improved varieties & balanced doses of fertilizers	2	20	Mustard-RSPR-01	34.1
11	Improved varieties & balanced doses of fertilizers	6	31	Toria-RSPT-1	38.7
12	Improved varieties & balanced doses of fertilizers	5	33	Chickpea-HC-1	33.3

Division of Agricultural Engineering

1	Laser Leveler	1	25	Wheat	Excellent
2	Rotavator	1	25	Wheat	Excellent

Division of Agronomy

1	Lopping in Basmati - 370	0.4	25	Rice	-
2	SRI Techniques	0.4	25	Rice	-
3	Zero Tillage Technique in Wheat	1	35	Wheat	-
4	Weed management in Wheat	0.8	20	Wheat	-
5	Vermi-composting methodology	-	50	-	-

Division of Agro-forestry

1	Field plantation of grafted Raj Harad	0.36	2	Raj Harad	Sampling of Raj Harad still at establishment stage
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4.10 ON FARM TESTING

S.No.	Crop/ Others	Technology tested	No. of trials	Result (B:C ratio)	Feedback
1	Mash	Weed control through chemical + mechanical	5	3.5	Farmer appreciated the yield contributed in response to weedicide in combination with one hoeing.
2	Mustard	Evaluation of insecticides for the management of mustard aphid		1.6	Farmers actually participated in preparation of insecticide solution and spraying operation. They appreciated the trials as this resulted increase in the yield.
3	Gram	Insecticide evaluation	3	1.4	84kg/ha increase in yield with application of imidacloprid
4	Buffaloes	Effect of different levels of mineral mixtures on milk production in buffaloes	18	2.9	Farmers are showing very much interest to adopt such type of feeding shedule in dairy animals
5	Cattle	Use of Deltamethrin and Flumethrin on the infestation of ticks in cattle		18	Different farmers visited the OFT. After seeing the good results of Flumethrin against ticks infestation, farmers were very much interested in using this drug as it is ready to use for application.

KVK, Poonch

1	Effect of weedicide on the productivity of wheat variety PBW 343	i. Farmer Practice (Isoproturon) ii. Sencor	02	There is 30.32 % increase in yield in case of Sencor@175-200g/h over farmer practice (Iso-proturon@750g/h)	Provision of quality chemicals and disease resistant seeds
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2	Performance of different varieties of Maize	i. KH-517 ii. KH-612	02	There is 15.38 % increase in yield of maize variety KH-517(yellow in colour) over KH-612 (white in colour).	A good yield is obtained when seed rate is optimum
3	Effect of seed rate on the productivity of paddy	i. Farmer Practice (100kg/ha) ii. Seed rate @50 kg/ha iii. Seed rate @75 kg/ha	02	There is 17 % increase in yield when seed rate was applied @ 75/ kg/ha over farmer practice.	Farmers are ready to adopt this practice as the results were encouraging
4	Evaluation of Mustard as Trap Crop for Diamond Back Moth (DBM) and cabbage butterfly in Knol-khol	(i) Farmers practice (Broadcasting) (ii) Sowing of mustard around the field (iii) One row of mustard after every five rows of knol-khol	02	There is 13 % increase in yield (over farmers practice) when one row of mustard was sown after every five rows of knol-khol	Availability of Quality plant protection chemicals in local market
5	Management of brinjal fruit and shoot borer	i. Farmer Practice (Endosulphan) ii. Karate (Lambda Cyhalothrin) 5 EC iii. Hamla	03	There is 20.15 % increase in yield when crop was sprayed with Hamla as compared to Farmer practice (Endosulphan).	Provision of seedlings
6	Varietal Performance in Knol-Khol	i. White Vienna ii. Purple Vienna iii. King of Market	02	Purple Vienna gave 15.21% more yield than white Vienna (F.P.) whereas the variety King of Market gave 17.85% more yields than white Vienna.	Provision of quality planting material
7	Nutritional Management on yield of strawberry	i. Farmer Practice (FYM & improper Inorganic fertilizers) ii. Recommended dose (100-200-80)kg NPK along with 50 t FYM/ha	02	There is 46.91 % increase in yield of strawberry when dose of NPK (100-200-80) along with 50 t FYM/ha is used.	Provision of quality planting material
8	Response of Tomato hybrid (Shivalik) in Poonch	i. Farmer Practice (Local variety) ii. Shivalik Hybrid	03	There is 60 % increase in yield of tomato from Shivalik over local variety	Provision of quality seeds and plant protection chemicals.
9	Effect of spacing on yield of cauliflower (Snowball-16)	i. Farmer Practice ii. 45 x 60cm iii. 30 x 45 cm	02	There is 21.95% increase in yield (250q/h) of cauli flower over farmer practice when planted 45 x 60 cm apart and 29.26% increase (265q/h) when planted 30 x 45 cm apart.	Provision of quality planting material
10	Effect of spacing on yield of brinjal (Sandhya)	i. Farmer Practice (Improper spacing) ii. 45 X 60cm iii. 75 X 75cm	03	There is 34.80 % increase in yield when plants were spaced at 45 x 60 cm apart compared to Farmers practice	Provision of seedlings
11	Economics of High density planting in Knol-Khol	i. Without any particular spacing ii. 20 x 30 cm iii. 15 x 30 cm	02	High density planting in knol-khol gave 26.08% higher yield (290q/h) over farmers practice (230q/ha).	Provision of seedlings

12	Management Effect of training / pruning on leaf fodder yield of <i>Robinia pseudocasia</i>	i. Farmer Practice ii. 50% pruning of the side branches iii. 75% pruning of the side branches	02	There is 75 % increase in yield of <i>Robinia pseudocasia</i> when 75% pruning of the side branches was done compared to no pruning at all.	Farmers get additional fodder and shade also reduced which helps maize crop also
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KVK, Rajouri

1	Maize	IDM module of head smut in maize	1	38.95	12.89
2	Mustard	White rust disease management in mustard through fungicide application	1	5.60	23.75
3	Wheat	IDM module of loose smut in wheat	1	20.00	25.00
4	Maize	Application of improved farm implements in maize	1	30.0	36.40
5	Maize	Integrated nutrient management and planting geometry in maize	1	21.70	51.74
6	Wheat	Improved method of seed placement and fertilizer application in wheat	1	23.50	52.59
7	Wheat	Integrated nutrient management and planting geometry in maize	1	26.5 (hybrid) 24.5 (local)	43.24 36.11

4.11 FARM ADVISORY SERVICES**KVK, Jammu**

- Scientific visit to farmer's field - 40
- Farmers visit to KVK - 66
- Diagnostic visits -12
- Advise on phone calls uncounted

KVK, Poonch

- Advisory services provided to 97 field
functionaries of District Agriculture and
Horticulture departments

KVK, Rajouri

- Agromet based weather advisory has been
provided to the farmers of district on
biweekly basis.

KVK, Kathua

- Regularly attended the Field problems of the
farmers and Providing the suitable remedial
measures

KVK, Doda

- Scientific visit to farmer's field - 40

KVK, Reasi

- Advisory services provided to field
functionaries of District Agriculture and
Horticulture departments.

4.12 AWARENESS CUM CLINICAL CAMPS

S.No.	No. of camps organized	Total no. of case attended
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KVK, R. S. Pura

1	Animal Health Camp (1)	56
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KVK, Poonch

1.	Awareness camp (02)	08
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KVK, Rajouri

1.	Soil health camp (01)	21
2.	Agriculture clinical camp (02)	60

KVK, Kathua

1	Veterinary Clinical Camp (1)	57
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KVK, Doda

1	Animal Health Camps (2)	280 animals treated
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KVK, Reasi

1.	Awareness camp = 02	46
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Division of ARGO

1	Clinical camp in various villages = 10	810 cases attended
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4.13 Consultancy Services Provided

S.No.	Type of consultancy	Place/organization
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KVK, R. S. Pura

1	Establishment of Mushroom Unit	Many villages
2	Establishment of Bee-Keeping Unit	Many villages
3	Establishment of Poly house	Vijaypur
4	Off season vegetable cultivation	Vijaypur and Karotana

KVK, Poonch

1.	Preparation of Strategic Research and Extension Plan (SREP) of Poonch district under ATMA scheme	Poonch/ Chief Agriculture Office, Poonch
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KVK, Rajouri

1	Integrated weed management	Department of Agriculture, Rajouri & Nehru Yuva Kendra, Rajouri
2	Integrated nutrient management	do
3	Integrated farming system modules	do
4	Fodder conservation	Department of Animal Husbandry, Nowshera
5	Soil testing and health	Prospective farmers
6	Concept of zero tillage	Department of Agriculture, Rajouri & Nehru Yuva Kendra, Rajouri
7	Soil and water conservation	
8	Improved agriculture implements	
9	Power tiller	

KVK, Kathua

1	Technical Consultancy and resource person under ATMA and RKVY	Deptt of Agriculture Kathua
2	Analysis of different diseased samples	Deptt of Horticulture

KVK, Doda

1	Related to crop production	Bhaderwah
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KVK, Reasi

1.	Preparation of Strategic Research and Extension Plan (SREP) of Reasi district under ATMA scheme	Chief agriculture Officer, Reasi
2	Preparation of projects for RKVY.	-do-
3	Attended programmes with NABARD	Jammu

Division of Fruit Science

1	Technical guidance	J&K Forest Department, Defence Establishments
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4.14 Farmers Educative Events

Type of Extension Approaches	No. organized	No. of Farmers Participated
KVK, R. S. Pura		
Training	27	601
Exposure Visit outside state	1	23
Exposure Visit within state	10	120
KVK, Poonch		
Field Days	05	196
Scientific visit to farmers field	22	140
Farmers visit to KVK	39	160
Diagnostic visits	11	117
KVK,Rajouri		
Field day	06	136
Kissan Gosthi	03	72
Exhibition	02	42
Film shows	08	240
Exposure visits	01	23
Seed treatment campaign	02	32
KVK, Kathua		
Field Days/Kisan Goshties	4	221
Mushroom day	1	37
Farmers day cum Ex trainee Sammelan	1	52
KVK, Doda		
Field days	11	253
Kisan Ghosti	2	111
KVK, Reasi		
Field Days	7	215
Scientific visit to farmers field	Often	-
Farmers visit to KVK	39	75
Diagnostic visits	Often	-
Division of ARGO		
Animals health care and treatment	2	500
Infertility Problems in animals	15	527
Division of Agroforestry		
Cultivation Importance conservation and production of quality planting material of medicinal plant	4	123

5.1 INAUGURAL CEREMONIES

5.1.1 Administrative Building

His Excellency Sh. N.N. Vohra, Governor of Jammu & Kashmir State and Chancellor of SKUAST-Jammu formally inaugurated the Administrative Building on Sept 05, 2009 in presence of Dr. B. Mishra, Hon'ble Vice-Chancellor and other dignitaries. The complex,



Inauguration of Administrative building by Sh. N.N. Vohra His excellency Governor of J & K

spreading over a covered area of 4300 square metres, has been constructed at a cost of Rs. 8.12 crore.

5.1.2 Farmers' Hostel

Farmers' Hostel at Main Campus Chatha was inaugurated on February 11, 2010 by Jenab Omar Abdullah, Hon'ble Chief Minister of Jammu & Kashmir and Pro-Chancellor of SKUAST-Jammu in presence of Jenab Ghulam Hasan Mir, Hon'ble Agriculture Minister, J&K, Sh. R.S. Chib, Hon'ble Health Education Minister, J&K, Dr. B. Mishra, Hon'ble Vice-Chancellor, SKUAST-Jammu.



Inauguration of Farmers Hostel by Jenab Omar Abdullah Hon'ble Chief Minister of J & K

5.2 WORKS COMPLETED DURING 2009-10

1. Farmers Hostel, Chatha

5.3 WORKS IN PROGRESS DURING 2009-10

S.No	Name of Project
1	Construction of Implements / parking shed at Main Campus Chatha, Jammu. (Size 248' x 41') (Group I)
2	Construction of Implements / parking shed at Main Campus Chatha, Jammu. (Size 258' x 25' x 15') (Group II)
3	Construction of Seed Storage Godowns with partition in Agriculture Farm at Main Campus Chatha. (90'x30'x16') (02 Units)
4	Construction of Stores for Agricultural Produce in Agriculture Farm at Main Campus Chatha (35'x25'x16') (02 Units)
5	Construction of Workshop / Implements Shed at Main Campus Chatha (126'x41'x14') (01 Unit)
6	i. Construction of Drying Cum Storage shed of (90' x 30'x16') alongwith open thrashing platform (150'x50') (01 unit) ii. Construction of Open Threshing Plate Farms (70' x 40') at Agricultural Farm Main Campus Chatha (02 units)
7	Construction of Girls Hostel Building (single storey) including associated sanitary and electrification works at Main Campus Chatha, Distt. Jammu
8	Installation of Shallow Tube wells (08 No) at Main Campus Chatha
9	Construction of Tubewell room and sump tank at Seed Production Farm, Chakroi, R.S.Pura
10	Providing Chain Link (Fabrics) Fencing around LPM division at FVSc & AH, Campus R.S.Pura
11	Construction of Tubewell Room, Chowkidar room and balance work of Mali hut at Agriculture Research Farm, Main Campus Chatha
12	Construction of Pucca Irrigation Channel at Sartangal, Bhaderwah

KVK Poonch

- 1 Administrative Building
- 2 Training Hostel
- 3 Residential Quarter (04 Sets)
Senior Scientist Quarter (01 Set)
Ministerial Staff Quarter (01 Set)
- 4 Demonstration Unit (02 No)

KVK Rajouri

- 1 Administrative Building

5.4 WORKS PROPOSED DURING 2010-11

S.No	Name of work
1.	Governance Director Extension Education (G+1) Estates Division. (G+1)
2	Academics Lecture Theaters (G+1) 04 No._
3	Residences
(i)	Asstt. Professor (146M ²) 10 sets
(ii)	Vice-Chancellor Residence (Duplex) 01 set (G+1)
(iii)	Residence for Directors or equivalent (250M ²) (Duplex) 01 set
(iv)	Professor / Assoc. Professor (180M ²) 06 sets
(v)	Residential Accommodation for Non-Teaching Staff Sectional Officer (125M ²) 08 sets
4	International Guest House Building (G+1)
5	Providing and fixing of Chain Link Fencing to Agriculture Research Farm at Main Campus Chatha (Group-I)
6	Providing and fixing of Chain Link Fencing to Agriculture Research Farm at Main Campus Chatha (Group-II)
7	Construction of Internal service roads by way of river bed material filling in embankments at Agriculture Research Farm Chatha
8	Construction/ installation of shallow tube wells along with sheds and sump tanks (08 Nos.) at Agriculture Research Farm, Chatha
9	Construction of Internal Service Roads by way of river bed material filling at proposed Residential area, Main Campus Chatha.
10	Development of farms by way of filling good earth and leveling of earth in lawn of Administrative building as per requirement at site at Main Campus Chatha
11	Construction of motor rooms with locking arrangements (sheds) (07 No.) for shallow tube wells at Main Campus Chatha.
12	Box type culvert over Perennial Nallah at Main Campus Chatha
13	Bank and Post Office
14	Teachers Home
15	VVIP Guest House
16	Academic Blocks (08 Nos) for new faculties Faculty of Horticulture and Forestry Faculty of Basic Science and Biotechnology Faculty of Dairy Technology Faculty of Agriculture Engineering

AWARDS AND RECOGNITIONS

6

Name and Designation of Teacher/Scientist	Name of Award/Distinction/Recognition	Awarding Institution/organization
Dr. Anish Yadav, (Associate Professor)	Dr. J.P. Dubey Young Scientist Award	Indian Association for Advancement of Vety. Parasitology (IAAVP)
Dr. Sanku Borkataki (Asstt. Prof.) Dr. Rajesh Katoch (Prof.) Dr. Anish Yadav (Assoc. Prof.) Dr. J.K. Khajuria (Assoc. Prof)	Ist Award in Research paper Presentation (Poster Session)	Indian Association for Advancement of Vety. Parasitology (IAAVP)
Dr. P.S.Slathia, (Asstt. Professor)	Young Scientists award	Indian Society of Extension Education, IARI, New Delhi
Dr Anshuman Kohli, (Jr. Scientist)	Member of the Executive Council of the Soil Conservation Society of India	Soil Conservation Society of India
Dr Moni Gupta, (Asstt. Prof.)	Fellow of Indian Society of Agricultural Biochemists. (FISAB)	Indian Society of Agricultural Biochemists.
Dr. Jyoti Kachroo, (Professor)	Awarded second prize (Dr DT Doshi Foundation- Pune) for best presentation	Agriculture Economics Research Association , New Delhi

ORGANIZATION OF NATIONAL /INTERNATIONAL SEMINARS/SYMPOSIA/CONFERENCE/ SHORT COURSES/TRAININGS WORKSHOPS/ SUMMER AND WINTER SCHOOLS

7

S. No.	Organizer	Nature of Programme Sponsoring Institute	Title of the Programme / event	Date and Venue	No. of participants
1	Division of Agronomy	Winter School ICAR	Integrated farming for high hills	Feb. 5 - 25, 2010, FOA, Chatha	14
2	Division of Vet. Pathology	5 day refresher training course	"Basic Laboratory Techniques for Diagnosis of Diseases in Sheep"	Dec.14-18 ,2009, FVSc & AH, R.S. Pura	5
3	DLRSS, Rakh Dhiansar	Training Programme for dry land farmers	Pre-Kharif season Workshop-2009	July 03, 2009, DLRSS, Dhiansar	130
4	Division of VEP, VPH and ANN	Refresher course for field functionaries of Sheep Husbandry Deptt., Jammu	Nutrition, Disease Surveillance, Monitoring and Preventive Medicine	Dec. 21-25 2009, Jan. 4-8 2010 & Jan. 11-15 2010 at FVSc & AH R.S.Pura	15
5	Division of Vegetable Sciences & Floriculture	Spice Board, Kalikut.	Improving productivity and quality with focus on Himalayan spices	Oct. 22-24 FOA, Chatha	150
6	Division of Entomology	Summer School sponsored by ICAR	Ecologically based integrated pest management under Eco-fragile hill agro ecosystem	14 July to 3 rd August, 2009, FOA, Chatha	20



Field demonstration to the participants of summer school



Release of Proceedings of Summer School CD's by Dr. B. Mishra Hon'ble Vice Chancellor



National Seminar on Spices



Winter School on Integrated Farming for High Hills

PARTICIPATION OF SCIENTISTS IN NATIONAL/ INTERNATIONAL SEMINARS/ SYMPOSIA/ CONFERENCES/ SHORT COURSES/ TRAINING/ WORKSHOPS /SUMMER AND WINTER SCHOOLS HELD AT ORGANIZATIONS OTHER THAN SKUAST-J

S. No.	Name & Designation of participants	Organizing/ Sponsoring Institute	Name of event	Date and Venue
1	Dr. S.K. Kotwal Professor (VPH)	ICAR Research Complex for NEH Region	VIII Conference of Indian Association of Veterinary Public Health Specialists and National Symposium on Transboundary Zoonotic diseases : Challenges and Strategies.	Nov. 6-7,2009 Complex for NEH Region Gangtok, Sikkim
		DST, GoI & University of Jammu.	5 th J&K Science Congress	Feb. 8- 10, 2010. University of Jammu, Jammu
2	Dr. M.Rashid Asstt. Professor (VPH)	DST, GoI & University of Jammu.	5 th J&K Science Congress	Feb. 8- 10, 2010. University of Jammu, Jammu
3	Dr. H.K.Sharma Asstt. Professor (VPH)	Deptt. of Veterinary Microbiology, CCS HAU	ICAR Centre of Faculty Training	March 5-25, 2010 CCS HAU, Hissar.
4	Dr. Rajesh Katoch Professor (Parasitology)	IAAVP, COVS, Hissar	20 th National Congress on Vety. Parasitology	Feb. 18-20, 2010 COVSC; -Hissar
		COVSC, Mathura	National Seminar on Recent Advancement on Diagnosis in Livestock and Poultry	Feb.20, 2010, COVSC, Mathura
5	Dr. J.K. Khajuria Assoc. Professor (Parasitology)	IAAVP	20 th National Congress on Vety. Parasitology	Feb. 18-20 , 2010 COVSC; CCSHAU-Hissar
6	Dr. Anish Yadav Assoc. Professor (Parasitology)	IAAVP	20 th National Congress on Vety. Parasitology	Feb. 18-20 , 2010 COVSC; CCSHAU-Hissar
7	Dr. Sanku Borkataki Asstt. Professor (Parasitology)	IAAVP	20 th National Congress on Vety. Parasitology	Feb. 18-20 , 2010 COVSC; CCSHAU-Hissar
8	Dr Ankur Rastogi, Asstt. Prof. (Animal Nutrition)	Indian Society of Sheep and Goat Production and Utilization	National Seminar on 'Stress Management in Small Ruminant Production and Product Processing'.	Jan. 29-31, 2010; Hotel Clark, Jaipur.
		GBPUAT	International Symposium on "Biotechnologies for optimization of Reproductive Efficiency of Farm and Companion animals to improve Global Food Security and Human Health	Nov. 10-12, 2010 GBPUAT, Pantnagar
9	Dr. M. Mutha Rao Assoc. Prof. (ARGO)	GBPUAT	International Symposium on "Biotechnologies for optimization of Reproductive Efficiency of Farm and Companion animals to improve Global Food Security and Human Health	Nov.10-12, 2010 GBPUAT, Pantnagar

10	Dr. Anil Kumar Pandey Assoc. Prof. (ARGO)	GBPUAT	International Symposium on "Biotechnologies for optimization of Reproductive Efficiency of Farm and Companion animals to improve Global Food Security and Human Health	November 10-12, 2010 GBPUAT ,Pantnagar
11	Dr. Sudershan Kumar Assoc. Prof. (ARGO)	ICAR	International Buffalo Conference on "Optimizing Buffalo Productivity Through Conventional and Novel Technologies	Feb. 1-4, 2010, ICAR New Delhi.
		ISACP	National congress on canine practice & 7 th National symposium on "Novel Approaches in Companion Animal Practice"	Jan. 21- 23, 2010, ISACP Bangalore.
		NAARM	NAIP workshop on "Leadership for Transition to NAIS"	Aug.6 - 11, 2010. NAARM Hyderabad
		NDRI	National Training Programme on "Procurement Related Matters and Financial Management System under world bank Funded Project"	Aug.17- 18 ,2009. NDRI, Karnal
12	Dr. Brinder Singh Jr. Scientist (Soil Science)	CSSRI	winter school on Improving sodic soil quality, input use efficiency and crop productivity through integrated nutrient management	Nov. 21 -11 Dec, 2009, CSSRI Karnal
13	Dr. Sonika Jamwal Jr. Scientist (Plant Pathology)	Centre of advance studies in Plant Pathology, GBPUAT	Recent advances in Biological control of Plant diseases	Mar. 20-09 April 2009 GBPUAT Pantnagar
14	Dr. Permandra Singh Jr. Scientist (Agronomy)	Banaras Hindu University	Winter school on Water and Nutrient Management for crop under rainfed ecosystem	Jan.10 -30 , 2010 Varanasi
15	Dr. V. S. Verma Sr. Scientist (Plant-Pathology)	AICRP	Biennial Workshop of AICRPs for Dryland Agriculture	Oct. 06-09 , 2009 S.K. Nagar, Gujarat
16	Dr. Anil Sharma Jr. Scientist (Soil Science)	AICRP	Biennial Workshop of AICRPs for Dryland Agriculture	Oct. 06-09 2009 S.K. Nagar, Gujarat
		Ubonratchathani University and Chemical Society of Thailand	International Congress on Chemistry and Environment (ICCE-2009)	Jan. 21-23, 2010 Thailand
		ICAR	All India Co-ordinated Annual Workshop on Forage Crops (ICAR),	April. 5-7, 2009, Anand Agricultue University, Anand
		ICAR	All India Co-ordinated Annual Workshop of Linseed and Safflower (ICAR)	Sep.3-5 , 2009 Orissa Agriculture University, Bhubneswar, Orissa
17	Dr. S. B. Singh, Sr. Scientist (PBG)	Society for Recent Developments in Agriculture, SV BPUAT, Modipuram,	Ist Indian Scientists and Farmers Congress on "technological innovations for enhancing agricultural production"	Oct. 3-4, 2009, CCS University, Meerut
		Society for Scientific Developments in Agriculture and Technology, Jhansi	National Symposium on "Achieving millennium development goals: problems and prospects"	Oct. 25-26, 2009, Bundelkhand University, Jhansi

		Indian Society of Plant Genetic Resources, (ICAR)	National Symposium on "Recent global developments in the management of plant genetic resources"	Dec.17-18, 2009 NBPGR, New Delhi.
18	Dr. Anjani Kumar Singh, Jr Scientist (PBG)	Indian Society of Plant Genetic Resources, NBPGR (ICAR)	National Symposium on "Recent global developments in the management of plant genetic resources"	Dec.17-18, 2009 NBPGR, New Delhi
19	Dr. S. B. Singh, Sr. Scientist (PBG)	Govt. of J & K and University of Jammu	5th JK Science Congress	Feb. 8-10 2010, University of Jammu, Jammu.
20	Dr. Anjani Kumar Singh Jr Scientist (PBG)	Directorate of Wheat Research, Karnal	All India Co-ordinate 48 Annual Wheat & Barely Workshop (ICAR)	Aug 28-31, 2009 IARI, New Delhi
		Society for Scientific Developments in Agriculture and Technology, Jhansi	National Symposium on achieving millennium development goals: problems and prospects"	Oct. 25-26, 2009 . Bundelkhand University, Jhansi
21	Dr Anshuman Kohli Jr. Scientist (Soil Science)	IMD, Ministry of Earth Sciences, GOI.	3 rd Annual Review Meeting of Integrated Agromet Advisory Services.	Dec. 10-12, 2009 . IIT, Roorkee.
		Indian Society of Soil Science, New Delhi.	Platinum Jubilee Symposium on Soil Science in Meeting the Challenges to Food Security and Environmental Quality.	Dec. 22-25, 2009 IARI, New Delhi.
22	Dr P. K. Verma Assistant Professor (Vet. Pharamology)	Division of Animal Biochemistry, National dairy Research Institute, NDRI	21 days ICAR sponsored winter school on "Recent advances in dairy nutraceuticals and bioinformatics applications"	Feb. 1- 21 , 2010 NDRI Karnal
23	Dr. M. Sultana Professor (Vet. Pharamology)	SKUAST-K,	IX th Agricultural Science Congress.	June 22 – 24, 2009 SKUAST-K, Shuhama, Srinagar
24	Dr. Neelesh Sharma Asstt. Prof. (Vet.ClinicalMedicine)	Department of Veterinary Clinical Medicine , COVS	28 th Annual Conference of ISVM	Feb.17-19 , 2010 Hyderabad
25	Dr. S.R. Upadhyay, Asstt. Prof. (Vet.ClinicalMedicine)	Department of Veterinary Clinical Medicine , COVS	28 th Annual Conference of ISVM	Feb.17-19 , 2010 Hyderabad
26	Dr. P.S.Slathia, Asstt. Professor (Agril. Extension)	IVRI	National Seminar on Enhancing efficiency of Extension for sustainable agri. and livestock prod.	Dec. 29-30, 2009 IVRI, Bareilly
		DST, GOI & University of Jammu	5 th JK Science Congress	Feb. 8-10 , 2010 University of Jammu, Jammu.

27	Dr. S.K.Kher Professor (Agril. Extension)	DST, GOI & University of Jammu	5 th JK Science Congress	Feb. 8-10 , 2010 University of Jammu, Jammu.
28	Dr. Nafees Ahmad Asstt. Professor (Agril. Extension)	DST, GOI & University of Jammu	5 th JK Science Congress	Feb. 8-10 , 2010 University of Jammu, Jammu.
29	Dr. C.K. Lidhoo Professor (Agril. Engineering)	DST, GOI & University of Jammu	5 th J&K Science Congress.	Feb. 8-10 , 2010 University of Jammu, Jammu.
30	Dr. Sanjay Khar Assistant Professor (Agril. Engineering)	Jammu University	5 th J&K Science Congress.	Feb. 8-10 , 2010 University of Jammu, Jammu.
		ISAE	44 th convention of the ISAE,	Jan. 28-29,2010 , IARI, New Delhi
31	Dr. Sandeep Mann Associate Professor (Agril. Engineering)	ISAE	44 th convention of the ISAE,	Jan. 28-29,2010 , IARI, New Delhi
32	Dr. Anil Kumar Associate Professor (Agronomy)	TNAU	National Symposium on "Weed Threat to environment biodiversity & agriculture productivity"	Aug. 2-3, 2009 TNAU, Coimbatore
33	Dr. A.K. Tiku, Professor (Pl. Physiology)	SKUAST-K	9 th Agricultural Congress	June 22-24, 2009, Srinagar,
	Dr. A.K. Tiku, Professor (Pl. Physiology)	DST, Govt. of India & University of Jammu	5 th JK Science Congress	Feb. 8-10, 2010, University of Jammu, Jammu
34	Dr Sanjay Guleria, Assoc. Professor (Biochemistry)	Indian Society of Agricultural Biochemists & Banaras Hindu University,	International Conference on Role of Biomolecules in Food Security and Health Improvement.	Feb .17-20,2009 Banaras Hindu University, Campus, Banaras
35	Dr Moni Gupta, Asstt. Professor (Biochemistry)	Indian Society of Agricultural Biochemists & Banaras Hindu University,	International Conference on Role of Biomolecules in Food Security and Health Improvement.	Feb .17-20,2009 Banaras Hindu University, Campus, Banaras
36	Dr. Vikas Sharma, Asstt. Professor (Biochemistry)	Indian Society of Agricultural Biochemists & Banaras Hindu University,	International Conference on Role of Biomolecules in Food Security and Health Improvement	Feb .17-20,2009 Banaras Hindu University, Campus, Banaras
		DST, Govt. of India & Uttarakhand State Council for S&T	National Seminar on Response of Eco-biological Components to the phenomenon of Global Warming	Sep. 26-27, 2009, DSB Campus, Kumaun University, Nainital
		Indian Society for Plant Physiology & Centre for Biotechnology, HAU	Zonal Seminar on Abiotic Stress Tolerance in Plants - Physiological and Molecular Approaches,	Dec, 5 th 2009, HAU, Hisar
		DST, Govt. of India & University of Jammu	5 th JK Science Congress	Feb. 8-10 2010, University of Jammu, Jammu

37	Dr. Sudhakar Dwivedi, Asstt. Professor (Agril. Economics)	IIM, Lucknow	Training programme on "Public Private Partnership for Innovation in Agriculture"	.July, 20-24, 2009, IIM Lucknow
		Nagaland University, Medziphema Campus, Dimapur	Training programme on "Agri Business Management & Rural Marketing"	Sep. 07-16, 2009, Dimapur (Nagaland)
		NCAP	Training programme on "Agricultural Policy Analysis"	Dec. 07-11, 2009, New Delhi
		National Institute of Rural Development	Training on "PME of Agricultural Research and Development Projects"	March 8-12, 2010, Hyderabad
38	Dr. Jyoti Kachroo, Professor (Agril. Economics)	TNAU	Attended and Presented research paper on "Technical Efficiency of Dry land and Irrigated Wheat based on Stochastic Model" in the 17 th Annual Conference of AERA	. Nov. 19 -21 ,2009, Coimbatore
39	Dr. Manish Kumar, Assoc. Professor (Agril. Economics)	Andhra University	Attended and Presented research paper in International conference on Statistics, Probability, Operations research, Computer Sciences & Allied areas in conjunction with 8 th IISA & XIX Annual Convocation of ISPS	. Jan. 4-8 ,2010, Vishakhapatnam
40	Dr. Sanjay Prakash Singh, Asstt. Professor (Agril. Economics)	IIM	Training on "Commodity Futures Market for Faculty of Agricultural Universities"	March 12-13, 2010, IIM, Bangalore
41	Dr. M.K.Khushu Chief Scientist (Agrometeorology)	CRIDA	Training programme on Agroclimatic analysis, crop simulation modeling and web page management (cropweatheroutlook)	June 2-4 July, 2009. CRIDA Hyderabad
		Kerala Agricultural University	Working group meeting of AICRP on Agromet	Dec. 21-22, 2009, KAU, Thrissur
42	Dr. Mahender Singh Technical Officer (IAAS)	CRIDA	Training programme on "Advances in plant Atmospheric Interactions"	Oct. 22-11 Nov., 2009 CRIDA Hyderabad
		Indian Institute of Technology	III rd Annual Review Meeting of Integrated Agromet Advisory Service	Dec. 10-12 , 2009. Roorki

PARTICIPATION OF SCIENTISTS IN NATIONAL/ INTERNATIONAL SEMINARS/SYMPOSIA/ CONFERENCES/SHORT COURSES/TRAINING/ WORKSHOPS/SUMMER AND WINTER SCHOOLS HELD AT SKUAST-J

9

S. No.	Name & Designation of participants	Organizing/ Sponsoring Institute	Name of event	Date and Venue
1	Dr. Vikas Sharma, Assistant Professor (Soil Science)	Spice Board, Kalikut.	Improving productivity and quality with focus on Himalayan spices	Oct. 22-24, 2009 FOA, Chatha
2	Dr. B.C. Sharma, Associate Professor (Agronomy)	ICAR	Winter School on "Integrating Farming for High Hills"	Feb. 05- 25, 2010 FOA, Chatha
3	Dr. Sarabdeep Kour, Assistant Professor (Soil Science)	ICAR	Winter School on "Integrating Farming for High Hills"	Feb. 05 to 25, 2010 FOA, Chatha
4	Dr. Deep Ji Bhat, Assistant Professor (Veg. Sciences & Flori.)	ICAR	Winter School on "Integrating Farming for High Hills"	Feb. 05 to 25, 2010 FOA, Chatha
5	Dr. Sudhakar Dwivedi, Asstt. Prof (Agril. Economics & Statistics)	Spice Board, Kalikut.	Improving productivity and quality with focus on Himalayan spices	Oct .22 – 24, 2009 FOA, Chatha
6	Dr. S.K.Kotwal Professor (VPH)	ICAR	ICAR Winter school.	Dec. 2-22, 2009
		Training – I Sponsored by Sheep Husbandry Department Jammu.	"Nutrition, Disease Surveillance and Monitoring and Preventive Medicine"	Dec .21- 25, 2009 FVSc & AH, R.S.Pura
		Training – II Sponsored by Sheep Husbandry Department Jammu.	"Nutrition, Disease Surveillance and Monitoring and Preventive Medicine"	Jan. .4- 8 2010 FVSc & AH, R.S.Pura
7	Dr R K Sharma Associate Professor (Animal Nutrition)	One day training for Officers of State Animal Husbandry & Sheep Husbandry Deptt. & Farmers	'An update on Goat nutrition & feeding'	July 07, 2009; FVSc & AH, R S Pura, Jammu
		ICAR	Winter School 'Quality Control of Feed Ingredients & compounded Feeds'	Dec. 02 -22 , 2009, FVSc & AH, R S Pura
8	Dr. P. K. Verma Assistant Professor (Vet. Pharmacology)	Division of Animal Nutrition, F V Sc & AH, , R.S. Pura.	21 days ICAR sponsored winter school on "Quality control of feed ingredients and compounded feed"	Dec 2-22, 2009, FVSc, R.S. Pura

S. No.	Name & Designation of participants	Organizing/ Sponsoring Institute	Name of event	Date and Venue
9	Dr. Rajesh Agrawal Asstt. Prof. (VEP)	Directorate of Extension Education,	One day vocational training programme	17-06-2009 at KVK, Reasi
10	Dr. Jonali Devi Associate Professor. (Vet. Physiology)	Division of Animal Nutrition	“Quality Control of Feed Ingredients and Compounded Feeds”	Dec.2- 22, 2009 At F.V.Sc & AH, R.S.Pura
11	Dr Uma Shankar Asstt. Prof.	Division of Entomology	Summer School on Ecologically based integrated pest management under Eco- fragile hill agroecosystem	July 14 – 3 Aug, 2009, FOA, Chatha
12	Dr. Devinder Sharma Asstt. Prof.	Division of Entomology	Summer School on Ecologically based integrated pest management under Eco- fragile hill agroecosystem	July 14 – 3 Aug, 2009, FOA, Chatha
13	Dr. R, S. Bandral SMS	Division of Entomology	Summer School on Ecologically based integrated pest management under Eco- fragile hill agroecosystem	July 14 – 3 Aug, 2009, FOA, Chatha

S. No	Title of the Project	Principal Investigator
10.1 Horticulture Technology Mini-Mission-1 (ICAR)		
1.	Production of quality planting material for ornamental crops in Jammu.	Dr. R. K. Pandey (Vegetables)
2.	Seed production for hybrid and open pollinated varieties of vegetables under mid hill conditions of Jammu.	Dr. J. P. Sharma (Vegetables)
3.	Development and promotion of IPM modules in temperate vegetable crops of Jammu.	Dr. Uma Shankar (Entomology)
4.	Technology refinement in micro irrigation and fertigation for improving quality and productivity of important horticultural crops in rainfed areas of Jammu.	Dr. Dileep Kachroo (Agronomy)
5.	Identification and production of seed and planting material of kala zeera (<i>Bunium persicum</i>) (Boiss) fedr. in Jammu region.	Dr. S. K. Gupta (Agro forestry)
6.	Collection, evaluation and mass multiplication of under utilized medicinal tree species.	Dr. K. K. Sood (Agro forestry)
7.	Production of quality planting material for sub tropical fruits.	Dr. Ravi Kher (Pomology)
8.	Trench cultivation of vegetables as livelihood security in perennial river beds of Jammu	Dr. R.K. Samnotra (Vegetables)
9.	Value addition and post harvest handling of perishable agrohorticulture produce for women empowerment in J&K	Dr. Raj Kumari (PHT)
10.	Promotion of biological control, key component of management of soil boron pathogens for sustainable horticulture in Jammu province of J&K State	Dr. Vishal Gupta (Plant Pathology)
11.	Investigation into honeybee disease and their management for agri-horticulture crop production and sustainable bee keeping	Dr. D.P. Abrol (Entomology)
12.	Factors effecting the olive oil quality and characterization of olive oil using standard protocols for technology transfer for effective marketing of the oil.	Dr. A.K. Tiku (Plant Physiology)
13.	Development and demonstration of integrated pest management modules in cucumber.	Dr. C. S. Kalha (Plant Pathology)
14.	Spawn production of edible mushrooms from Himalayan Eco system.	Dr. P. K. Raina (Plant Pathology)
15.	Technology refinement and demonstration of integrated weed management in commercially important vegetable and ornamental crops.	Dr. Anil Kumar (Agronomy)

10.2 Indian Council of Agricultural Research (ICAR)

1	Seed Production in Agricultural crops and Fisheries.	Director Research
2	Experiential learning- setting up of facilities for hands on training on Hi tech nursery for horticultural crops.	Dr. V. K. Wali (Pomology)
3	Enhancement of livelihood security through farming systems and related farm enterprises in north-west Himalayas.	Dr. Amarjit S. Bali (Agronomy)
4	Molecular basis of capacitation like cyrodamage during Cryopreservation of bovine spermatozoa (Buffalo and corrbreed bulls)	Dr.M Rao (ARGO)
5	Network project on outreach of technologies for temperate fruit crops	Dr. R.M. Sharma (Pomology)

10.3 National Oilseeds and Vegetable Oils Development Board (NOVOD)

1.	National Network on Integrated Development of Jatropa.	Dr. Mohd. Saleem (Agro forestry)
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10.4 Department of Science & Technology (DST)

1	Induction of double Haploids for bacterial leaf blight resistance in Basmati rice through anther culture	Dr. R. K. Salgotra (PBG)
2	Free radical scavenger and antioxidant activities of selected north-western Himalayan medicinal plants	Dr. Sanjay Guleria (Biochemistry)
3	On-farm Training on recent trends in silk worm rearing technology.	Dr. Ajay Koul (Sericulture)
4	Popularization of Bio-fertilizers in rainfed areas of Jammu division for sustainable agriculture development	Dr. S.K. Kher (Agril. Extension)
5	Exploring the plant diversity of Jammu Region for pesticidal properties	Dr. Reena (Entomology)
6	Assessment of fungal pathogens during post harvest of management of important fruit crops of Jammu & Kashmir	Dr. Monika Sood (PHT)
7	Isolation, Characterization and multiplication of Bio-agents for management of wilt diseases in solanaceous crops of Jammu	Dr. Sachin Gupta (Pl. Pathology)

10.5 Indian Institute of Remote Sensing

1	Soil carbon pools assessment under national carbon project.	Dr. A.K. Bhat (Soil Sciences)
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10.6 Ministry of Earth Science (MES)

1.	Agro Advisory Services (Jammu)	Dr. M. K Khushu (Agrometeorology)
2	Agro Advisory Services (Rajouri)	Dr. Anshuman Kohli (Soil)

10.7 Department of Bio-Technology (DBT)

1	Morphometry and phylogeography of honeybees and stingless bees in India.	Dr. D. P. Abrol (Entomology)
2	Empowering of Rural Women through backyard poultry Farming in Jammu	Dr. Rajesh Katoch (Vety. Parasitology)
3	Molecular Characterization of Semi-domestic cattle breed of Jammu & Kashmir	Dr. B. Brahma (Veterinary)
4	Biochemical prospecting of some traditionally used north-western Himalayan Medicinal plants for anti fungal metabolites	Dr. Sanjay Guleria (Biochemistry)

10.8 Ministry of Food Processing, Govt. of India

1.	Quality control laboratory.	PHT
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10.9 National Medicinal Plants Board (NMPB)

1	Germplasm collection and mass propagation of <i>Rawolfia Serpentina</i> Benth. Ex Kurz and <i>Gloriosa superba</i> L.	Dr. Lalit Mohan Gupta (Agro forestry)
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10.10 Ministry of Water Resources

1	Farmers' Participatory Action Research Programme	Dr Rajinder Dhar (WMRC)
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10.11 Ministry of Agriculture Sciences, Govt. of India

1	Scaling-up of Water Productivity for livelihood in Agriculture through Training and Demonstration	Er. N.K.Gupta (WMRC)
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10.12 National Horticulture Board

Commercialization of soft fruits in Jammu plains through Hi-tech production and PHM	Dr. R.M. Sharma (Pomology)
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10.13 Jammu and Kashmir Science & Technology

Improving productivity of traditional agricultural system in Rajouri with scientific intervention	Dr. Anshuman Kohli (Soil)
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10.14 All India Coordinated Projects

S.No	Title of the project	Directorate/Division	Funding Agency
1	All India Coordinated rice improvement project, Chatha	Genetics & Plant Breeding	ICAR
2	Farming System Research Centre, Chatha	Directorate of Research	ICAR
3	All India Coordinated project on wheat and barley, Chatha	Genetics & Plant Breeding	ICAR
4	Water Management Research, Chatha	Directorate of Research	ICAR
5	All India Co-ordinated Research Project on Chickpea, Samba	Directorate of Research	ICAR
6	All India Co-ordinated Research Project on Agrometeorology, Chatha	Directorate of Research	ICAR
7	All India Co-ordinated Research Project on Dry land Research, Dhiansar	Directorate of Research	ICAR
8	All India Co-ordinated Research Project on Maize, Udhampur	Directorate of Research	ICAR
9	All India Co-ordinated Research Project on Rape Seed Mustard, Chatha	Genetics & Plant Breeding	ICAR
10	Research project on Honey Bee and pollinators	Entomology	ICAR

The university published the Journal of Research volume-8, No: 1 & 2 and University Annual Report 2008-09

The scientists of the University during the period 2009-10 published research papers in National/ International Journals, besides publishing various abstracts, books, pamphlets, folders, popular articles etc.

11.1 List of the Research Publications in Journals (2009-10)

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- Abrol, D. P. 2009. Propolis and its medicinal value. *Bee World* 1(1):24-27.
- Ahmad, H., Khan, R. B., Sharma, D., Md. Monobrullah., Gupta, S. and Srivastava, K. 2009. Bio-efficacy and economics of different biopesticides and pesticides against leaf folder, *Cnaphalocrocis medinalis* Gueene. *Annals of Entomology*. 27 (1-2) : 63-70.
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- Ajit Pal Singh, R K Sharma, K Barman and R Kumar. (2009). Nutritional evaluation of some promising top foliages. *Journal of Research, SKUAST-J*, 8 (2): 116-122.
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- Bhat, K.L and Bhusan, A. 2009. Evaluation of onion (*Allium cepa* L.) genotypes under subtropical conditions of Jammu region. *Environment and Ecology*. 27(3):1178-80
- Chesti MH, Ali, T and Chand, S 2009. Suitability of different soil test methods for available P and its critical limits in Greengram (*vigna radiate* L) *Journal of Research SKUAST-J*. 8(1): 73-78.
- Dey, T. and Hussain, A. 2009. Quality characterization of advanced generation induced mutant lines in Basmati rice. *Oryza* 46(2) : 94-96
- Dwivedi, S. and Badoria, A. 2009. Need of Revamping Supply Chain for Milk Marketing, *Indian Jr. of Agricultural Marketing*, 23(1)
- Dwivedi, S., Sharma, P.K. and Sehar, H. 2010). Investment & income pattern in Poultry Production: A case study of Baramulla District of Jammu & Kashmir, *Research Journal of Agricultural Sciences*, 1, 262-265.

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- Gupta, N., Koul, R.K., Bhat, A and Singh, V.B. 2009. Effect of different treatments on quality of dehydrated ber. *Environment and Ecology* 27 (4B) : 2065-2070
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Given the national leadership in almost all major agricultural research areas, the university has close linkages with following other institutes of the country.

Institute	Web Site
State Agriculture Universities	
Assam Agricultural University	www.aau.ac.in
Acharya NG Ranga Agricultural University, Hyderabad	www.angrau.net
Ch.Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya, Palampur	www.hillagric.ernet.in
Gujarat Agricultural University	www.gau.guj.nic.in
Jawaharlal Nehru Krishi Vishvavidyalaya, Jabalpur	www.jnkvvjabalpur.org
Kerala Agricultural University	www.kau.edu
Orissa Univ. of Agriculture & Technology	www.ouat.ac.in
Punjab Agricultural University	www.pau.edu
Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Krishinagar, Akola, Maharashtra	www.pdkv.mah.nic.in
Sher-e-Kashmir University of Agric. Sc.& Tech, Kashmir	www.skuastkashmir.ac.in
Tamil Nadu Agricultural University, Tamil Nadu	www.tnauniv.org
University of Agricultural Sc. GKVK, Karnataka	www.uasbng.kar.nic.in
Dr. Yashwant Singh Parmar Univ. of Horticulture & Forestry, Solan (H.P)	www.ysparmeruniversity.org
Deemed University & Institutes	
Indian Council of Agriculture Research	www.icar.org.in
Indian Agriculture Research Institute	www.iari.res.in
Indian Veterinary Research Institute	www.ivri.nic.in
National Dairy Research Institute	www.ndri.hry.nic.in
CIFE	www.fisheries.university.org
Allahabad Agriculture Institute	www.aaidu.org

University Council

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



4th University Council Meeting

a) Meeting: 4th University Council meeting held on 12-01-2010

MEMBERS OF UNIVERSITY COUNCIL	
Sh. N.N. Vohra His Excellency Governor J&K State (Hon'ble Chancellor, SKUAST-Jammu)	Chairman
Jenab Omar Abdullah Hon'ble Chief Minister, J&K State (Hon'ble Pro-Chancellor, SKUAST-Jammu)	Member
Jenab G.H. Mir Hon'ble Minister for Agriculture, Co-operatives & fisheries, J&K State	Member
Dr. B. Mishra Hon'ble Vice Chancellor, SKUAST-Jammu	Member
Dr. Anwar Alam Hon'ble Vice Chancellor, SKUAST-Kashmir	Member
Dr. V. K. Taneja Hon'ble Vice Chancellor, Guru Angad Dev University of Veterinary Sciences, Ludhiana	Member
Principal Secretary to Govt. Agriculture Production Department, J&K Govt., Jammu	Member
Commissioner/Secretary to Govt., (Financial Advisor-SKUAST-Jammu)	Member
Dr. R.K Sharma Registrar, SKUAST-Jammu	Non-Member Secretary



14th Board of Management Meeting

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.

- a) Meeting:
- i) 13th Board of Management held on 06-07-2009.

Members of Board of Management	
Dr. B. Mishra, Hon'ble Vice Chancellor, SKUAST-J	Chairman
Sh. S.L. Bhat, IAS Finanacial Commissioner Planning & Development Department, Govt. of J&K	Member
Shri Sudhanshu Pandey, IAS, Commissioner/ Secretary to Govt., Finance Department Govt. of J&K	Member
Dr. R.M. Acharya Ex. Dy. Director General (ICAR)	Member
Dr. K.A. Singh Director, Indian Grassland & Fodder Research Institute Jhanshi - UP	Member
Dr. A.K. Srivastava, Director, National Dairy Research Institute, Karnal, Haryana	Member
Sh. Harinder Singh Progressive Farmer, R/o Banagarh, R.S.Pura, Jammu	Member

Mr. R.K. Gupta Agro-industrialist, Jammu	Member
Dr. K.S. Risam Director Extension Education, SKUAST-Jammu	Member
Dr. R.M.Bhagat DRI-cum-Dean PGs, SKUAST-Jammu	Member
Dr. N.A. Sudhan Director Research, SKUAST-Jammu	Member
Dr. R.K. Sharma Registrar, SKUAST-Jammu	Non-Member Secretary

ii) 14th Board of Management meeting held on 08-03-2010 and following were present:

Dr. B. Mishra, Hon'ble Vice Chancellor, SKUAST-J	Chairman
Sh. M. I. Khandey, IAS, Principal Secretary to Govt., Agriculture Production Department Govt. of J&K.	Member
Shri Sudhanshu Pandey, IAS, Commissioner/ Secretary to Govt, Finance Department Govt. of J&K	Member
Sh. B.B.Vyas, IAS Commissioner / Secretary, Planning & Development Department, Govt. of J&K,	Member
Dr. H.S.Gupta, Director, Indian Agricultural Research Institute, New Delhi	Member
Dr. A.K. Srivastava, Director, National Dairy Research Institute, Karnal, Haryana	Member
Dr. B.K.Joshi, Director, National Bureau of Animal Genetic Resources, Karnal, Haryana	Member

Krishi Pandit Bakshi Ganesh Das, Progressive farmer, R/o Saranoo, Rajouri.	Member
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Sh. S.C.Dutta, Agro-industrialist, Pvt. Ltd. 97-BO98 A, Jammu.	Member
Dr. K.S. Risam, Director Extension Education, SKUAST-Jammu	Member
Dr. R.M.Bhagat, DRI-cum-Dean, PGS, SKUAST-Jammu	Member
Dr. N.A.Sudhan Director Research, SKUAST-Jammu	Member
Dr. R. K. Sharma, Registrar, SKUAST-J	Non-Member Secretary

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.



10th Academic Council Meeting

1. 9th Academic Council Meeting held on 12/06/2009 under the Chairmanship of Dr. B.Mishra, Hon'able Vice-chancellor
2. 10th Academic Council Meeting held on 04/03/2010 under the chairmanship of Dr. B.Mishra, Hon'able Vice-chancellor

Extension Education Council

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



4th Extension Council Meeting

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.

The 4th Extension Education Council Meeting of SKUAST-Jammu was held on June 2, 2009 chaired by **Dr. B. Mishra, Hon'ble Vice Chancellor**. The meeting was attended by all the Directors of the allied departments of Agriculture, Horticulture, Command Area, Joint Directors Fisheries and Sheep Husbandry and officers of various departments. Two eminent experts in the field of Agriculture (Dr. Baldeo Singh, Joint Director Extension, IARI, New Delhi) and Animal Sciences (Dr. O.S. Parmar, Director Extension Education, GADVASU, Ludhiana) also participated in the Council Meeting.

His Excellency, the **Governor of Jammu & Kashmir and Chancellor of SKUAST-Jammu, Sh. N. N. Vohra** visited SKUAST-Jammu on 05-09-2009 and called upon the Agri-Scientists, to take the available research output to the doorsteps of the farmers, regularly monitor



His Excellency the Governor of J & K Sh. N. N. Vohra addressing senior faculty members.

its impact on the ground and enlarge research efforts to transform agriculture and allied sectors in the state. Asserting that there is a vast potential for growth of agriculture and allied sectors in the state to boost economy and generate employment opportunities, the Governor emphasized the need for adopting area and agro-climatic zone-specific approaches to achieve the desired results. He said that the state has abundant potential for growth of horticulture, floriculture, forestry, animal and sheep husbandry, beekeeping, vegetable, mushroom, saffron, medicinal and aromatic plants cultivation, adding that a holistic approach is required to optimally benefit from this huge resource base. He asked the faculty members to work with a missionary zeal to keep pace with the advancement made in agri-research and technology across the globe and make the University a centre of excellence.

Referring to the Krishi Vigyan Kendras, the Governor said that these need to be further strengthened, for effectively popularizing the new technology and carrying research from the lab to the fields. He said these centres, being at the cutting edge, have to become agents of change and agriculture growth. He said that there should be a perfect coordination between the University and extension network of the

State Government, for ensuring visible impact of research and improved agricultural practices on the ground to achieve self-sufficiency in the farm produce. Earlier, the Governor inaugurated the Administrative Block of the University at Chatha Campus.



Hon'ble Chief Minister, J & K addressing the scientists of the University

Jenab Omar Abdullah, Hon'ble Chief Minister, Jammu & Kashmir visited Main Campus Chatha on February, 19, 2010 accompanied by Hon'ble Minister for Agriculture Jenab Ghulam Hasan Mir, Hon'ble Minister for Medical Education, Sh. R.S. Chib and Hon'ble Minister for Revenue Sh. Raman Bhallah. During his visit, he inaugurated the Farmers' Hostel and addressed the University faculty.

Minister for Agriculture J&K, Jenab Ghulam Hassan Mir visited Sher-e-Kashmir University of Agriculture Science and Technology (SKUAST) Jammu on 03-09-2009 and asked the scientist to focus their research in making agriculture and allied activities a profitable venture in all regions and climatic zones of the state. Elaborating his



Hon'ble Minister for Agriculture, J & K interacting with the scientists of the University



Hon'ble Minister for Agriculture, J & K inspecting the University Library

point, the Minister asked scientist to target their research in finding out the crop varieties suitable to the geographic and agro climatic conditions of various regions of the state. He said Jammu has less plain area as compared to the rain fed area, where lack of adequate irrigation facility is the main stumbling block. He said if the scientists are working on to find new seed varieties to improve yield in irrigated areas, they should also identify the crops for the areas lacking sufficient irrigation facilities. The focus of research should be, to make agriculture a profitable activity so that the interest of those who are traditionally associated with it is retained and encourage others, particularly

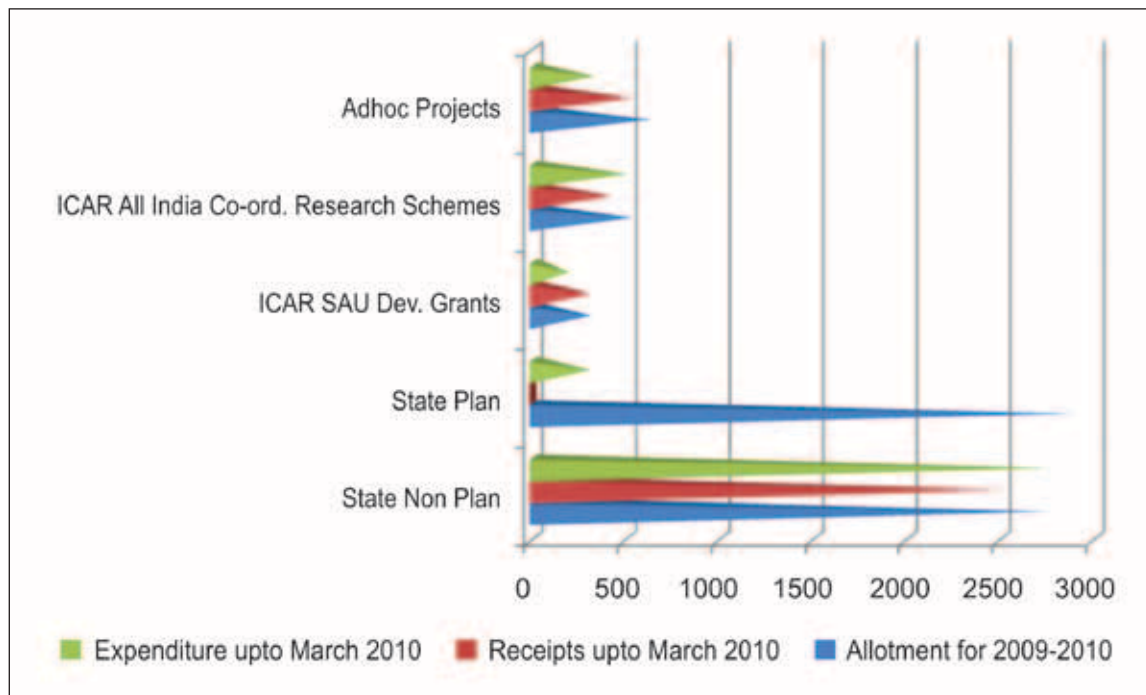
educated lot to pursue their future in the sector, The Minister said adding that increase in production and improving the economic status of farmers should go side by side. Acknowledging the importance of introducing modern methods of cultivation for boosting production, Minister said there was also a need for providing marketing opportunities to the farmers to enable them better returns of their produce. Referring to some land mark research works of the University, the Minister said many times it has been found that farmers are not able to make optimum use of the new findings. He termed lack of coordination between the University and line departments as the reason for delay in making the best use of the new researches. Minister also mentioned to the bio fuel plant *Jatropha*, for the cultivation of which, parts of Jammu have great potential. He expressed dissatisfaction on the failure of the authorities to popularize its cultivation among the farmers. Minister also inspected the various sections of the University and interacted with research scholars, scientists and students. The Minister also visited the R S Pura Campus of the University and took stock of the facilities at veterinary Hospital

RESOURCES AND FINANCIAL ESTIMATES (2009-10) 15

(Rs. In Lakhs)

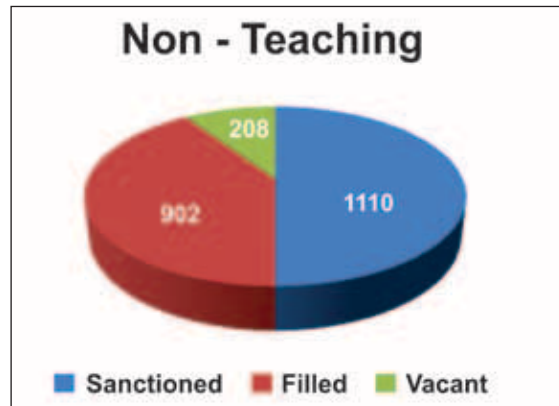
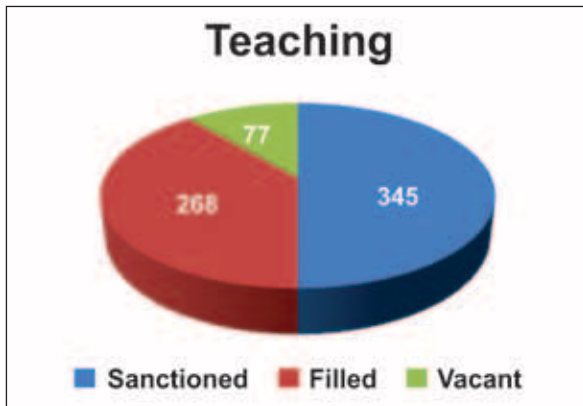
S.No.	Particulars	Allotment for 2009-2010	Receipts up to March 2010	Expenditure upto March 2010
1	State Non Plan	2772.70	2537.00	2770.73
2	State Plan	2905.18	930.00 **	309.59
3	ICAR SAU Dev.Grants	312.00	311.77	196.73
4	ICAR All India Co-ord. Research Schemes	532.81	417.37	510.12
5	Adhoc Projects	633.75	533.78	328.71
6	Internal resources	--	347.04	--

** Against the allocation of Rs. 2905.18 lakhs, an amount of Rs. 930.00 lakh was released and balance has been kept in civil deposit by the State Govt.



STAFF POSITION (as on March 31, 2010)

Category	Sanctioned	Filled	Vacant
A. Teaching			
Dean	02	-	02
Associate Dean	02	02	-
Professor/Equivalent	34	18	16
Assoc. Professor/Equivalent	87	75	12
Asstt. Prof./Equivalent	220	173	47
Total	345	268	77
B. Non-Teaching			
Administrative	240	165	75
Technical	46	37	9
Auxiliary/Supporting	479	432	47
Total	765	634	131
Grand Total(A+B)	1110	902	208



A. Appointments:

S. No.	Name	Appointed as
Teaching		
1	Dr. M. S. Bhadwal	Associate Dean, FVSc. & AH
2	Dr. Jaswinder Singh	Professor (Clinics & TH)
3	Dr. V. S. Verma	Prof. (Plant Path.)
4	Dr. Asma Khan	Associate Prof. (LPM)
5	Dr. Jonali Devi	Associate Prof. (Vety. Physiology)
6	Dr. Kamal Sarma	Associate Prof. (Vety. Anatomy)
7	Dr. Lekh Chand	Associate Prof. (Agronomy)
8	Dr. Sunil Kumar	Associate Prof. (LPT)
9	Dr. Manish Kumar	Associate Prof. (Statistics)
10	Dr. R. K. Salgotra	Sr. Scientist (PBG)
11	Dr. R. S. Bandral	Programme Coordinator (Bhaderwah)
12	Dr. Sanjay Kher	Programme Coordinator (Poonch)
13	Dr. Idrees Mehraj Allaie (Resigned)	Asstt. Prof., (Vety. Parasitology)
Non-teaching		
1	Deepak Sharma	Audio-visual Operator
2	Amit Sharma	Library Asstt.
3	Meenakshi Devi	-do-
4	Mukesh Kumar	Artist-cum-Photo.
5	Rajinder Pal Singh	-do-
6	Milap Rohmetra	Accounts Asstt.
7	Ravinder Reshi	-do-
8	Yasser Ali	Prog. Asstt. (Computer)
9	Harcharan Singh	Mechanic
10	Rohit Kumar	FCLA
11	Raj Kumar	-do-
12	Sham krishan Sharma	-do-
13	Parveen Kumar Sharma	-do-

14	Vikas Mehra	-do-
15	Firdous Ahmad	-do-
16	Rupinder Kour	-do-
17	Vinod Kumar Bhatt	-do-
18	Veena Sharma	-do-
19	Sarabjeet Singh	-do-
20	Jagmohan Singh	-do-
21	Bandana Devi	-do-
22	Dalbir Singh	-do-
23	Zafar Iqbal Lone	-do-
24	Mohd. Aliyaz Sheikh	-do-
25	Sumeer Ji Raina	-do-
26	Vijay Kumar	-do-
27	Rajesh Kumar	-do-
28	Mohd. Razak	-do-
29	Deeraj Rajwal	-do-
30	Manoj Kumar	-do-
31	Parveen Kumar	-do-
32	Mahmood ul Hassan	-do-
33	Shabeer Ahmad	-do-
34	Mohd. Sadiq	-do-
35	Neeraj Gangal	-do-
36	Mohd. Iqbal Dar	-do-

B Promotions

S.No.	Name	Promoted as
1.	Sh. Devinder Sharma, Sr. Stenographer	Secretary of Vice-chancellor

C. Superannuation

Scientific Staff:

S. No.	Name	Designation	Date of Superannuation
1	Dr. G.R. Bhagat	Professor (Agril. Ext. Edu.)	15-08-2009 (VRC)
2	Dr. A.K. Raina	Professor (VEP)	05-02-2010 (VRC)

Non-Teaching:

S. No.	Name	Designation	Date of Superannuation
1	Sh. Vijay K. Soi	Comptroller	30/04/2009
2	Sh. Manzoor Ahmad	FCLA	30/06/2009
3	Sh. Om Prakash	Electrician	30/06/2009
4	Sh. Subash Chancer	FCLA	31/08/2009
5	Sh. Bhajan Singh	FCLA	31/12/2009

D. Employee.s who left this University

S. No.	Name	Designation	Date of Leaving
1	Dr. Harsh Vardhan Singh	Programme Coordinator (Plant Pathology)	06-07-2009
2	Dr. Archana Pathak	Assoc. Professor (Vety. Anatomy & Histology)	09-07-2009
3	Dr. Arvind Kumar Singh	Jr. Scientist (Agronomy)	01-07-2009
4	Dr. S.K. Pandey	Jr. Scientist (PBG)	07-07-2009
5	Dr. Keshav Varman	Asstt. Professor (Vety. Animal Nutrition)	24-11-2009
6	Dr. Parveen Kumar Gahlot	Asstt. Professor (Vety. Anatomy & Histology)	06-01-2010
7	Dr. P. Thirumurugan	Asstt. Professor (LPM)	21-01-2010

*PERSONNEL (as on March 31, 2010)

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Assistant Professor/Equivalent and above

Governance:

Vice-Chancellor's Office

S.No	Name	Designation
1	Dr. B. Mishra	Hon'ble Vice-Chancellor
2	Dr. A.S. Bali	OSD to Hon'ble Vice-Chancellor
3	Sh. Sanjay Sharma	PRO to Hon'ble Vice-Chancellor
4	Sh. Devinder Sharma	SVC

DRI-Cum-Dean Post Graduate Studies

1	Dr. R.M. Bhagat	DRI-cum-Dean PGS
2	Dr. S. B. Bakshi	Dy. Director, Student Welfare
3	Dr. A. K. Gupta	Medical Officer
4	Dr.(Mrs.) Sushma Gupta	Medical Officer
5	Sh. Keemti Lal	Assistant Registrar

Directorate of Extension Education

1	Dr. Kernel Singh Risam	Director Extension Education
2	Dr. Pramod Baru	Associate Director Extension Education (HQ at Bhaderwah)
3	Dr. R. K. Arora	Associate Director Extension Education (HQ at Poonch)

Directorate of Research

1	Dr. R.M. Bhagat	Director Research
2	Dr. J. P. Sharma	Associate Director Research
3	Dr. Deepak Kher	Associate Director Research
4	Dr. R. R. Jat	Associate Director Research
5	Dr. Pradeep Wali	Deputy Director Research (Attached with DEE)

6	Dr. M. C. Dwivedi	Farm Manager
7	Dr. A. K. Singh	Farm Manager
8	Dr. Ajay Gupta	Assistant Director Research (Attached with MSP, Chatha)

Registrar Office

1	Dr. B.B. Gupta	Registrar
2	Sh. Sanjay Sharma	I/c Dy. Registrar
3	Sh. A. K. Koul	Deputy Registrar (Academics)
4	Smt. Hansey Koul	Assistant Registrar
5	Sh. Tarsem Raj	Assistant Registrar
6	Sh. Manohar Lal	Assistant Registrar

Comptroller Office

1	Smt. Pushpa Devi	Comptroller
2	Sh. Sohan Lal Sharma	Store Purchase Officer
3	Sh. R. K. Kapoor	Assistant Comptroller
4	Smt. Veena Gupta	Assistant Comptroller
5	Sh. Jitender Raina	Assistant Comptroller
6	Sh. Babu Ram	Assistant Comptroller
7	Sh. Vijay Sharma	Assistant Comptroller

Project Planning & Monitoring Office

1	Sh. S.C. Bhasin	Project Planning & Monitoring Officer
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Estates Division Office

1	S. Iqbal Singh Sudan	Executive Engineer
2	Sh. Kewal Kumar Raina	Assistant Executive Engineer

Library

1	Dr. Sreenivasulu	University Librarian
2	Smt. Shashi Prabha Raina	Assistant Librarian
3	Sh. Leela Dhar Mangi	Assistant Librarian

Faculty of Agriculture, Chatha**Dean's Office**

1	Dr. Ajay Koul	Dean
2	Dr. C.S. Kalha	Associate Dean
3	Smt. Raj Kumari Aima	Administrative Officer
4	Sh. Devinder Samotra	Account Officer

Division of Agronomy

1	Dr. A.S. Bali	Professor
2	Dr. M.K. Khushu	Professor
3	Dr. B. C. Sharma	Associate Professor
4	Dr. Anil Kumar	Associate Professor
5	Dr. Lekh Chand	Associate Professor
6	Dr. Bodu Ram Bazaya	Assistant Professor
7	Dr. Meenakshi Gupta	Assistant Professor
8	Mrs. Neetu Sharma	Assistant Professor
9	Dr. Sarabdeep Kour	Assistant Professor

Division of Agricultural Economics & Statistics

1	Dr. A. B. Khan	Professor
2	Dr. Arshad Mahmood	Professor
3	Dr. S.E.H. Rizvi	Professor
4	Dr. Jyoti Punjabi	Professor
5	Dr. Manish Kumar	Associate Professor
6	Dr. S. P. Singh	Assistant Professor
7	Dr. Sudhakar Dwivedi	Assistant Professor

Division of Agriculture Extension Education

1	Dr. S. K. Kher	Professor
2	Dr. Rajinder Peshin	Associate Professor
3	Dr. M. S. Nain	Associate Professor
4	Dr. P. S. Slathia	Assistant Professor
5	Dr. Nafees Ahmad	Assistant Professor
6	Dr. Poonam Parihar	Assistant Professor

Division of Agricultural Engineering

1	Dr. C. K. Lidhoo	Professor
2	Dr. A. K. Raina	Associate Professor
3	Er. Sushil Sharma	Associate Professor
4	Er. Sandeep Mann	Associate Professor
5	Er. R. K. Srivastava	Assistant Professor

Division of Agro-forestry

1	Dr. Mohd. Saleem	Professor
2	Dr. S. K. Gupta	Associate Professor
3	Dr. K. K. Sood	Associate Professor
4	Dr. N. S. Raina	Associate Professor
5	Dr. L.M. Gupta	Assistant Professor
6	Dr. Sandeep Sehgal	Assistant Professor
7	Ms. Meenakshi Gupta	Assistant Professor

Division of Biochemistry & Plant Physiology

1	Dr. S. A. Mallick	Professor
2	Dr. A. K. Tiku	Professor
3	Dr. Sanjay Guleria	Associate Professor
4	Dr. Moni Gupta	Assistant Professor
5	Sh. Gurdev Chand	Assistant Professor
6	Dr. Vikas Sharma	Assistant Professor
7	Dr. B.K.Sinha	Assistant Professor

Division of Entomology

1	Dr. D. P. Abrol	Professor
2	Dr. Virender Kaul	Professor
3	Dr. Hafeez Ahmad	Associate Professor
4	Dr. R. K. Gupta	Associate Professor
5	Dr. Kuldeep Srivastava	Assistant Professor
6	Dr. Uma Shankar	Assistant Professor
7	Dr. Devinder Sharma	Assistant Professor

Division of Vegetable Science & Floriculture

1	Dr. R. K. Gupta	Professor
2	Dr. Arun Gupta	Professor
3	Dr. R. K. Samnotra	Associate Professor (Attached with FFVRA)
4	Dr. R. K. Pandey	Associate Professor
5	Dr. Sandeep Chopra	Assistant Professor
6	Dr. Satish Kumar	Assistant Professor
7	Dr. Sanjeev Kumar	Assistant Professor
8	Dr. Deep Ji Bhat	Assistant Professor
9	Sh. Manoj Kumar	Assistant Professor
10	Dr. Sheetal Dogra	Assistant Professor
11	Sh. Balbir Dhotra	Assistant Professor

Division of Genetics and Plant Breeding

1	Dr. B. B. Gupta	Professor
2	Dr. S. K. Gupta	Professor
3	Dr. Bikram Singh	Professor
4	Dr. A.K. Razdan	Professor
5	Dr. S. K. Mondal	Associate Professor
6	Dr. S.K. Sudan	Associate Professor
7	Sh. Praveen Singh	Assistant Professor

8	Dr. A. K. Singh	Assistant Professor
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9	Dr. G. K. Rai	Assistant Professor
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10	Mr. Satish Kumar	Assistant Professor
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Division of Plant Pathology

1	Dr. V.K. Razdan	Professor
2	Dr. V.S. Verma	Professor
3	Dr. P. K. Raina	Associate Professor
4	Dr. S. K. Singh	Assistant professor
5	Dr. Deepak Kumar	Assistant Professor
6	Dr. Sachin Gupta	Assistant Professor
7	Dr. R. S. Sodhi	Assistant Professor
8	Dr. Vishal Gupta	Assistant Professor

Division of Fruit Science & Post harvest technology**I) Fruit Science Section**

1	Dr. V. K. Wali	Professor
2	Dr. Ravi Kher	Professor
3	Dr. Parshant Bakshi	Assistant Professor
4	Dr. Mahital Jamwal	Assistant Professor
5	Dr. Arti Sharma	Assistant Professor

II) Post Harvest Technology Section

1	Dr. Raj Kumari Kaul	Professor
2	Dr. Anju Bhat	Associate Professor
3	Dr. Jagmohan Singh	Assistant Professor
4	Dr. Monica Sood	Assistant Professor

Division of Sericulture

1	Dr. Ajay Koul	Professor
2	Dr. Kalu Ram	Professor
3	Dr. S. P. Devi	Associate Professor
4	Dr. R. K. Bali	Associate Professor

5 Sh. R. L. Bhagat Assistant Professor

6 Sh. Darshan Singh Assistant Professor

Division of Soil Sciences And Agril. Chemistry

1 Dr. A. K. Bhat Professor

2 Dr. K.R. Sharma Professor

3 Dr. Asim K. Mondal Associate Professor

4 Dr. Vikas Sharma Assistant Professor

5 Dr. Sanjay Swami Assistant Professor

6 Dr. A. P. Rai Assistant Professor

7 Dr. Renu Gupta Assistant Professor

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

Dean's Office

1 Dr. A.R. Nazki Dean

2 Dr. M.S. Bhadwal Associate Dean

3 Sh. Raman Sharma Accounts Officer

Division of Veterinary Public Health & Hygiene

1 Dr. S. K. Kotwal Professor

2 Dr. H. K. Sharma Assistant Professor

3 Dr. M. R. Sheikh Assistant Professor

Division of Veterinary Pathology

1 Dr. Nawab Nashiruddin Associate Professor

2 Dr. Shagufta Azmi Associate Professor

3 Dr. D Basheer Ahamed Assistant Professor

4 Dr. Shilpa Sood Assistant Professor

Division of Parasitology

1 Dr. Rajesh Katoch Professor

2 Dr. J. K. Khajuria Associate Professor

3 Dr. Anish Yadav Associate Professor

4 Dr. Sanku Borkataki Assistant Professor

Division of Pharmacology & Toxicology

1 Dr. Mudasir Sultana Professor

2 Dr. Rajinder Raina Professor

3 Dr. Shahid Prawez Assistant Professor

4 Dr. Nrip K. Pankaj Assistant Professor

5 Dr. Pawan K. Verma Assistant Professor

Division of Veterinary Biochemistry

1 Dr. Vijay Pandey Assistant Professor

2 Dr. Aditi Koul Assistant Professor

3 Dr. Pratiksha Raghuwanshi Assistant Professor

Division of Veterinary Physiology

1 Dr. A. R. Nazki Professor

2 Dr. P.S. Mahapatra Associate Professor

2 Dr. Jonali Devi Associate Professor

3 Dr. Jafrin Ara Ahmed Assistant Professor

Division of Anatomy & Histology

1 Dr. Shalini Suri Associate Professor

2 Dr. Kamal Sarma Associate Professor

3 Dr. Prabhakar Kumar Assistant Professor

4 Dr. Probal Jyoti Doley Assistant Professor

Division of Livestock Products Technology

1 Dr. Sunil Kumar Associate Professor

2 Dr. Arvind Kumar Assistant Professor

Division of Veterinary Clinic & Teaching Hospital

1 Dr. J. S. Soodan Professor

2 Dr. Utsav Sharma Associate Professor

3 Dr. Ajay Kumar Gupta Associate Professor

4 Dr. Ashok Kumar Assistant Professor

5 Dr. Sharad Kumar Assistant Professor

6 Dr. Arvind Kumar Assistant Professor
Tripathi

7 Dr. Ram Bilash Assistant Professor
Kushwaha

8 Dr. Seema Assistant Professor

Division of Vety. & AH Extension

1 Dr. Gautam Assistant Professor

Division of Livestock Production & Management

1 Dr. Asma Khan Associate Professor

2 Ms. Sahar Masud Assistant Professor

3 Dr. Depanjali Konwar Assistant Professor

Division of Animal Reproduction, Gynecology & Obstetrics

1 Dr. M. Mutha Rao Associate Professor

2 Dr. Sudarshan Kumar Associate Professor

3 Dr. Sanjay Agarwal Assistant Professor

4 Dr. W.A.A. Razzaque Assistant Professor

5 Dr. Anil Kumar Pandey Assistant Professor

6 Dr. Sudhir Kumar Assistant Professor

7 Dr. Nishi Pande Assistant Professor

Division of Vety. Surgery & Radiology

1 Dr. H. R. Bhardwaj Associate Professor

2 Dr. N. K. Singh Assistant Professor

3 Dr. Ankur Sharma Assistant Professor

4 Dr. D.K. Dwivedi Assistant Professor

Division of Veterinary Clinical Medicine & Jurisprudence

1 Dr. S. K. Gupta Professor

2 Dr. Rajiv Singh Associate Professor

3 Dr. Kafil Hussain Assistant Professor

4 Dr. Neelesh Sharma Assistant Professor

5 Dr. S. R. Upadhayay Assistant Professor

6 Dr. R. K. Bhardwaj Assistant Professor

Division of Veterinary Epidemiology & Preventive Medicine

1 Dr. V. S. Wazir Associate Professor

2 Dr. M. A. Malik Associate Professor

3 Dr. Rajeev Singh Assistant Professor

4 Dr. Rajesh Agrawal Assistant Professor

5 Dr. Abha Tikoo Assistant Professor

Division of Animal Genetics & Breeding

1 Dr. A. K. Das Associate Professor

2 Dr. R. K. Taggar Associate Professor

3 Dr. Deepak Sharma Assistant Professor

4 Dr. Vikas Vohra Assistant Professor

5 Dr. Nishant Kumar Assistant Professor

Division of Animal Nutrition

1 Dr. R. K. Sharma Associate Professor

2 Dr. Ankur Rastogi Assistant Professor

3 Dr. Ravindra Kumar Assistant Professor

Division of Vety. Microbiology & Immunology

1 Dr. Anil Taku Associate Professor

2 Dr. M. Altaf Bhat Associate Professor

3 Dr. Bablu Kumar Assistant Professor

4 Dr. Rajesh Assistant Professor

Regional/Sub-Research Stations/CENTRES/ SCHEMES

Regional Agricultural Research Station, Rajouri

1 Dr. A. K. Sharma Associate Director
Research

2 Dr. S. B. Singh Sr. Scientist (PBG)

3 Dr. Anshuman Kohli Jr. Scientist (Soil Science)

4 Sh. Kamlesh Bali Jr. Scientist (Entomology)

5 Sh. Manmohan Sharma Jr. Scientist (PBG)

6	Sh. Vikas Sharma	Jr. Scientist (Agronomy)
7	Sh. Anil Bhushan	Jr. Scientist (Olericulture)
8	Dr. Ashok Kumar Singh	Jr. Scientist (Pl. Pathology)
9	Sh. Sunil Kumar Mishra	Jr. Scientist (Agronomy)
10	Dr. M. H. Chesti	Jr. Scientist (Soil Science)
11	Dr. Anjani Kumar Singh	Jr. Scientist (PBG)
12	Dr. J.S. Manhas	Jr. Scientist (Agril. Extension)

Maize Breeding Research Sub Station, Poonch

1	Dr. A. K. Singh	Jr. Scientist (Entomology)
2	Sh. Magdeshwar Sharma	Jr. Scientist (Entomology)
3	Dr. Bupesh Kumar	Jr. Scientist (PBG)

Regional Horticultural Research Sub Station, Bhaderwah

1	Dr. R. M. Sharma	Sr Scientist (Pomology)
2	Sh. Amit Jasrotia	Jr. Scientist (Pomology)
3	Dr. J. N. Srivastava	Jr. Scientist (Plant Pathology)
4	Dr. Vishal Raina	Jr. Scientist (PBG)
5	Sh. Brijeshwar Singh	Jr. Scientist (Plant Pathology)
6	Dr. Neeraj Kotwal	Jr. Scientist (Entomology)
7	Dr. A. C. Jha	Jr. Scientist (Plant Pathology)
8	Dr. Kiran Kour	Jr. Scientist (Pomology)
9	Mr. Manoj Kumar	Jr. Scientist (Soil Science)
10	Dr. Rakesh Kumar	Jr. Scientist (Pomology)

Rain fed Horticultural Research Sub Station, Raya

1	Dr. Sanjeev Rai	Jr. Scientist (Entomology)
2	Dr. Vijay Bahadur Singh	Jr. Scientist (Plant Pathology)
3	Dr. Neeraj Gupta	Jr. Scientist (PHT)
4	Sh. Vijay Kumar	Jr. Scientist (Soil Science)

Dry land Research Sub Station, Dhiansar

1	Dr. Ramesh Kumar Salgotra	Sr. Scientist (GPB)
2	Dr. Dalip Koul	Jr. Scientist (PBG)
3	Er. J. P. Singh	Jr. Scientist (Agril. Engg.)
4	Dr. Peeyush Sharma	Jr. Scientist (Soil Science)
5	Dr. V. K. Singh	Jr. Scientist (Plant Pathology)
6	Sh. Permendra Singh	Jr. Scientist (Agronomy)
7	Dr. Reena Kumari	Jr. Scientist (Entomology)
8	Dr. Sonika Jamwal	Jr. Scientist (Plant Pathology)
9	Dr. Anil Sharma	Jr. Scientist (Soil Science)
10	Dr. Brinder Singh	Jr. Scientist (Soil Science)
11	Sh. Jai Kumar	Jr. Scientist (Agronomy)

Pulse Research Sub-Station, Samba

1	Dr. B.S. Jamwal	Sr. Scientist (PBG)
2	Dr. S. K. Singh	Jr. Scientist (Plant Pathology)
3	Sh. B. N. Singh	Jr. Scientist (Agronomy)

Farming Research Centre, (ICAR), Chatha

1	Dr. Dileep Kachroo	Chief Scientist
2	Dr. Narendera Pal Thakur	Sr. Scientist (Soil Science)

3 Dr. A.K. Gupta Sr. Scientist (Agronomy)

4 Dr. Vijay Khajuria Jr. Scientist (Agronomy)

Water Management Research Centre,(ICAR) Chatha

1 Dr. A.S.Bali Chief Scientist

2 Dr. Rajinder Dhar Sr. Scientist (Agronomy)

3 Er. Narinder Kumar Gupta Sr. Scientist (Ag. Engineering)

4 Dr. A. Samanta Sr. Scientist (Soil Science)

5 Dr. Vijay Bharti Jr. Scientist (Agronomy)

All India Co-ordinated Research Project on Rice (ICAR), Chatha

1 Dr. Anil Gupta Sr. Scientist (Plant Pathology)

2 Sh. Rajan Salalia Jr. Scientist (Entomology)

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**Not As per the Seniority*