ANNUAL REPORT

2004-05

SHER-E-KASHMIR
UNIVERSITY OF AGRICULTURAL SCIENCES AND
TECHNOLOGY OF JAMMU
RAILWAY ROAD, JAMMU-180 012 (J&K) INDIA

GUIDENCE

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Deputy Director Research
Dr. Deepak Kher,
Deputy Director Research

WORD PROCESSING

Mrs. Raj Kumari Aima,
P.A. to DRI/DPGS

COVER THEME

SKUAST-J present Head Office with Students Hostel in the background. The student hostel constructed at university campus, R.S. Pura with a total cost of Rs.2.00 crores having accommodation for 143 students including 29 single seater, 49 double seater and 6 suites for Non Resident Indian Students

PUBLISHED BY

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From Vice Chancellor's Desk

Thomas Malthus in his 200 year old "Essays on the principles of population" stated that human kind increases geometrically while the food supply increases arithmetically and if people do not limit their offsprings; famine, war or diseases may cause devastation.

The present world population is likely to reach 7 billion in 2010 and 8 billion in 2025. Per capita food intake is increasing due to improved living standards. Eventually to meet the food requirement across the globe by 2025, the food production will be required to increase by about 400 per cent in Africa, 200 per cent in Latin America and by 50 per cent in Asia. India with modest population growth scenario will have 1.4 billion population requiring 300 million tones of food. Besides, it will have to feed the largest animal population of the world. If the present growth rate of agriculture and population continues, India may have to import 45 million tones of food grain by 2025.

Judging from the untapped potential of the cropped area, biodiversity and other resources, and the experience of sixties and seventies, when India could usher green revolution by using technologies based on high yielding varieties, fertilizers, irrigation and plant protection chemicals, it can once again prove that it has the ability to meet the challenges of the food for the future also.

The country at the moment is witnessing the new chapter in the technological transformation of farming techniques. The gene revolution triggered by molecular genetics, genomics and proteomics is just beginning to make an impact. Biotechnology, precision farming, drip and sprinkler irrigation, improved post-harvest technology and the use of space, information and communication technologies are all opening up uncommon opportunities for launching the country on the path of so called ever-green revolution on sustainable basis ensuring food, nutritional, environmental and social security. The words of Dr. APJ Abdul Kalam, Hon'ble President of India "With farmers in focuses, farming technology as their friend and food processing and marketing as partners, this is indeed the second green revolution" further spells the bloom for Indian agriculture .

Where increased production still continues to be the major objective of the farming, the value addition to the agricultural produce or to the farmers time input has emerged

equally important. Under changed global perceptions about trade and free movement of agricultural products as envisaged in WTO principles and practices, it will be the net monetary output per unit area in a unit time which will matter. Growing of high value crops including medicinal plants, production of hybrid seeds, adoption of agri-related enterprises like fishery, dairy, apiculture, mushroom growing in farming systems, reduction in post - harvest losses, value addition through processing and competitive marketing are some of concepts required to be associated with future land management. The agricultural farms, therefore are required to be considered as commercial units where economic out-turn shall always be in focus.

Agri-business is the right starting point in our quest for prosperity. World trade in food products, sea food, herbal products and flowers is a whopping $395 billion. We ought to have a 20 per cent share in this huge market as we possess 20 per cent of worlds irrigated land.

The State of Jammu & Kashmir and especially the Division of Jammu offers a wide scope for improvement in its land management strategies. Diversified fruit trees and crop varieties can be grown owing to wider climatic spectrum of the division ranging from typical sub-tropical to temperate type. Contrary to the tropics, the incidence of diseases and pests is quite low and therefore enlarges the scope for organic culture.

WTO has opened up new vistas for export of commercial crops like mangoes, apples, walnuts, rice, vegetables, flowers, mushrooms, medicinal /aromatic plant products, livestock/ fish products etc. and Jammu Division has potential to move in this direction positively.

The Sher -e-Kashmir University of Agricultural Sciences and Technology of Jammu is seized of the Strengths, Weaknesses, Opportunities and Threats (SWOT) of the region. Where new genotypes are being identified for commercial exploitation, the scientists are fully involved in the development of improved crop/ animal husbandry. New innovative methods are being adopted for effective transfer of technology to the farmers in collaboration with line departments. The emphasis is being laid on the training and building-up of the competent human resource with entrepreneurial skills as per the need of the day. In order to bring perceptible improvements in the quality of life of farming community, a collective and target oriented effort is the need of the day and we all ought to stand by it for its accomplishment.

Date:
Place: **Jammu**

(Nagendra Sharma)

UNIVERSITY COUNCIL

As on 31-03-2005

H.E. Lt.Gen.(Retd.) Sh. S.K. Sinha, P.V.S.M. Chancellor (The Governor, J& K State)	Chairman
Sh. Mufti Mohammad Sayeed Pro-Chancellor (Hon'ble Chief Minister, J&K State)	Member
Sh.Abdul Aziz Zargar Agriculture Minister, J&K Govt.	Member
Dr. Nagendra Sharma Vice Chancellor, SKUAST of Jammu	Member
Dr. Anwar Alam Vice Chancellor, SKUAST of Kashmir	Member
Sh. B.R. Kundal (IAS) Principal Secretary, Finance Department, J&K Govt.	Nominee of J&K Govt.
Dr. Mangala Rai Secretary (DARE) & Director General (as specialist), Indian Council of Agriculture Research, Krishi Bhavan, New Delhi-110001	Member
Dr. V.K. Taneja Dy. Director General, Animal Sciences (as specialist), Indian Council of Agricultural Research, Krishi Bhavan, New Delhi-110001	Member
Dr H.N. Khajuria Registrar, SKUAST of Jammu	Non -Member Secretary

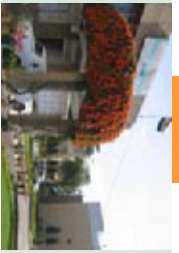
BOARD OF MANAGEMENT

As on 31-03-2005

Dr. Nagendra Sharma Vice Chancellor, SKUAST of Jammu	Ex-Officio Chairman
Sh.B.R. Kundal, IAS Principal Secretary, Finance Department, Govt. of J&K	Member
Sh. M.I. Khanday, IAS Principal Secretary, Planning & Development Department, Govt. of J&K.	Member
Sh. B.B. Vyas Commissioner Secretary, Agriculture Production Department, Govt of J&K	Member
Dr. Seema Wahab Advisor, Govt. of India, Ministry of Science & Technology, Department of Biotechnology, New Delhi	Member
Dr. S.N. Shukla Asstt. Director General, FFC-I & II, ICAR, New Delhi	Member
Dr. M.P. Yadav Director, Indian Veterinary Research Institute, Izatnagar, Bareilly	Member
Dr. H.N. Khajuria Director Resident Instructions cum Dean, P.G. Studies, SKUAST of Jammu	Member
Director Research, SKUAST of Jammu	Member
Director Extension Education SKUAST of Jammu	Member
S. Harinder Singh (Advocate) President, State Wing Bharat Kissan Union, R/o Banagarh, R.S.Pura, Jammu	Member
Sh. Raj Kumar Gupta M/S R.K. Rice & General Mills, Sarore Adda, Bari Brahmana, Jammu	Member
Dr. H.N. Khajuria Registrar, SKUAST of Jammu	Non-Member Secretary

GOVERNANCE

Vice Chancellor	Dr. Nagendra Sharma
Director Resident Instructions- cum-Dean, P.G. Studies	Dr. H.N. Khajuria
Director Research	Vacant
Director Extension Education	Vacant
Registrar	Dr. H.N. Khajuria
Comptroller	Sh. V.K.Soi
Project Planning & Monitoring Officer	Sh. Ravi Kumar
Associate Director Research	Dr. R.K. Gupta
Associate Director Extension Education	Dr. Pramod Baru
Deputy Director Research	Dr. Deepak Kher
Deputy Director Research	Dr. R.R. Jat
Deputy Director Research	Dr. Pardeep Wali
Deputy Director Extension Education	Dr. R.K. Arora
Deputy Registrar (Academic)	Dr. K.R. Sharma
Deputy Registrar (Establishment)	Sh. P.D. Sharma
Deputy Registrar (Recruitment)	Sh. A.K. Koul
Store Purchase Officer	Sh. Bodh Raj
I/C Dy Director Student Welfare	Dr. S.B. Bakshi
Assistant Director Research	Dr. Deepak Kumar
Secretary to Vice Chancellor	Sh. V.B. Gupta
PRO to Vice Chancellor	Sh. Sanjay Sharma
Assistant Registrar (Establishment)	Smt. Hancy Koul
Assistant Registrar (Academic)	Vacant
Assistant Comptroller	Sh. Sohan Lal
Assistant Comptroller	Sh. Raman Sharma



Organogram

University Council → CHANCELLOR

CHANCELLOR → VICE CHANCELLOR

Board of Management ← VICE CHANCELLOR → Academic Council, Research Council, Extension, Education

VICE CHANCELLOR → Secretary to V.C; PRO to V.C

VICE CHANCELLOR → Director Research; Librarian; Estates Officer-Cum-Chief Engineer; PP&MO; Comptroller; Registrar; Dean of Faculty; Director R.I – Cum-Dean PGS; Director Extension Education

- Director Research → Assoc. Direc. Research, Dy. Dir.Res., Asstt. Dir. Res
- Librarian → Asstt. Librarian, Library Asstt.
- Estates Officer-Cum-Chief Engineer → AEE (Civil)/ AEE (Electrical), Asstt. Compt./ Accounts Officer
- PP&MO → Asstt. PP&MO, Asstt. Dir. Stat., Statistical Officer
- Comptroller → Dy. Comptroller, Asstt. Compt, H.Q, Asstt. Compt., Faculty
- Registrar → Dy. Reg. (A), Asstt. Reg.; Dy. Reg. (E), Asstt Reg. (E)
- Dean of Faculty → Administration & Academics → Associate Dean of Faculty, Asstt. Registrar (A)
- Director R.I – Cum-Dean PGS → Deputy Director, Student Welfare, Medical Officer, Asstt. Reg. (A)
- Director Extension Education → Associate Director, Extension Education, Dy. Director Ext. Education → Krishi Vigyan Kendra: 1. KVK R.S.Pura, 2. KVK Rajouri, 3. KVK Bhaderwah

RESEARCH STATION/ SUB STATIONS

1. Regional Agriculture Research Station, Rajouri
2. Rainfed Horticulture Res. Sub Station for Sub-Tropical Fruits, Raya.
3. Pulses Research Sub-Station, Samba
4. Dry land Research Sub-Station, Dhiansar
5. Maize Research Sob-Station, Poonch
6. Regional Horticulture Research Sub Station, Bhaderwah

FACULTY OF AGRICULTURE, CHATHA, UDHEYWALLA

1. Division of Agricultural Economics & Statistics
2. Division of Agricultural. Engineering
3. Division of Agricultural. Extension Education
4. Division of Agro forestry
5. Division of Agronomy
6. Division of Bio-Chemistry & Plant Physiology
7. Division of Entomology
8. Division of Fruit Science & Post Harvest Technology
9. Division of Genetics & Plant Breeding
10. Division of Plant Pathology
11. Division of Sericulture
12. Division of Soil Science & Agricultural. Chemistry
13. Division of Vegetable Science & Floriculture

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

1. Division of Animal Breeding & Gen tics including Biostatistics
2. Division of Animal Nutrition
3. Division of Animal Reproduction & Gynaecology & Obstetrics
4. Division of Livestock Product Technology
5. Division of Livestock Production and Management
6. Division of Vety. Anatomy & Histology
7. Division of Vety & Animal Husbandry Extension
8. Division of Vety. Bio-Chemistry
9. Division of Vety. Clinical Medicine & Jurisprudence
10. Division of Vety. Clinics & Teaching Hospital
11. Division of Vety. Epidemiology & Preventive Medicine
12. Division of Vety .Microbiology & Immunology
13. Division of Vety. Pharmacology & Toxicology
14. Division of Vety. Physiology
15. Division of Vety. Public Health & Hygiene
16. Division of. Vety. Surgery and Radiology
17. Division of Vet.Parasitology
18. Division of Vety. Pathology

Preface

The present issue of the annual report of Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu for the year 2004-05-the fifth in series encompasses the account in respect of various activities and programmes entrusted to the university through its Act and Statutes. The details pertaining to the human resource available and the salient accomplishments made in respect of Resident Instructions, Research and Transfer of Technology have been presented.

In this publication, an attempt has been made to highlight the participation of faculty in various conferences/seminars/ symposia and that of the students in different extra curricular activities. In research, the contributions made by the faculty working in different divisions and the scientists placed at different research stations have been presented. In Agriculture, the salient achievements on various aspects of crop/tree production and protection technology have been highlighted in addition to post harvest management of agricultural produce. With respect to Veterinary Sciences, the research outputs based on current problems in livestock production and management have been briefly discussed. Under Extension Education programme, classified activities with involvement of target groups primarily the farmers have been outlined. This includes on-campus and off-campus trainings for extension functionaries, farmers and rural youth; educational tours etc. as carried out at different KVKs, success stories of agri-clinics and agri-business management; front line demonstrations; field-days; vocational trainings; interactive workshops, Zonal Research and Extension Advisory meetings' outputs. Information on financial aspects, faculty distribution, library etc. is presented as annexures.

Special attempts have been made towards human capital development through imparting of specialized skills to the graduating students. Better infrastructure, improved laboratory and field facilities, updating of library, communication through comprehensive networking (both local area and wider area) have been given required attention as reflected in the report. Significant efforts have been made to mobilize financial resources for strengthening research and transfer of technology in addition to creation of infrastructure.

I place on record my highest appreciations of work done by Dr. R.R. Jat, Dy. Director Research in collaboration with Dr. Deepak Kher (DDR) and Mrs. Raj Kumari Aima, PA to DRI/ DPGS in bringing out this report.

I am also grateful for the cooperation rendered in supply of information by all the constituent components of the university.

January, 2006
Jammu

(H.N. Khajuria)
DRI-Cum-DPGS/
Registrar

Contents

1 EXECUTIVE SUMMARY

The University during 2004-05 under the leadership of Dr. Nagendra Sharma, the present Vice Chancellor who took over the reigns of this institute w.e.f. Dec. 2004 and Mr. H.U. Khan (Ex-Vice Chancellor) continued its strive to achieve the goals for the development of competent and professional human resource, solving of farmers' problems through innovative research and transfer of technology in the fields of Agriculture and Veterinary Sciences. Even in spite of the constraints in respect of insufficient scientific and supporting manpower, and the matching infrastructure, the university successfully completed the academic programmes including B.Sc. (Ag.), B.V.Sc. & A.H., M.Sc. (Ag.), M.V.Sc. and Ph.D. carried out assigned research agenda as approved by the Research Council involving almost entire faculty working at both the campuses and at various research stations of the university and undertook numerous initiatives for the transfer of technology to the farmers. The brief summary is given as under:

- The first convocation of the University was held on 17th May, 2004. The Convocation function was presided over by His Excellency Lt. Gen (Retd.) Sh. S.K. Sinha, P.V.S.M., the Governor,J&K State and Chancellor, SKUAST, Jammu. The Convocation was addressed by Dr Mangla Rai,Director General ICAR & Secretary, DARE, Govt of India. As many as 259 students were awarded the degrees. Among them, 15, 121, 64 and 59 students were awarded Ph.D., M.Sc. (Ag.), B.Sc. (Ag.) and B.V.Sc. & A.H. degrees respectively.

- The university has total sanctioned strength of 312 faculty positions with 72, 22 and 6 per cent distribution in Teaching, Research and Extension Education respectively. Under Resident Instructions, the University has 218 as its total faculty strength with 35 Professors, 73 Associate Professors and 110 Assistant Professor level positions. Out of 218, 114 are in faculty of Veterinary Sciences and Animal Husbandry and 104 are in Agriculture. Almost one-third of these positions remained vacant during the period under report. The academic and the gender wise spectrum of the faculty reveals 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 640 non teaching members including administrative, technical, auxiliary and supporting staff.
- The admissions to the various academic programmes were undertaken through Board of Professional Entrance Examinations of Jammu and Kashmir Government in respect of Bachelor's and Master's degree programme; whereas, for doctoral degree programme, the university itself selected the candidates on the basis of merit. As many as 111 and 34 students were admitted to U.G. and P.G. programmes respectively. The number of students who completed their degrees in Agriculture and Veterinary Sciences was 24 and 72 respectively. The total number of students on roll remained 366, with 241 in Veterinary Sciences and 125 in Agriculture. The number of female students was about 15 per cent.
- The students of the university continued to participate in local/state/national level events in extra curricular activities: Besides this, as many as 10 students cleared ICAR's NET; one was selected for IFS and three for KAS services. The university extended all facilities to the students including medical health care through a university dispensary equipped with a full time medical officer and supporting staff with liberal contingency for medicines. About 1200 OPDs were attended and 95 per cent were the students.
- The university released five varieties in different crops. Saanwal Basmati:10 to 15 per cent superior in yield and 10 days early as compared to standard Basmati 370; DGS-1 (Gobhi Sarson): with yield of 19 q/ha having low erucic acid and moderately resistant to aphids; RSPR 01 (Indian Mustard): a high yielding variety of Raya with 40 per cent oil and a yield potential of 19 q/ha and moderately resistant to aphids and Alternaria blight; RSPT O1 (Toria): an early maturing (75-85 days) variety, yielding 7.5 q/ha, having oil content of 40 per cent. A variety of chickpea SCS 3 (Shivani) was released for rainfed climate of

Jammu. The variety has yield potential of 20 q/ha under optimum field management conditions and moderately resistant to wilt and root rot pathogen.

- Improvement in wheat yield with the use of biofertilizers (Azotobactor or Azospirillium with FYM was recorded. Rice (medium duration)-peas-maize (green cob) proved profitable diversified cropping system. For Rice Wheat cropping system, N, P and K @ 100, 50 and 25 Kg/ha with 5 tons of FYM recorded better results. 20 Kg of $ZnSo_4$ was also recommended once in two years. The rice- wheat growing soils were found to be low in available 'N', medium in available 'P' and marginally deficient in available K. Soils of Jammu district showed accumulation of heavy metals in the order of Fe>Mn>Cu>Zn>Cd, but were within the threshold values for growing vegetables.
- In tomato, F-1 hybrid Prithvi was found to yield 40 tons/ha. Palam Priya, Arkel, Bonneville and AP-1 of green peas were also found to be promising with green pod yield of 13.5, 11, 11 and 10.3 tons/ha respectively.
- Temperate mulberry varieties were successfully propagated vegetatively following budding/grafting on TR-10 rootstock with 60 per cent success. Temperature tolerant silkworm races were developed to tolerate high temperature (30 ^{o}C). High yielding races of silkworm for spring crops have also been developed with improved cocoon weight and filament length (800m).
- The use of zero-till fertilizer seed drill was found economical in comparison to other methods of sowing not by increasing the yield, but by saving in resources. For drying of tomato, brinjal and bitter gourd, the suitable temperature has found to be 65 ^{o}, 50 ^{o} and 60^{o}C respectively.
- For the control of root knot nematodes of pulse crop in Jammu, biocontrol agents have been identified. The use of beetle *Zygogramma bicolorata* to control congress grass is also being standardized. Aphid control in wheat was achieved with the application of oxydemeton/methyl parathion and imidacloprid 20 g a.i./ha and imidacloprid 0.6 g a.i./kg seed. Bioagents- *Trichoderma* spp strains viz T14, T23, T25, T27; *Pseudomonas fluorescence*, *Chaetomium globosum* were found effective to control cucumber wilt.
- Propagation in Raj harar was standardized following patch budding and cleft grafting. Twenty three candidate Plus Trees were selected in Jatropha for genetic testing.

- A survey conducted in the existing olive orchards of Doda and Udhampur to ascertain causes of crop failure and low productivity revealed that major causes of low productivity was the neglected state of these orchards. In order to check the fruit drop in walnut, an application of Endosulfan (0.02%) at panicle emergence and repeated application again at fortnight interval, followed by two sprays of NAA (20 ppm) 8 and 6 weeks prior to expect harvest recorded 50 per cent reduction in fruit drop (40% in control).
- Bhaderwah, Chinta valley, Malathi and adjoining areas were surveyed for mosaic disease incidence in Rajmash and the disease incidence varied from 22 to 45 per cent.
- Thirty-three genotypes of oats were tested under single cut programme for forage yield at 50 per cent flowering stage and genotype OS-315 gave highest green fodder yield of 320.5 q/ha. Under multicut regime, genotype OS-295 produced highest green fodder yield of 387.4 q/ha in all the four cuts. In respect of grain yield, entry OS-6 resulted in to the highest grain yield of 42.3 q/ha followed by entries S-3021 and HJ-8, with yield potential of 38.0 q/ha and 34.9 q/ha respectively.
- In Sorghum, out of 20 entries tested under single cut system and data recorded at 50% flowering stage for Green fodder yield(GFY) potential, entry IS-3225 gave the highest GFY potential of 352.4 q/ha followed by entry G-84 and IS-3237 with GFY potential of 325.37 q/ha and 320.55 q/ha respectively.
- In the intermediate zone of Rajouri and Poonch the major diseases recorded in maize were stalk rot complex (20.8%), foliar blight complex (50.7%), brown spot (26.4%), downy mildew (19.44%) and sheath blight (25.5%). Out of several genotypes tested local L-4 was found resistant against stalk rot complex; local C-2, KH-2001 and KH-517 resistant against banded leaf and sheath blight and KH-612, KH-517 and local C-5 resistant against downy mildew.
- 105 samples of local Rajmash germplasm were collected from Loran, Sabzian and Mandi locations of Poonch District. It was concluded that exotic and local germplasm of Rajmash cannot be maintained in rainfed condition.
- Helminthosporium leaf spot emerged as main maize disease under dry land condition during three seasons of investigation i.e. 2002, 2003 and 2004. Out of 57 genotypes of maize evaluated under natural conditions, none was found immune. Three genotypes viz.; FH 3077, Harsa Composite and JAUM 7(local) were resistant.

- In a five years combined data on fertilizer trials, the recommended dose of NPK (60:40:20) coupled with 20 Kg $ZnSO_4$/ha recorded highest grain yield of maize with an average of 27.11 q/ha as compared with other treatments.
- In Cereal + Legume system (Maize + Black gram), 100 per cent N through inorganic fertilizer recorded the highest average maize equivalent yield of 23.22 q/ha followed by the treatment of 15 kg N through green leaf + 20 kg N through inorganic fertilizer with an average maize equivalent yield of 21.08 q/ha. The highest mustard equivalent yield of 11.95 q/ha was recorded with the application of 10 tons FYM/ha in maize during the preceding kharif season followed by recommended NPK (60:40:20 Kg/ha) + $ZnSO_4$ @ 20 Kg/ha.
- During first year of study in uridbean and moongbean, it was observed that out of the various factors, inclusion of improved variety helped to increase the yield by 56.5 and 24.5 per cent respectively over farmer's practices, whereas increases recorded due to fertilizers, weed control and plant protection were 9.3, 6.5 and 6.0 per cent in case of uridbean and corresponding figures for moongbean were 6.2, 4.1 and 3.9 per cent.
- Under water management programme, wheat (PBW-343) following groundnut, receiving only two irrigations of 6 cm each produced mean grain yield of 2900 kg/ha in 138 days, while as mustard (RSP-03) followed by groundnut received two irrigations and produced mean oilseed yield of 669 kg/ha in 133 days.
- Gross anatomical aspects of the immune system, histo-morphological works on superficial lymph nodes and histological studies on the female genital system of Kagani goat were carried out. Under immobilization of *R.oryzae* in agar-agarose and polyacrylamide subjected to varying temperature conditions from 20 ^oC to 40 ^oC under static conditions, the maximum enzyme yield was obtained at 30 °C in agar blocks followed by polyacrylamide blocks and agarose beads.
- Toxicological and biochemical studies of organophosphorus insecticides in sheep and goats were undertaken to determine the pattern of toxic symptoms and establish biomarkers which will help in diagnosis of such toxicosis and also evolve a suitable antidotal treatment for such intoxications. The acute toxicity studies of triazophos and dichlorovos indicated that these insecticides should not be exceeded than the recommended doses.

- The analysis of 925 faecal samples in Jammu district collected from bovine's revealed 62.38 per cent prevalence of helminth parasites. Helminth parasites of Amphistomes (25.12%) were predominant followed by the strongyles (9.78%). Presence of Fasciola, Strongyloides, Ascaris, Trichuris, Moniezia spp. was 5.15, 6.23, 8.01, 0.88 and 0.62 per cent respectively. 822 faecal samples of sheep and goats revealed 77.49 per cent infection of gastrointestinal parasites.
- Tree leaves from fifteen fodder tree species, such as *Acacia nilotica*, *Albizia lebbeck*, *Olea species*, *Berberis species*, *Celtis australis*, *Cordia dichotoma*, *Dalbergia sisso* (Shisham), *Grewia optiva*, *Leucaena leucocephala*, *Mangifera indica* etc. were analysed for proximate and fibre constituents, nitrogen solubility, fibre bound nitrogen and nitrogen fractions. The crude protein (CP) content was maximum in *L. leucocephala* (24.52%) and minimum in *Morus alba* (8.60%) whereas ether extract (EE) content was highest in *M. alba* (9.31%) and minimum in *A. nilotica* (1.73%). The neutral detergent fibre content varied from 13.15% in *M.azedarach* to 53.08% in *Olea species*, whereas acid detergent fibre varied from 10.08% in *M. azedarach* to 55.49% in *C. dichotoma*.
- Studies on the effect of various thickeners viz rice flour, maida, Arhar dal and corn flour on quality of shank-whey soup at 0 (Control), 1,2 and 3 per cent w/v of soup revealed the increase in the level of thickeners, and the pH of the soup (5.20 to 5.65) and consequently decreased the titrable acidity.
- A total of 165 cattle from unorganized farms as cases in Veterinary Clinic and Teaching Hospital at R.S. Pura were studied during the period from May, 2004 to December, 2004. Out of 165 cases, 85 (51.52%) were of endometritis, 42 (25.45%)were of anoestrus, 24 (14.55%) were of an ovulation and 14 (8.48%) were of cystic ovarian degeneration. In 85 cases of endometritis, different antibiotic treatments viz. Gentamycin-M,Tetracycline,Ciprofloxacin, Enrofloxacin and indigenous drugs were tried and Enrofloxacin was found to be most effective.
- Results of the three groups of anesthetic studies (Gr.I-Propofol alone, Gr.II-xylazine + propofol and Gr.III-xylazine + ketamine)in 18 goats and 12 buffalo calves indicated that induction and recovery was rapid in propofol groups of animals. Transient apnoea for 30-50 seconds soon after propofol injection was noticed.
- Metabolic profile study was carried out in pregnant animals wherein sub clinical deficiency of Ca, P, and mild anemia was reported. Anti microbial

sensitivity test in Mastitis revealed that enrofloxacin was highly effective followed by trimethoprim, tetracycline, chloramphenicol, streptomycin, oxytetracycline, gentamycin, clindamycin, cloxacillin, erythromycin, amoxicillin, novobiocin and sulphamethizole. Screening of livestock for Hormoprotozoan diseases and poultry for salimonellosis was carried out. The Hog cholera was first time reported from Jammu.

- Under the project on management of long bone fractures in large animals, metacarpal and metatarsal fractures in equine and metatarsal, metacarpal and tibial fractures in bovine were managed. Tibial fracture in bovine were managed by transfixation and hanging pin caste techniques whereas meta carpal/ metatarsal fractures were managed with U or V splints incorporated POP casts.

- The transfer of technology has been carried out through Krishi Vigyan Kendras and the involvement of subject matter resource personals from the faculty of agriculture and faculty of Veterinary Sciences & animal Husbandry. A new programme initiated by the Hon'ble Vice Chancellor "Village Visit & Stay with Farmers" has proved very effective. The scientists working at different research stations too participated in various extension activities.

- As many as 67 departments functionaries, 2130 farmers/farm women and 175 rural youth were imparted training through 32 different short courses. The trainings were organized in crop production, crop protection, horticulture, home science, soil and fertilizers.

- Under agri-clinic and agri-business management, 25 persons were trained. As many as 1173 Front Line Demonstrations (FLDs) were laid with the highest number of 910 (FLDs) in Maize alone. Educational tour for 20 farmers was arranged to participate in Krishi Vigyan Mela at IARI,New Delhi.

- The University organized as many as 35 professional trainings for the benefit of farmers and departmental functionaries 53 scientists participated in different seminars/symposia/ workshops at state/national level.

- Dr. Nagendra Sharma, the Vice Chancellor, was conferred upon the distinguished Veterinarian Award, 2004. Dr. H.N. Khajuria,DRI,was awarded Meritorious Teacher Award by PAU,Ludhiana and was also nominated by ICAR as member Research Advisory Committee, CRIDA, Hyderabad. Prof. A.K. Srivastav, Dean, Veterinary Sciences & A.H. was selected as member NAS,Allahabad and Fellow of NAS, 2004.Dr R.K.Sharma,DrR.R.Jat and Dr. Rajiv Singh were selected as Editorial Board Member (ISAN), elected as Councillor, North Zone (ISMPP) and awarded "Young Scientist Award" by J&K State Council for Science &Technology respectively.
- In publications, the university brought out Journal of Research (Vol. 3), Achievements of Academic, Research and Extension Education for the period 1999-04 and the Package of Practices of Horticultural crops. As many as 450 publications including book chapters/bulletins/manuals/research papers etc. were published by the scientists in various journals of repute.
- The main library at Chatha with another equally strong unit at R.S. Pura were further strengthened by way of adding 1437 number of books this year raising the library acquisition to 13,905 with 1230 bound journals. As many as 64 and 65 Indian and foreign journals are subscribed. Library is also equipped with LAN & CD-ROM facility with free down loading provision.
- The university operated the total budget of 4342.70 lakh during 2004-05 with over 60 per cent allocated for both the faculties.
- Among various statutory meetings, Board of Management, Academic Council, Research Council, Zonal Extension Advisory Meetings were held accordingly.

5th meeting of Board of Management held on March 18, 2005 chaired by the Vice Chancellor Dr. Nagendra Sharma and attended by the members: Shri B.R. Kundal, Shri. M.I. Khandey, Dr. Seema Wahab, S. Harinder Singh, Sh. Raj Kumar Gupta and Dr. H.N. Khajuria, Non-member secretary

2 INTRODUCTION

On 20th day of September 1999, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu was carved out of erstwhile Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu and Kashmir to cater to the requirements of Jammu Division comprising of six districts - district Doda, Poonch, Rajouri, Udhampur, Jammu and district Kathua. Jammu Division lies between 32°20'N to 33°10'N Latitude and 74°45' E to 74°55' E Longitude with its characteristic climatic zones including sub-tropical, dry temperate, wet temperate and intermediate.

The total area of Jammu division is about 1800 thousand hectares and only 22 per cent of this area is available for agriculture and this accounts for about 70 per cent of total crop production in the state. The major crops produced are rice, wheat and maize. Since 75 per cent of the cultivated area is under rainfed agriculture, emphasis are laid upon the cultivation of less water requiring crop/ tree varieties including oil seeds, pulses, sub-tropical fruits such as guava, ber, aonla, pomegranate, lemons etc. In the typical temperate zone partly falling under districts of Doda, Udhampur and Kathua, efforts have been made to exploit the potential for the cultivation of Saffron (Kishtwar), apples, pears, apricots and various nuts.

In order to bring improvements in existing land use pattern in Kandi areas, new interventions have been initiated. Selection of suitable genotypes, soil and moisture conservation, water-shed management, popularization of having small water harvesting reservoirs for life-saving irrigations and utilization of degraded lands for some economic benefits through the cultivation of diesel plant 'Jatropha' have been taken up on priority. New projects on cultivation of medicinal plants and value addition to the agricultural produce have also been adopted. Since Jammu division is rich in livestock population (5.7 million), the university has taken up the challenges to bring improvements both genetically and in the management including health care through the application of advanced technologies in Veterinary Sciences and Animal Husbandry.

The university presently has three faculties i.e. Faculty of Agriculture and Faculty of Veterinary Sciences & Animal Husbandry and Faculty of Postgraduate Studies with six research stations/sub-stations and a seed production farm. The extension activities are carried primarily by three Krishi Vigyan Kendras (KVK), viz. KVK, R.S. Pura (Jammu), Bhaderwah (Doda) and KVK (Rajouri). A fourth KVK at Reasi (Udhampur) has recently been commissioned. Out of the total 312 faculty positions, the major component i.e. over 70 per cent is in teaching. The faculty distribution in Agriculture and Veterinary Sciences is in 60:40 ratios. Efforts are being made to expand the dimensions of the university by way of having more faculties and the matching human resource and infrastructure.

The university is running two undergraduate degree programmes - B.Sc. (Ag.) and B.V.Sc. & A.H.; and postgraduate degree programmes- M.Sc. (Ag.) in ten disciplines; M.V.Sc. in nine disciplines and Ph.D. programme in six disciplines with total student strength of three hundred sixty six. Efforts have been made to improve the field and laboratory infrastructure to ensure quality education on competitive basis.

This report details the activities carried out during 2004-05. The university in recent past has witnessed a revolutionary change with the joining of the new Vice Chancellor, Dr. Nagendra Sharma w.e.f. Dec. 2004. His rich experience, magnificent potential, far sighted vision, clear perception, effective motivation, deep concern towards peasantry and upright individuality makes him a complete leader to set the right agenda in right direction for an institution like that of an agricultural university. What the university could not do since its inception has been achieved in a short-time after his joining, which includes procurement of the land at Chatha, starting up of agricultural faculty building complex, KVK complex at Rajouri and Bhaderwah, development of Conference Halls at R.S.Pura campus, re-invigoration of veterinary hospital complex etc. involving more than Rupees 50 crores of funds, mobilized from State and ICAR. Not only in context with infrastructures development, a perceptible change in the overall mindset of the faculty and staff of the university through Vice Chancellor's personal interaction/intervention and motivation will go a long way in the transformation of this university into an institution of repute on national/international level.

3 RESIDENT INSTRUCTIONS

During 2004-05, the period under report, the university has made significant achievements in the field of Agricultural education and tried to raise its standards to the national level by the introduction of up-dated curriculum at undergraduate (UG) and post graduate (PG) level, both in Agriculture and Veterinary Sciences, as recommended by Education Division of Indian Council of Agricultural Research (ICAR) and Veterinary Council of India (VCI) respectively. Rural Agriculture Works Experience (RAWE) has also been introduced in B.Sc. (Ag.) programmes to acquaint the students with problems related to farmer's field where as for B.V.Sc. & A.H.; the practical training continued through internship.

Rural Agricultural Work Experience
(Releasing of the report by The Vice Chancellor and Participation of the Students and Farmers)

ACADEMIC POGRAMMES RUN BY THE UNIVERSITY:

1. UG Programme : B.Sc. (Ag.); B.V.Sc. & A.H.
2. PG Programme : M.Sc. (Ag.) : 8 divisions
   Ph.D. : 6 divisions
   M.V.Sc. : 5 divisions

DETAILS OF PG PROGRAMMES:

S.No.	M.Sc. (Ag.)	Ph.D.	M.V.Sc.
1.	Agronomy	Agronomy	Vety. Clinical Medi. & Jurisprudence
2.	Entomology	Entomology	Vety. Preventive Medicine & Epidemiology
3.	Fruit Science & Post Harvest Technology	Fruit Science & Post Harvest Technology	Vety. Physiology
4.	Genetics & Pl. Breeding	Genetics & Pl. Breeding	Vety. Public Health & Hygiene
5.	Plant Pathology	Plant Pathology	Vety. Surgery & Radiology
6.	Soil Sciences & Agril. Chemistry	Soil Sciences & Agril. Chemistry	
7.	Sericulture		
8.	Vegetable science & Floriculture		

FACULTY SPECTRUM:

The classified information pertaining to the faculty strength- both cadre wise and faculty wise with academic spectrum is given under Table -1. As evident, there are 218 faculty positions as sanctioned strength for all the three faculties viz. Faculty of Agriculture, Faculty of Veterinary Sciences & A.H. and Faculty of Post-graduate Studies. The overall faculty strength under Faculty of Agriculture and Faculty of Veterinary Sciences including PG faculty is 104 and 114 respectively (Table 1a).

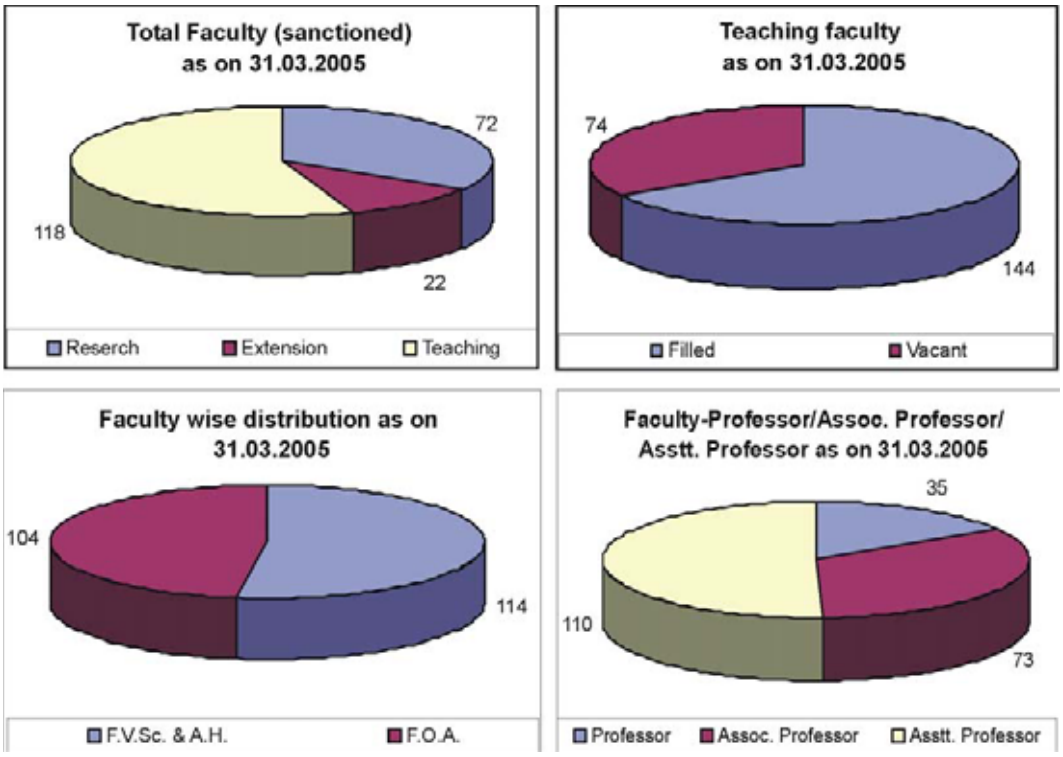


Table 1a: Faculty Strength (2004-05)

Post	FACULTY						Total		
	F.O.A.			F.V.Sc & A.H.					
	Sanctioned	Filled	Vacant	Sanctioned	Filled	Vacant	Filled	Vacant	Total
Professor/ Equivalent*	15	08	07	20	04	16	12	23	35
Associate Professor/ equivalent	36	29	07	37	11	26	40	33	73
Assistant Professor/ Equivalent	53	50	03	57	42	15	92	18	110
Total	**104**	**87**	**17**	**114**	**57**	**57**	**144**	**74**	**218**

Table 1b: Faculty's Academic Spectrum (2004-05)

Post	F.O.A.		F.V.Sc. & A.H.			Total
	Ph.D.	M.Sc.	Ph.D.	M.V.Sc.	M.F.Sc.	
Professor/equivalent	07	–	04	–	–	11
Associate Professor/ equivalent	30	01	09	02	–	42
Assistant Professor/ equivalent	34	15	11	30	01	91
Total	**71**	**16**	**24**	**32**	**01**	**144**

The figures in Table 1b reveal academic spectrum of the existing faculty where in there are 94 faculty members holding Ph.D. degree out of the total of 144. About 10 per cent of the existing faculty constitutes female strength (Table 1c)

Table 1c: Genders in Faculty's Academic Spectrum (2004-05)

Gender	F.O.A.		F.V.Sc & A.H.			Total
	Ph.D.	M.Sc.	Ph.D.	M.V.Sc.	M.F.Sc.	
Male	65	13	24	25	-	127
Female	06	03	-	07	01	17
Total	**71**	**16**	**24**	**32**	**01**	**144**

STUDENTS STRENGTH:

The strength of students admitted to B.Sc. (Ag.) programme was 19 only during academic session 2004-05, where as, for B.V.Sc. & A.H. programme it was 92. The number of students admitted to M.Sc. (Ag.) programme in different divisions of Agriculture was 23 and at Ph.D. level it was 11 during academic session 2004-05. In M.V.Sc., only three students were admitted. The distribution of students year wise, faculty wise and gender wise is given in Table 2(a,b,c). This was against the intake capacity as under.

Intake capacity - Faculty wise

Faculty	Degree Programme	Seats	
		Through BPEE (J&K)	ICAR including SC/ST
F.O.A.	B.Sc. (Ag.)	75	08
F.V.Sc. & A.H.	B.V.Sc. & A.H.	75	08
Faculty of PGS	M.Sc. (Ag.)	38	07
	M.V.Sc.	20	03
	Ph.D.	08	–
Total		**216**	**26**

Table 2a: Number of Undergraduate and Postgraduate Students on Roll (2004-05).

Year	FACULTY						Total
	Under graduate		Post Graduate				
	B.Sc. (Ag.)	B.V.Sc. & A.H.	Agriculture		Veterinary Sciences & A.H.		
			M.Sc. (Ag.)	Ph.D.	M.V.Sc.	Ph.D.	
Ist	19	92	23	11	03	-	148
IInd	09	59	17	06	-	-	91
IIIrd	05	31	01	04	-	-	41
IVth	27	31	-	03	-	-	61
Vth	-	25	-	-	-	-	25
Total	**60**	**238**	**41**	**24**	**03**	**-**	**366**

The total strength of the students on roll at post graduate degree programme under PG Faculty was 68, whereas, in UG programmes in agriculture and Vety. Sciences & A.H., it was 60 and 238 respectively with total of 366 students (Table 2a). In first year class, (UG& PG) the number of students remained the highest (148).

Table 2b: Genders in Undergraduate and Postgraduate Degree Programme (2004-05)

Gender	FACULTY						Total
	Undergraduate		Postgraduate				
			Agriculture		Veterinary Sciences & A.H.		
	B.Sc. (Ag.)	B.V.Sc.& A.H.	M.Sc. (Ag.)	Ph.D.	M.V.Sc.	Ph.D.	
Male	50	205	35	17	02	-	309
Female	10	33	06	07	01	-	57
Total	**60**	**238**	**41**	**24**	**03**	**-**	**366**

Of 366 students, 57 are girl students i.e. about 16 per cent of the total strength, evenly distributed across the faculties (Table 2b). The total number of students who have completed their undergraduate degree is 24 and 72 from Agriculture and in Veterinary Sciences and A.H., respectively. One hundred and three students obtained their degree with 96 in UG and only 07 in PG programme (Table 2c).

Table 2c: Completion of Undergraduate and Postgraduate degrees (2004-05)

Faculty	Degree	Number of students	Total
Undergraduate	B.Sc. (Ag.)	24	96
	B.V.Sc. & A.H.	72	
Postgraduate	M.Sc. (Ag.)	05	07
	Ph.D.	02	
	M.V.Sc.	-	
	Total		**103**

Among these students who qualified for the award of the degrees, 31 were from agriculture and 72 were from Veterinary Sciences.

UNIVERSITY CONVOCATION:

The first convocation of this university was held on May 17, 2004 at Jammu under the leadership of Ex-Vice Chancellor, Mr. H.U. Khan. The Convocation function was presided over by H.E. Lt. Gen. (Rtd.), Sh. S.K. Sinha, PVSM, the

Governor of J&K State and Chancellor, SKUAST-Jammu. Dr. Mangala Rai, Director General, ICAR and Secretary, Department of Agricultural Research and Education, Govt of India was the chief guest and also addressed the Convocation. In this convocation, 64 B.Sc. (Ag.), 59 B.V.Sc. & A.H., 121 M.Sc. (Ag.) and 15 Ph.D. degrees were awarded besides the award of 9 gold medals and 28 merit certificates.

Pass out students' w.e.f. 20-9-1999 to 17-5-2004 (Date of IST convocation)

Degrees	No. of students
B.Sc. (Ag.)	64
B.V.Sc. & A.H.	59
M.Sc. (Ag.)	121
Ph.D.	15
Total	**259**

Table 3: Thesis submitted by Postgraduate students (2004-05)

S.No.	Name of the students	Division	Title of thesis submitted
Ph.D.			
1.	Mrs. Surya Prabha Devi	Entomology	A STUDY OF ASSIMILATORY BEHAVIOUR OF BIVOLTINE SILKWORM (*Bombyx mori* L.) GENOTYPES
2.	Mr. Parshant Bakshi	Pomology & PHT	EFFECT OF POSTHARVEST TREATMENTS ON STORAGE LIFE OF PEACH (*Prunus persica* (L.) *Batsch*)
3.	Mr. Ramakant Sharma	PBG	COMPARATIVE STUDY OF GENETIC VARIABILITY INDUCED BY PHYSICAL AND CHEMICAL MUTAGENS IN BASMATI RICE (*Oryza sativa*. L.)
M.Sc.			
1.	Mr. Jagdish Chander Raina	Entomology	BIO-CONTROL POTENTIAL OF HELICOVERPA ARMIGERA NUCLEAR POLYHEDROSIS VIRUS (HaNPV) ON CHICKPEA AND TOMATO

2.	Mr. Surinder Kumar	Agronomy	PERFORMANCE OF RICE GENOTYPES AT DIFFERENT NITROGEN LEVELS UNDER IRRIGATED CONDITIONS
3.	Mr. Amarjit Singh	Agronomy	EFFECT OF NITROGEN LEVELS AND WEED MANAGEMENT ON GROWTH, YIELD AND QUALITY OF GOBHI SARSON (*Brassica napus* L.) VAR.DGS-1
4.	Mr. Dara Singh	Pomology & PHT	PROPAGATION STUDIES IN AONLA (*Emblica officinalis* Gaerin)

STUDENTS FACILITIES:

Undergraduate students have been taken out for educational tours during summer and winter breaks. The All India educational tour was conducted for the student of 4th year (Ist Semester) B.V.Sc. & A.H. from 12 Feb. to 6 March, 2005 and Dr. S.K. Gupta (Assoc. Prof., VEP) and Dr. Sudarshan Kumar, (Asstt. Prof., ARGO) escorted the tour. The students of this university continued to participate in agriculture youth festivals from time to time. They are also encouraged to get actively involved in other extra curricular activities of the university such as games, open competitions, athletics and cultural programmes and facilities regarding different events are also made available to them so that they can prepare better. For the benefit of the students, there are two libraries, one located at F.V.Sc. & A.H., R.S. Pura and another at F.O.A. Chatha. These libraries are provided with latest books, periodicals, journals and text books so that student can get latest information and technical know how and can do better research and find better placement after completion of their degree.

HOSTELS:

Students have also been provided with better and hygienic accommodation in the hostels. There are three hostels located at university campus R.S. Pura housing 177 students including 30 girls. One newly constructed hostel named as students Hostel was inaugurated by Jenab Mufti Mohd. Sayeed, Hon'ble Chief Minister, J&K State on September 9th, 2004. This newly constructed Hostel has capacity to accommodate 143 boarders; 29 rooms are single seater, 49 rooms are double seater and has 16 single room suits for foreign students with facility of kitchenette and attached restrooms. Spacious and well furnished dinning hall, common room, lawn, courtyard etc. have also been provided in the hostel.

MEDICAL FACILITIES:

The health cover has been provided to the students with medical facilities at both the campuses. One full time medical doctor along with one female staff nurse is provided at the dispensary. The Annual statement of Health Centre from January first to 31st December, 2004 is as under (Table 4).

Table 4: Annual statement of Health Centre from 01-01-2004 to 31-12-2004

S.No.	Type of cases	No.	S.No.	Type of cases	No.
1.	Total OPD	1160	7.	Female	150
2.	Students	1138	8.	Surgical	162
3.	Staff	22	9.	Medical	976
4.	Hostlers	722	10.	Patients referred	11
5.	Non Hostlers	416	11.	Emergencies	7
6.	Male	980			

STUDENTS' ACHIEVEMENTS (SCHOLARSHIP, NET ETC.):

A number of students cleared National Eligibility Test conducted by Agricultural Scientists Recruitment Board (ASRB), Indian Council of Agriculture Research, New Delhi and a few qualified for Kashmir Administrative Services. The details are given in Table 5a and 5b.

Table 5a: Agriculture

S.No.	Name of student	Division	Achievements
1.	Rajeev Bharat	Agronomy	NET(ICAR)
2.	Arvind Kumar Ishar	Entomology	NET(ICAR)
3.	Devinder Sharma	Entomology	NET(ICAR)
4.	Tariq Rasool Rather	Plant Pathology	NET(ICAR)
5.	Sachin Gupta	Plant Pathology	NET(ICAR)
6.	Ms Efath Shehnaz	Plant Pathology	NET(ICAR/CSIR)
7.	Ms Upma Dutta	Plant Pathology	NET(ICAR)
8.	Ashwani Kumar	Pomology & PHT	NET(ICAR)
9.	Ms Kiran Kour	Pomology & PHT	NET(ICAR)
10.	Parshant Bakshi	Pomology & PHT	NET(ICAR)

Table 5b: Veterinary Sciences & Animal Husbandry

S.No.	Name of the student	Achievements
1.	Shahid Iqbal	Selected in IFS
2.	Arun Manhas	Selected in KAS
3.	Khalid Malik	Selected in KAS
4.	Ramnish Gupta	Selected in KAS

EXTRA CURRICULAR ACTIVITIES:

The extra curricular activities of the students are looked after by Incharge Deputy Director Student Welfare located at R.S.Pura under the direct supervision of DRI/Dean PGS, and he is responsible for the maintenance of hostels , co-curricular, extra curricular and allied activities including medical facilities.

NATIONAL INTEGRATION CAMP CUM YOUTH FESTIVAL:

A group of twenty students of this university participated for the first time in the above national event held from October 4 to 10, 2004 at Patnitop (District Udhampur). The team was escorted by Dr. Sudarshan Kumar, (Asstt. Prof, ARGO). The team won three first prizes and one second prize in this Youth Festival .The camp was organized by Patnitop Development Authority at Patnitop, J&K.

INTER UNIVERSITY NATIONAL DEBATE COMPETITION:

One student from faculty of agriculture of this university participated in the Inter University National Debate Competition held at Regional Institute of Cooperative Management, Chandigarh from December 29 to 31, 2004.

ORGANIZATION OF REPUBLIC DAY CELEBRATIONS:

56th Republic day was celebrated in the University Head Quarter and the national flag was hoisted by Hon'ble Vice Chancellor, Dr. Nagendra Sharma. The Vice Chancellor in his Republic Day address emphasized the need for hard work and sincere/dedicated service to make the country strong at global level. The students presented the National Anthem and joined the faculty and staff in the celebrations of the event.

NATIONAL CONFERENCE ON WORLD PEACE:

Dr. S.B. Bakshi, I/C Dy. Director Students Welfare, of this university participated in National Conference on World Peace. For spreading the message

of communal harmony, the Peace March was flagged off from the faculty of Veterinary Sciences & Animal Husbandry which after passing through the main bazaar culminated in the R.S.Pura Campus. An amount of Rs. 3,525/- (Rs. Three thousand five hundred twenty five only) was collected and remitted to the Secretary, National Federation for Communal Harmony (NFCH), New Delhi.

YOUTH FESTIVAL FOR PROMOTING NATIONAL INTEGRATION:

A contingent of four students participated in the Youth Festival organized by Youth Wing, R.E.R.F and Brahma Kumaris' Ishmariya Vishwa Vidyalaya at Chandigarh from December 24 to 30, 2004. A total of 132 participants from 27 Universities and Youth Organizations of North Zone participated in the Festival.

The folk dances, folk songs presented by the students were highly appreciated. The Kashmiri folk song was repeatedly presented in front of all the VIPs during evening camp fire programmes. A dogri poem written by Atul Sharma (student) during National Integration Camp was also liked by all the participants. Active participation in group discussion was made by the students and they won third prize in this competition. The performance of the students of this university was highly appreciated. In two items, Monoacting and self authored poem, the students excelled and won second and third prize respectively.

TRAINING CAMP- ART OF LIVING:

The students of F.V.Sc. & A.H., participated in a Training Camp of Art of Living from 22nd to 28th March , 2005 and Dr. Sudershan Kumar was the Convener. A SUFI ROCK cultural evening was also held on 28th March , 2005 and all faculty members of F.V.Sc. & A.H, R.S.Pura participated.

Students participated in Peace March held on the occasion of Youth Festival for promoting National Integration at Chandigarh.

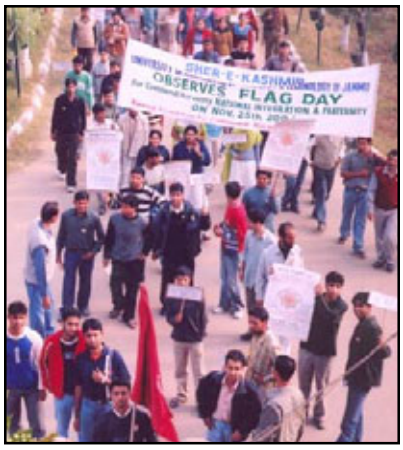
Student receiving third prize in self authored poem during Youth Festival at Chandigarh

COMMUNAL HARMONY CAMPAIGN:

The Communal Harmony Week was observed by the university from November 19-25, 2004. During the week long programme the students of the university were briefed about the importance of promotion and fostering communal harmony, national integration and fraternity especially in our state. The activities being undertaken by National Foundation for Communal Harmony (NFCH) were also elaborated.

November 25 , 2004 was observed as Communal Harmony Flag Day by pinning of flags. A massive rally of staff and students of the university in collaboration with Ministry of Youth Affairs and Sports was held. Twelve Universities from all over India participated in the event which includes: Delhi, Madras, Dr. Y.S. Parmar University of Horticulture and Forestry, Solan, University of Jammu, Maharishi Dayanand Swarswati University, Ajmer, Mohan Lal Sukhadia University, Udaipur and Meghalaya University etc. The students of this university won the first prize in State ex-position.

In Essay competition, the student won the first prize on the topic "Why Youth is called wheel of progress in every Nation"? The Volley ball team of the University won the first prize beating team of Chaudhary Charan Singh Haryana Agricultural University, Hisar by a very good margin in straight sets. The students participated in carrom, kabbadi, tug of war. Spiritual Wisdom, a programme was organized by the Prajapita Brahma Kumaris Ishwariya Vishwa Vidyalaya, World Head Quarters at Mount Abu on February 11-14, 2005 at Shantivan, Abu Road, Rajasthan, and the students of this university also participated in that spiritual programme.



Organization of Communal Harmony rally and Flag Day

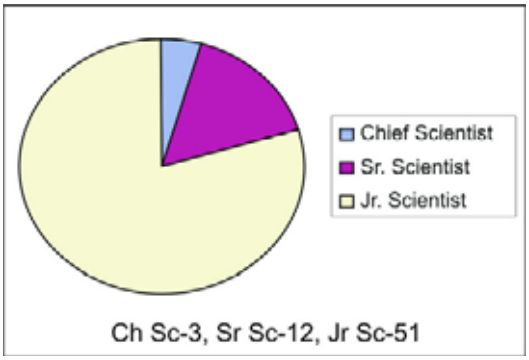
4 RESEARCH

The research is carried out both by the faculty placed under Faculty of Agriculture at Chatha/Faculty of Veterinary Sciences & Animal Husbandry, R.S. Pura and by the scientists working at different regional research station/sub station of the university, as per the programme approved in Research Council Meeting (RCM). As already pointed out, there are only 70 sanctioned positions (including Head Office and seed production farm, Chakroi) of the scientists who are exclusively engaged in research at different research stations under overall control of Directorate of Research. Out of these sanctioned positions, about 50 were filled up by 31.03.2005. Whereas, the rest remained vacant during 2004-05. The distribution of these scientists at different research stations is given under table 6:

Table 6: Scientific Strength at different Research stations/Sub stations/schemes

S.No	Research Stations & Schemes	Sanctioned	Filled	Vacant
1	RARS, Rajouri	14	12	02
2	PRSS, Samba	04	02	02
3	DLRSS, Dhiansar	07	04	03
4	RHRSS, Bhaderwah	12	10	02
5	RRSSF, Raya	04	01	03
6	MBRSS, Poonch	04	03	01
7	Water Management Research, Chatha	05	05	00
8	Cropping System Research, Chatha	04	04	00
9	All India Coordinated Wheat Improvement Project, Chatha	01	01	00
10	All India Coordinated Rice Improvement Project, Chatha	04	04	00
11	AICRP on Agrometeorology, Chatha	02	02	00
12	AICRP on Dry land Agriculture, Dhiansar	03	03	00
13	Seed Production Farm, Chakroi (R.S. Pura)	02	02	00
	Total	**66**	**53**	**13**

It is evident from the figures in the table that there is meager research staff at all the research stations except for the ones at Rajouri and Bhaderwah. Among these scientists, the cadre-wise distribution is given in the following figure:



Cadre-wise distribution of Scientists

RCM held on March 1-2, 2005

The research outputs as accrued from different faculties and research stations are reported as under:

A. FACULTY OF AGRICULTURE

AGRONOMY

- Use of biofertilizers like *Azotobacter* or *Azospirillium* coupled with FYM and 80 kg N / ha resulted into grain yield of wheat at par with 120 k g N/ ha alone.
- Inoculation of Phosphate Solublizing Bacteria (PSB) coupled with recommended dose of phosphorus mainly through Single Super Phosphate (SSP) or Rock Phosphate increased the productivity of rice –wheat cropping system besides improving the beneficial micro-organism for making the unavailable form of phosphorus form the nutrient pool of soil to the plants in available form.
- A cropping sequence involving rice (medium duration)-peas-maize (green cobs) proved profitable diversified cropping system under assured irrigation system.
- Evaluation of agro-technology under On Farm Research Programme indicated that N P&K @ 100, 50 and 25 kg/ha coupled with 5 t FYM to both rice and wheat performed better under irrigated conditions of Jammu.
- Application of Pendimethalin @ 1.00 g a.i/ha proved an effective weed control

measure in maize-pulse intercropping system with a weed control efficiency of 72 per cent over check.

- Studies on gobhi-sarson revealed that application of 60 kg N/ha and pre plant incorporation of fluchloralin @ 1 kg a.i/ha not only improved the growth and yield of gobhi-sarson but also gave higher net returns.
- PR-113 variety of rice performed better at nutrient dose of 120 kg N, 60 kg P_2O_5 and 30 kg K_2O/ha.

SOIL SCIENCE AND AGRICULTURAL CHEMISTRY

- **Residual effect of zinc application:** 20 kg $ZnSO_4$ per hectare was recommended for zinc deficient soils of rice-wheat cropping system as single application in every two years.
- **Characterization of ground/surface water in Jammu district:** Water samples from tube wells, ponds, nallas covering various parts of Jammu were analysed to assess suitability for irrigation and was found to be safe for irrigation.

OLERICULTURE AND FLORICULTURE

- In a trial on hybrid tomato, F_1 hybrid Prithavi has been identified as a top high yielding variety with yield potential of 40 tons/ha. US-620 and Lehar followed it with yield potential of 34 tons and 32 tons/ha, respectively.
- 19 varieties of green peas were evaluated during Rabi 2004-05. Top ranking varieties were Palam Priya, Arkel, Bonneville and AP-1 with green pod yield of 13.5, 11, 11 and 10.3 tons/ha, respectively.
- Two dark green fruit, single plant selections of Okra are under evaluation

BIOCHEMISTRY AND PLANT PHYSIOLOGY

- **Standardization of agro techniques for olive:** A private olive orchard at Dhramtal, Chenani has been adopted in November, 2004 for conducting the experimental trial on physiological basis of fruiting, nutritional studies and other agro-techniques for Olive. Chemical analysis of soil samples for initial status of the soil revealed that the experimental block is low in nitrogen and medium in phosphorus, potassium and boron. A fertilizer trial in a randomized block design has been laid with four levels each of nitrogen, phosphorus and potassium with 3 replications. Further research work is under progress.

- Studies on physiological parameters of growth and production in gobhi sarson (*Brassica napus L.*) ecotypes released at different intervals: Experimental field trial has been laid under RBD during rabi season 2004 at Chatha with 4 varieties of gobhi sarson viz. DGS1, GSL1, GSL2 and ISN602. Phenophase wise growth data has been recorded on the leaf appearance, leaf expansion, branch appearance, floral bud appearance etc. Also biomass has been recorded at periodic intervals of 15 days for calculation of CGR, RGR, NAR, SLW etc. and partitioning of dry matter. Simultaneously leaf samples have been preserved for biochemical analysis. Data analysis is under progress.

AGRICULTURAL ECONOMICS AND STATISTICS

- **Prospects and problems of vegetables and fruit growers of Jammu and Udhampur districts:** The compilation of the already collected data from Udhampur block is under process. The information will be consolidated on various aspects of farm size, area under different vegetables, production, marketing surplus, marketing channels and various costs incurred by the farmers etc. However, the information pertaining to another block Chenani is under collection and therefore final compilation and analysis of the data will be completed after undertaking data from both the selected blocks.

- **Economics of marketing channels and price spread of Basmati in Jammu:** The collection of primary data through personal interview with enlisted farmers in the study area has been completed. Compilation, tabulation and analytical work is in progress.

SERICULTURE

- **Bioassay of mulberry varieties by feeding to silk worm:** The objective of this experiment is to test the feeding quality of improved mulberry genotypes collected from outside sources. This study has been divided into two; evaluation of spring specific genotypes and autumn specific genotypes. In the spring specific genotypes; S54, Chinese white, TR-4, TR-8, have shown good results in the form of worm shell per cent. For autumn season genotype, Rokokayso, Gosherami, Fukushima, Enshutakasuka are producing good results on the basis of shell percentage. Confirmation of these results shall be carried out in coming rearing season before recommendations are passed on to user departments.

- **Vegetative propagation of temperate mulberry varieties under local conditions:** Temperature varieties of mulberry are shy rooters failing to

survive if raised from cuttings. Generally these varieties are propagated by root grafting. The objective of present study is to attain maximum survival by budding and grafting. 15 varieties of mulberry have been tested for propagation. On an average 55 per cent success rate has been achieved. However between two methods of propagation, 60 per cent survival was observed by budding as against 51 per cent in case of grafting. Rootstock used was TR-10. The experiment is being repeated to confirm the results.

- **Evolution of temperature tolerant silkworm races:** The objectives of this programme are to develop silkworm races and hybrids suited for a) high temperature rearing during autumn season and b) high yielding races suited for spring season. For attaining objective a) high temperature rearing during autumn season eight silk worm line have been developed having tolerance to high temperature (30 °C). Hybrids have been prepared from these lines. Two hybrids have been short listed for their tolerance to temperature as well as high yields in the form of cocoon weight ranging from 2.0 to 2.5 gm and cocoon shell weight ranging from 0.42 to 0.47 gm. Filament length of 800 m has been attained. The parameters selected for evaluation are as per the benchmarks set by silkworm race authorization committee for north India. These lines /hybrids shall be reared in autumn 2005 to confirm the results. To achieve the second objective (b), seven lines have been purified and developed with a cocoon weight ranging from 1.65 to 1.96 g, shell weight ranging from 0.365 to 0.399 and shell ratio being 19.36 to 22.25 %. Diallel crosses have been prepared and shall be checked in coming rearing season. The selected hybrids shall be reared for three seasons before applying for approval from race authorization committee.

- **Phyto-morphology and silk worm bioassay on some improved varieties of mulberry:** PG student initiated work on above mentioned topic during the fag end of year in March, 2005. Observations have been completed and data are being compiled.

AGRICULTURAL ENGINEERING

- **Performance evaluation of different sowing equipment for wheat crop:** The two year experimentation indicated the best performance of traditional seed cum fertilizer drill (38.16 q/ha) followed by zero till ferti. seed drill(35.92 q/ha), conventional method (34.93 q/ha) and Raised Bed Planter(29.22 q/ha), respectively. There is very slight difference between zero till ferti seed

drill and traditional seed drill, later being better but the zero till. Ferti. seed drill seems to be promising one since it has a saving of Rs 2000 per hectare on land preparation; the crop establishment is advanced by 10 to 15 days beside it requires less labour and ensure timelines of sowing operation in Rice-Wheat cropping system.

- **Heated air drying of locally available vegetables of Jammu region:** Moisture loss data during drying of the tomato slices (Pusa Ruby) at 45°, 55°, 65°, 75°, 85° and 95 °C were recorded and dried samples, thus obtained, were evaluated for optimization of temperature. The drying characteristics and development of thin layer drying model analysis is in process. Based on the optical density (OD) measurements an index of non-enzymatic browning and organolaptic evaluation, the best temperature for drying of tomato, brinjal and bitterguord slices were found to be 65°, 50° and 60 °C, respectively. The study will help local entrepreneurship for processing of such vegetables.

- **Training and Demonstration of Power Tillers for Mechanizing Horticultural Operations:** The power tiller VST 130 DI and KAMCO 90 ER along with the attachment like pit diggers, cultivator, M.B. Plough, bund maker, axial flow pump, potato digger, planter, trolley and boom sprayer have been procured under the project. A demonstration unit on drip irrigation at Chatha and an experiment on performance evaluation on drip irrigation on papaya crop within kandi belt have been laid at Dhiansar. For popularizing the power tiller, its attachment and pressurized irrigation system demonstrated at various places like Chatha, Udheywalla, R.S.Pura and Ballore village of Jammu district where in 254 farmers have participated. The studies conducted under DOAC project in ten villages of Kathua District have indicated that annual utilization of draught animal power ranged between 215.73 hours per pair to 659.73 hours per pair.

Table 7: Draught animal power utilization pattern in Kathua District

S.No.	Category of the farmers	DAP utilization (hr/ha)
1	Medium large (> 4 ha)	1350.00
2	Small medium (2-4 ha)	477.50
3	Small (1-2 ha)	283.26
4	Marginal (< 1 ha)	194.96

ENTOMOLOGY

- Two species of root knot nematodes, *Helicotylenchus spp*. and *Tylenchorhynchus spp*. were found infesting pulse crop in Jammu. Some biocontrol agents have also been isolated and their multiplication and identification is being carried out. Management studies against wheat aphid revealed that oxydemeton–methyl and imidacloprid 20g a.i./ha and Imidacloprid 0.6g a.i/kg seed were highly effective in reducing the population of the aphids considerably and increased the grain yield. Studies on establishment and biocontrol potential of *Zygogramma bicolorata* on congress grass showed that the beetle started diapausing from October onwards and complete cessation of activity was noticed in December. The activity was resumed in last week of March onwards and population is following inclining trend till date. The data is being recorded on the impact of beetle in term of population and reduction of vigour of plant vis a vis the plant flushes germinated during different months of the year. The studies so far showed that the beetle could suppress the Parthenium germinated during post monsoon period only. Further, the plants germinated before or after the monsoon remained unaffected due to the reason that the beetle undergoes diapause during the period. Hence, effort are required to break the diapause of beetle or to evolve the winter resistant strain of this beetle.

- Studies on insecticide resistance against *Helicoverpa armigera* showed that the pest is acquiring differential degree of resistance in Jammu region coupled with increased ratio of resistance through various generations. Novel biopesticides based up on indigenous isolates of indigenous HaNPV strains were developed and their field potential was evaluated. It was revealed that the isolate from Samba was the most virulent and its application @ 5 $x10^{12}$ PIBs alone or in combination with *Trichogramma pretiosum* was effective in suppressing the population of this pest on tomato. However in chickpea, its combined application at half the dose i.e 250 LE with 0.035 % Endosulfan was found equally effective.

AGROFORESTRY

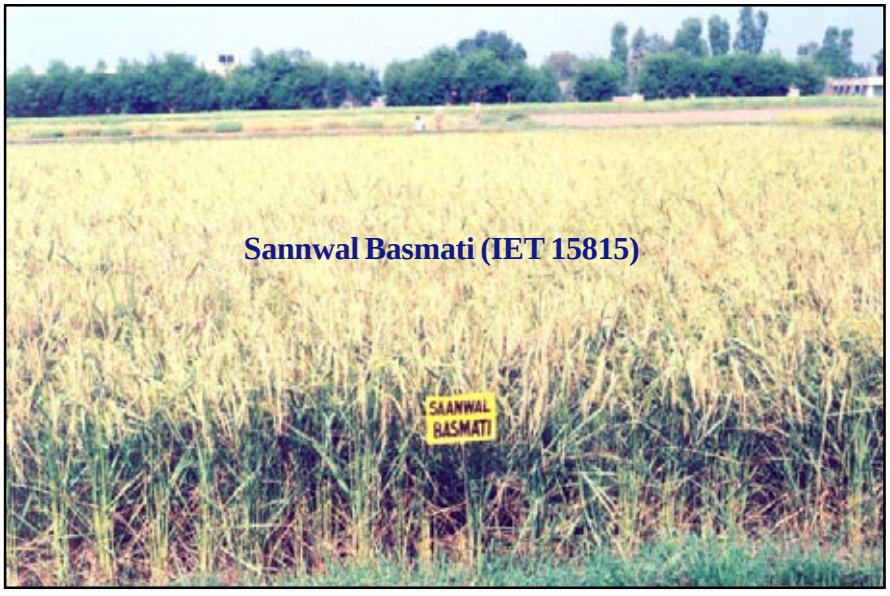
- Experiments conducted on vegetative propagation of Raj harad (*Terminalia chebula)* resulted into 82 and 68 per cent success in patch budding and cleft grafting respectively. A clonal orchard of Replicas established at FOA, Chatha. Grafted plants have also been distributed to Development Departments, NGO's and farmers.

- Identified and marked 23 candidate plus trees (CPT's) of *Jatropha curcas* in various parts of Jammu division. Seed collection from these trees as well as other sources outside the state has been undertaken for establishing progeny trials in the nursery for further field testing and screening of superior planting material.

GENETICS AND BREEDING

Following varieties of field crops were released by the division during the period under report:

- **Rice Variety-Sannwal Basmati (IET 15815):** It is a medium tall Basmati variety of *indica* group of rice developed through secondary selection in Basmati growing belt of R. S. Pura area of Jammu district. It has an average height of 140-145 cm having compact and straight panicle; slow senescence. It is moderately resistant to shattering, slightly responsive to fertilizers than Basmati 370. The variety matures in 140-145 days (seed to seed) with an advantage of earliness of about 10 days over Basmati 370.The variety has a yield advantage of 10.0 to 15.0% over Basmati 370.The variety is recommended for Basmati growing belts of Jammu & Kathua districts. The variety has quality parameters at par with Basmati 370.



Sannwal Basmati (IET 15815)

- **Gobi Sarson Variety - DGS-1:** It is a tall, early maturing and high yielding variety of gobhi sarson. It is profusely branched with intense pod bearing capacity. Its leaves are thick, smooth and sweet in taste. The plants are stout and do not lodge. It has comparatively low erucic acid (26%) and glucosinolate (20-30 μ moles/g defatted meal). It is moderately resistant to aphids and Alternaria blight. It yielded 19.0 q/ha in research and 12.0 q/ha in farmers field.

Gobi Sarson Variety - DGS- 1

- **Indian mustard Variety- RSPR 01:** It is a tall, early maturing and high yielding variety of raya. Plants are stout and do not lodge. It is moderately resistant to aphids and Alternaria blight. It has 40 per cent oil content. On an average it yielded 10 q/ha on farmer's field. It matures in 140-150 days. This variety has been tested in All India Coordinated trials and yielded (19.20 q/ha) against national check (17.3 q/ha).

Indian mustard Variety- RSPR 01

- **ToriaVariety- RSPT 01:** It takes 75 to 85 days to mature. Because of its early maturity, it fits well in Toria- Wheat rotation. It gives an average yield of 7.5 quintle per hectare. Its oil content is 40 per cent. The variety was approved for release in representative areas of Jammu, Kathua, Udhampur and Naushehra of Jammu Division of J&K State.

ToriaVariety- RSPT 1

- **Chickpea variety- Shivani (SCS-3):** Developed by Pulses Research Sub-Station, Samba, Shivani is a desi gram high yielding variety having brown, medium bold seed. It is drought resistant, moderately tolerant to pod borer and moderately resistant to wilt and root rot diseases. Under optimum management conditions, the yield potential of the variety is 20 q/ha. Protein content of the variety is in the range of 22-24 per cent.

Chickpea variety- Shivani (SCS-3)

PLANT PATHOLOGY

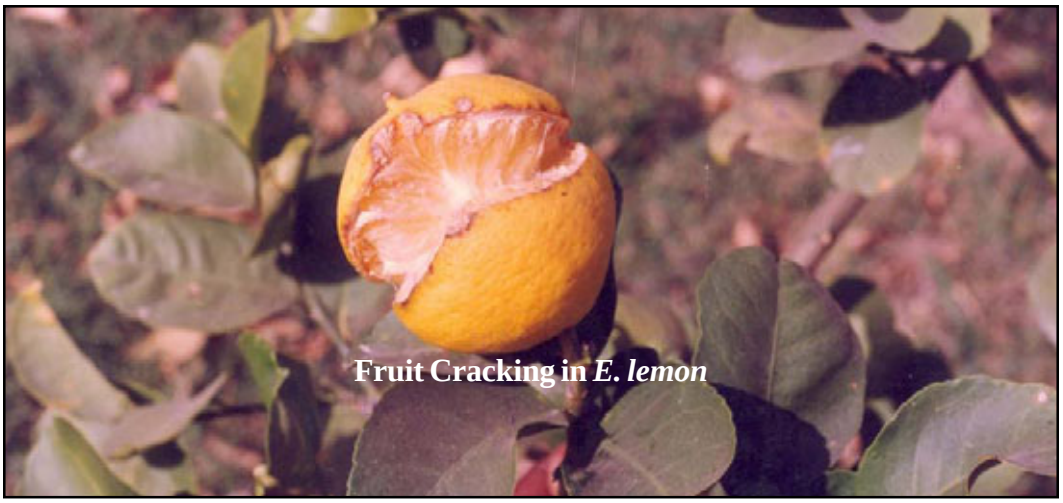
- Among various bioagents and fungicides tested in the field, the resident isolates of *Trichoderma* spp. Viz. T_{14}, T_{23}, T_{25},T_{27} and non resident *Chaetomium globosum* and *T. viride* (IARI, New Delhi) and *Pseudomonas flourescens*(Pantnagar) and fungicides viz., carbendazim, Saaf and thiophanate methyl were found most effective against cucumber wilt.
- Out of 20 genotypes of uridbean tested, SUS-1, SUS-2, SUS-3 and SUS-4 gave resistant reaction against the foliar disease.
- Several isolates of *Trichoderma viride*, *T. harzianum*, *T. virens, Chaetomium globosum*, *Aspergillus flavus, A. tereus*, *A. niger* and *Trichothecium roseum* were collected from the soils of different agro-climatic zones of Jammu Division. These isolates were evaluated individually against the major soil borne pathogens viz., *Fusarium oxysporum*, *F. solani* and *Sclerotium rolfsii* for their biological control efficacy. One isolate each from *T. viridie*, *T. harzianum* and *T. virens* exhibited superior biocontrol properties in suppressing the growth of the pathogens tested. The selected biocontrol isolates have been mass multiplied and shall be transferred to the field in the current year for field evaluation.
- During *rabi* 2004-05, 611 germplasm lines of wheat under PPSN, SAARC, TPN and Multiple Disease Screening Nursery (MDSN) has been tested against rusts, smuts, powdery mildews and foliar blights.

POMOLOGY AND POST HARVEST TECHNOLOGY

- **Introduction of sub-tropical Peach and Pear cultivars:** Under this project, seventeen cvs of pear and fifteen cvs of peach have been introduced from different parts of India and the observations on morphological and physiological characters were recorded. The cv Florda Prince, Early Grand and Shan-e-Punjab were found promising during initial stage.
- **Standardization of maturity indices in Pears:** Maturity indices of pear cv. LeCont and Pathernakh were standardized for Sub-tropical conditions of Jammu. LeCont and Pathernakh pear take 129-135 and 148-156 days respectively to mature from full bloom.
- **Runner production of strawberry and its distribution:** Runner production of strawberry cvs. is major problems for its cultivation under sub-tropical conditions due to intense heat. However the problem was overcome by using

different shade nets for runner production. The runners were distributed to farmers.

- **Effect of plant growth regulators on fruit drop in mango cv. Dashehari**: Following the trials, it is recommended that for effectively controlling the fruit drop in mango cv. Dashehari, plants should be sprayed with 30 ppm NAA at pea stage followed by repeated spray after 15 days or 20 ppm NAA spray at marble stage and followed another repeated spray after 15 days.
- **Fruit cracking in** *E. lemon*: Cracking of lemon was effectively controlled with the spray of 40 ppm NAA twice in the month of July.



Fruit Cracking in *E. lemon*

- **Jamun (***Syzgium cumini***) dehydration at low temperature under vaccum**: The product retains its colour if dehydrated under aforesaid conditions. The fruits can also be utilized for preparation of a ready to serve beverage having natural and an attractive colour. A Food Quality Control Laboratory is under establishment with the assistance of Ministry of Food Processing Industries, Govt. of India.
- **Peach was subjected to various post-harvest techniques to extend its storage life**: Refrigerated storage coupled with modified atmospheric packaging was found most suitable for its storage. The problem of chilling injury during refrigerated storage can be reduced by intermittent warming of fruit.

B. FACULTY OF VETERINARY SCIENCES & ANIMAL HUSBANDARY

VETERINARY ANATOMY AND HISTOLOGY

Gross anatomical aspects of the immune system of Kagani goat has been studied. Histomorphological works on superficial lymph nodes of Kagani goat has been conducted. Gross and histological studies on the female genital system of Kagani goat have also been conducted. In addition, gross anatomical works on the appendicular skelton of some wildlife species available in Jammu region such as Leopard, Samber deer and Barking deer has been studied

VETERINARY BIOCHEMISTRY

The Immobilization of *R. oryzae* in agar, agarose and polyacrylamide was subjected to varying temperature conditions from 200 to 400 °C under static conditions. The maximum enzyme yield was obtained at 300 °C in agar blocks followed by polyacrylamide blocks and agarose beads. Furthermore, the enzyme recovery from agar immobilized *R. oryzae* was maximum when wheat bran was used as support media during immobilization. The agar blocks with wheat bran under specified conditions (100mM, pH 6.5 phosphate buffer and 30 °C) was successfully reused for four times. However under immobilized conditions the enzyme activity was low compared to free mycelium.

VETERINARY PHARMACOLOGY AND TOXICOLOGY

Toxicological and biochemical studies of organophosphorus insecticides in sheep and goats were undertaken with a view to determine the pattern of toxic symptoms and establish biomarkers which will help in diagnosis of such toxicosis and also evolve a suitable antidotal treatment for such intoxications.

The acute toxicity studies of triazophos and dicholorvos have been conducted in Bakerwali goats. Both insecticides were shown to induce marked toxic symptoms & biochemical alterations thereby indicating that their margin of safety is low for this species.

The results indicate that these insecticides should not be exceeded than the recommended doses lest these induce toxic symptoms and biochemical alterations in the goats. The erythrocyte cholinesterase is a good bio-maker in predicting the exposure to these insecticides in this species.

Studies on Pharmacokinetics of antibacterial drugs were also under taken in goats. The disposition kinetics of cephalosporins (Cefuroxime & Ceftriaxone), in goats were studied using microbiological assay methods for assaying these antibacterial drugs in the blood of goats. Based on the drug levels in the blood at

different time intervals various pharmacokinetic parameters were determined. Such studies help in evolving an exact dosage regimen that needs to be administered in animals to combat infections amenable to these antibacterial drugs.

VETERINARY PARASITOLOGY

The species wise finding of survey of helminth parasites affecting livestock in Jammu region are as under:

Bovines: 925 faecal samples collected from bovines in R.S.Pura, Bishnah and Samba tehsils of Jammu district and Bilawar tehsil of Kathua district revealed 62.38 per cent prevalence of the parasite. Amphistomes (25.12%) were predominant, followed by the strongyles (9.78%). Presence of Fasciola, Strongyloides, Ascaris, Trichuris, Moniezia spp. was 5.15, 6.23, 8.01, 0.88 and 0.62, per cent respectively. Mixed infection with one or more helminthic ova was also detected in 8.27 per cent bovines. Helminthic infection was recorded throughout the year with seasonal variation i.e. highest during rainy (69.75 %) followed by winter (58.87%) and Summer (55.13 %), respectively.

Sheep and Goat: 822 faecal samples collected from sheep and goats from R.S.Pura, Bishnah and Samba tehsils of Jammu district and Bilawar tehsil of Kathua district revealed 77.49 per cent infection of gastrointestinal parasites. Strongyles (47.13%) were predominant followed by Eimeria (8.23%), Amphistomes (6.07%), Trichuris (4.08%), Strongyloides (3.27%), Fasciola (2.98%), Dicrocoelium (2.83%) and Moniezia (0.83%) spp. Mixed infection with one or more gastrointestinal ova was also detected in 14.51 per cent animals only. Gastroin-testinal parasitic infection was recorded throughout the year with seasonal variation i.e. highest during rainy; July-October (84.12%) followed by summer; March-June (80.03%) and winter November-February (72.21%), respectively.

Equines: Prevalence studies of helminths in equines of Jammu region (Horses-265 and Mules-162) based on faecal examination revealed 77.75 per cent infection. The samples were found positive for parasitic ova viz. Strongyles (66.04%), Strongyloides (16.39%), Ascarids (4.68%), Oxyurids (7.72%), Amphistomes (3.74%) and mixed infection was 20.84 per cent. However, faecal examination of equines of Katra region (81.72%) revealed higher infection rate as compared to R.S. Pura region (60.34%) of Jammu. The over all prevalence of infection was 82.14 per cent in Summer (June, July & August), 68.08 per cent in Autumn (Sept., Oct. & Nov.), 77.77 per cent in Winter (Dec., Jan. & Feb.) and 75.22 per cent in spring (March, April & May)

One village, namely Chak Siyan (R.S.Pura Tehsil) with 57 number of families having total livestock 170 was adopted for complete deworming of parasites. First deworming of all the animals was done on 29th April 2004.

VETERINARY PUBLIC HEALTH AND HYGIENE

- Testing of milk and indigenous milk products for hygienic quality.
- Studies on myiasis in sheep and goats.
- Studies on hydatidiosis in meat animals.
- Studies on mastitic milk.
- Screening for brucellosis and tuberculosis.
- Running an extension campaign regarding Zoonoses and their control using novel strategy of reaching the unreached through school children and farmers in rural areas.

ANIMAL NUTRITION

Fifteen tree leaves such as *Acacia nilotica* (Kikar), *Albizia lebbeck* (Sirin), *Olea species* (Olive), *Berberis species* (Kimalh), *Celtis australis* (Khirk), *Cordia dichotoma* (Lasura), *Dalbergia sisso* (Shisham), *Grewia optiva* (Dhaman), *Leucaena leucocephala* (Subabool), *Mangifera indica* (Mango leaves), *Melia azedarach* (Drenk), *Morus alba* (Toot/Shtoot), *Prunus species* (Apricot), *Quercus dilatata* (Moru) and *Zizyphus jujuba* (Ber) were analysed for proximate and fibre constituents, nitrogen solubility, fibre bound nitrogen and nitrogen fractions. There was variation in proximate and fibre composition. The crude protein (CP) content was maximum in *L. leucocephala* (24.52%) and minimum in *M. alba* (8.60%) whereas ether extract (EE) content was highest in *M. alba* (9.31%) and minimum in *A. nilotica* (1.73%). The neutral detergent fibre content varied from 13.15 per cent in *M. azedarach* to 53.08 per cent in *Olea species*, whereas acid detergent fibre varied from 10.08 per cent in *M. azedarach* to 55.49 per cent in *C. dichotoma*.

The total nitrogen (N) solubility in borate phosphate buffer varied from 11.20 per cent in *C. dichotoma* to 63.00 per cent in *Dalbergia sisso*. It appears that protein from *Dalbergia sisso*, *M. azedarach*, *G. optiva* and *L. leucocephala* would be degraded quickly in the rumen because of their high N solubility and that from *Quercus species*, *A. nilotica*, *Olea species* and *C. dichotoma* would be degraded slowly. The neutral detergent insoluble nitrogen content was maximum in Olea leaves (56.63%) and minimum in *M. azedarach* leaves (3.00%). The nitrogen fraction A

having instantaneous and complete rumen degradability ranged from 8.40 per cent in *C. dichotoma* to 50.40 per cent in *Dalbergia sisso*, whereas nitrogen fraction B1 having high ruminal degradability varied from 2.30 per cent in *C. dichotoma* to 18.20 per cent in *M. azedarach*. The protein fraction B2 having low ruminal degradability but complete digestibility in intestine was highest in *A. lebbeck* (64.88%) and lowest in *Dalbergia sisso* (19.83%), whereas, nitrogen fraction B3 having lowest ruminal degradability was maximum in 22.83 per cent in *G. optiva* and minimum in *M. azedarach* (0.90%). The nitrogen fraction C which is unavailable to the ruminant animal varied from 2.10 per cent in *M. azedarach* to 53.06 per cent in *Olea species*. On the basis of present studies it appears that *A. lebeck*, *Berberis species*, *Dalbergia sisso*, *L. leucocephala*, *M. alba*, *M. azedarach* and *Z. jujuba* are good fodders for ruminants.

ANIMAL GENETICS AND BREEDING

About one hundred forty Bakarwali goats were measured/recorded for growth/ morphometry.

LIVESTOCK PRODUCT TECHNOLOGY

Effect of various thickeners viz rice flour, maida, arhar *dal* and corn flour on quality of shank-whey soup at 0 (control), 1, 2 and 3 per cent w/v of soup were tested. The increase in the level of thickeners increased the pH of the soup (5.20 to 5.65) and consequently decreased the titratable acidity of shank-whey soup (0.18 to 0.14). The increase in level of thickeners also linearly increased the overall nutritive value in terms of total solids content (6.36 to 11.76 %), crude protein content (2.50 to 2.70%) content except ether extract (0.60 to 0.5%) and lactose content (2.35 to 2.10%). However, not much difference in terms of ash content. In general, incorporating thickeners @ 1 to 2 per cent level improved overall sensory attributes of the products viz. colour and appearance (7 to 7.25%), flavour (7 to 7.25) and overall palatability (7 to 7.25%) of the products. Incorporation above 2 per cent level decreased the scores for above sensory attributes of the product (7.25 to 6.5%). The increase in level of thickeners linearly increased the consistency of the product and consequently decreased the meat flavour intensity. From this experiment, it is concluded that thickeners can be utilized in making nutritive soup. The maximum level of incorporation should not exceed two per cent level to get better improvement in terms of sensory attributes of the product.

ANIMAL REPRODUCTION, GYNAECOLOGY AND OBSTETRICS

Uterine samples of cattle from unorganized farms, suffering from endometritis were collected and culture sensitivity tests were carried out in collaboration with Division of Veterinary Microbiology and Division of Veterinary Public Health. The gynoecia-clinical (per rectal palpation and visual inspections of external genitalia) criteria adopted by the research staff for categorizing the conditions were as follows:

1) Anoestrus
2) Cystic Ovaries
3) Endometritis
4) An ovulation

A total of 165 cattle from unorganized farms and cases in Veterinary Clinic and Teaching Hospital at R.S. Pura were studied during the period from May, 2004 to December, 2004. Out of 165 cases, 85 (51.52 %) were of endometritis, 42 (25.45 %) were of anoestrus, 24 (14.55 %) were of an ovulation and 14 (8.48 %) were of cystic ovarian degeneration.

In 85 cases of endometritis, different antibiotic treatments viz. Gentamycin, Tetracycline, Ciprofloxacin, Enrofloxacin and indigenous drugs were tried and Enrofloxacin was found to be most effective. In anoestrus cows, Receptal (GnRH) was more effective than indigenous drugs. In an ovulation, GnRH was found to be more effective than hCG and Placentrex. In cystic ovarian degeneration cases also, GnRH was found to be more effective than hCG.

A total of 35 isolates were collected. *E.coli* was found highest in percentage i.e 15 of 35(42.85%). These isolates were subjected to *in-vitro* antimicrobial sensitivity test by standard disc diffusion method. The result of the antimicrobial sensitivity test revealed maximum sensitivity to Enrofloxacin (80 %) followed by Gentamycin (70 %) and Ciprofloxacin (60 %).

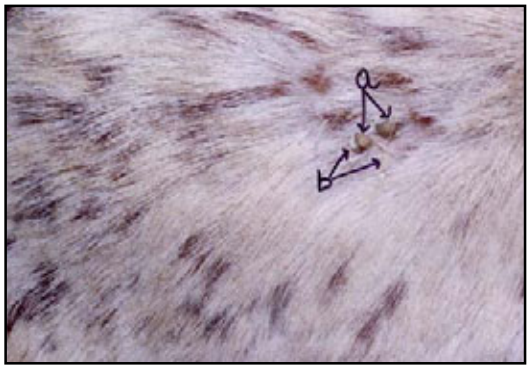
VETERINARY SURGERY AND RADIOLOGY

Results of the three groups of anaesthetic experiments (Gr.I-Propofol alone, Gr.II-Xylazine + Propofol and Gr.III- Xylazine + Ketamine) already conducted in 18 goats and 12 buffalo calves indicate that induction and recovery was rapid in propofol groups of animals. *Transient apnoea* for 30-50 seconds soon after Propofol

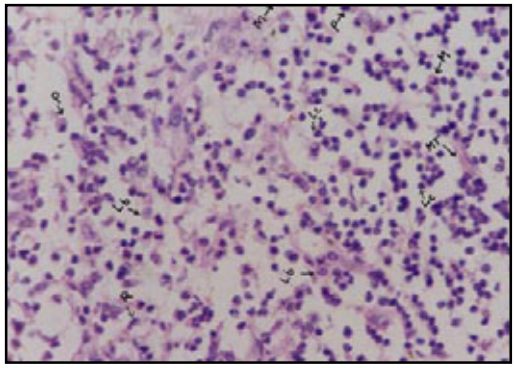
injection was noticed. A decrease in RT., RR.; TEC and Hb and an increase in HR, TLC, Serum ALT, AST, BUN, Creatinine and Glucose were found in all the groups.

VETERINARY CLINICAL MEDICINE AND JURISPRUDENCE

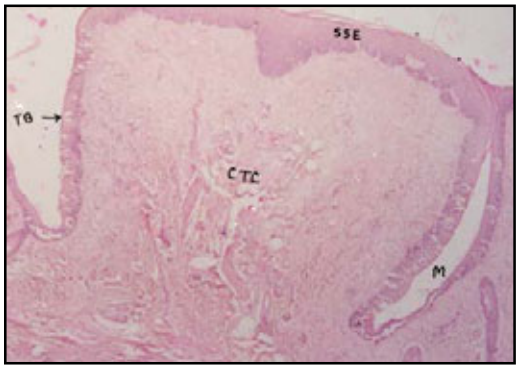
Metabolic profile study was carried out in pregnant animals wherein sub clinical deficiency of Ca, P, and mild anaemia was reported. Antimicrobial sensitivity test in Mastitis revealed that enrofloxacin was highly effective followed by trimethoprim, tetracycline, chloramphenicol, streptomycin, oxtetracycline, gentamicin, clindamycin, cloxacillin, erythromycin, amoxicillin, novobiocin and sulphamethizole. A baseline survey was conducted in J&K and Udhumpur districts was carried out there anaemia, hypoalbunemia and hypoglycaemia was reported.



***Hypoderma crossi* Larvae (a) in goats surrounded with pyogenic material (b)**



No.1. Photomicrograph showing different cell populations in the lymph node of adult Bakarwali goat as Plasma cell (P) Macrophase (M), Lymphocyte (Lc), Lymphoblast (Lb), Reticular cell (R) and Medullary traveculae (MT).



No.2. Photomicrograph of the Tongue of a Himalayan Black bear showing Stratified squamous epithelium (SSE), Connective tissue core (CTC), Moat (M) and Taste bud (TB).

Goat warble fly infestation, caused by fly *Hypoderma crossi* was studied in four tehsils of Jammu district over a three year period between January 2002 and December 2004. The clinico parasitological examination of 1294 goats revealed 26.42 per cent warble infestation. The prevalence was 40.08 per cent in Samba tehsil, whereas no animal was found positive for warble infestation at Ranbir Singh Pura, Jammu and Bishnah tehsils of Jammu district as the climatic conditions are not favorable for larval development of fly. Warbles were found in goats from late September to early March. Clear seasonal variation were observed in prevalence and intensity, with the highest warbles on back of goat in winter (80.45%) followed by autumn (65.43%) and spring (1.90%) whereas no infestation in summer and rainy season.

VETERINARY EPIDEMIOLOGY AND PREVENTIVE MEDICINE

- Screening of livestock for Hormoprotozoan diseases.
- First report of Hog cholera from Jammu.
- Screening of poultry for salimonellosis.

VETERINARY AND ANIMAL HUSBANDRY EXTENSION

Study of Ethnoveterinary practices of Jammu: The preliminary studies on existing ethno veterinary practices of Jammu region were completed. It was found that a wide variety of substances are frequently used in treatment of various common conditions. The conditions like diarrhoea, indigestion, bloat, FMD, HS, mastitis, pneumonia, skin affections, retained placenta, plant poisonings, etc. are treated using a variety substances like camphor, cedar wood oil,jaggery, lajbati leaves *(Mimosa pudica),* rice gruel, asoeftida, patrees, safed musli,chirate leaves, etc.

Backyard Poultry Farming in Jammu Region- Present status and future strategies: In this project an attitude scale using Likert's method of summated rating was constructed. The scale contained 15 items in all and the reliability coefficient using Rulon's formula was found out to be 0.92, indicating fairly high reliability.

Further studies in the project are directed towards identifying the existing Backyard units in the study area and studying their profiles.

Extension Activities:

1. The division is actively engaged in running an extension campaign on milk and meat born zoonoses. In the campaign high risk groups are identified and targeted for increasing awareness. A novel strategy for targeting school children is also being tried in this campaign. An effort has been made to cover both consumers and producers regarding hygienic practices.

2. Training programmes organization: Active support has been rendered in different capacities in the training programmes organized in F.V.Sc & A.H. For the past one year, all the organizational aspects like planning, execution, monitoring, coordination, evaluation, etc. are being dealt for the training programmes organized in the faculty.

3. The division has organized two training programmes for field veterinarians of Animal and Sheep Husbandry Department, Jammu.

VETERINARY CLINICS AND TEACHING HOSPITAL

Under the project on management of long bone fractures in large animals, metacarpal and metatarsal fractures in equine and metatarsal metacarpal and tibial fractures in bovine were managed. The fractures fixation technique used was on the merit in each case. Tibial fracture in bovine were managed by transfixation and hanging pin caste techniques whereas meta carpal / metatarsal fractures were managed with U or V splints incorporated POP casts. Future work on use of intramedullary devices for repair of long bone fractures in large animals is in progress. Under the project titled" Comparative efficacy of autogenous synovial, Diclofenac sodium, Triamcinolone and ultrasound therapy in aseptic arthritis in animals", the results obtained from the pilot trials were applied in clinical cases of arthritis in equine brought to the veterinary clinic, involving the hock joint, knee joint and fetlock joint. The animals showed varying degree of lameness. The synovial fluid collected from these joint showed an increase in volume, presence of RBCS, the specimens were dark yellow and turbid and contained large number of leucocytes and/or cell and cartilage debris. Resolution of inflammatory changes in the joint and synovial fluid and improvement in the gait of the animals was much better in the group of animals in which Triamcinolone was given intra-particularly on two occasions at two weeks internal than those in which Diclofenac sodium was used weekly on two occasions. The work is in progress.

Students busy in Teaching Hospital Course Practicals

C. RESEARCH STATIONS/SUB-STATIONS

REGIONAL HORTICULTURE RESEARCH SUB-STATION, BHADERWAH

A survey was conducted in the existing Olive orchards of Doda and Udhampur to ascertain causes of crop failure and low productivity of these orchards. The survey revealed that major causes of low productivity are the neglected state of these orchards. A manual on "Olive Production Technology" has been prepared for the use of growers and field functionaries.

In order to check the fruit drop in walnut, an application of Endosulfan @ (0.02%) at panicle emergence and repeated application at fortnight interval, followed by two sprays of NAA (20 ppm) at 8 and 6 weeks prior to expect harvest

recorded 19 per cent fruit drop and 22.22 kg yield per tree as compared to 40.25 per cent fruit drop and 15.36 Kg yield per tree recorded in untreated trees. Three grafting techniques viz. tongue, cleft and whip and three budding methods; patch, chip and annular were tried in February-March and June-July respectively during 2004 on walnut rootstocks. The highest bud take (32%) was achieved in patch budding followed by chip budding (28%).

A field trial for the evaluation of different fungicides against corn rot of saffron revealed that carbendazim and carboxin (steeping before planting + drenching) were effective in checking the corm rot.

Thirty three locations in and around Bhaderwah, Chinta valley, Malathi and adjoining areas were surveyed for estimation of mosaic disease incidence in Rajmash and found that the disease incidence varied from 22 to 45 per cent.

REGIONAL AGRICULTURAL RESEARCH STATION, RAJOURI

Thirty three genotypes of oats were tested under single cut programme for forage yield at 50 per cent flowering stage. Genotype OS-315 gave highest green fodder yield of 320.5 q/ha. Genotypes next in order were OS-296 and Black Nip with green fodder yield of 312.5 q/ha and 304.5 q/ha, respectively. Whereas in respect of dry matter yield, genotype JH-99-2 ranked first with 50.4 q/ha.

Under multicut schedule, genotype OS-295 produced highest green fodder yield of 387.4 q/ha in all the four cuts, followed by genotypes OS-315 and OS-297 with green fodder yield of 383.66 q/ha and 377.5 q/ha, respectively. Whereas, in respect of dry matter yield, genotypes OS-295 and OS-315 also gave maximum dry mater yield of 62.4 q/ha and 59.9 q/ha respectively. In respect of grain yield, entry OS-6 resulted into maximum grain yield of 42.3 q/ha followed by entries S-3021 and HJ-8, with yield potential of 38.0 q/ha and 34.9 q/ha, respectively, whereas in respect of Dry Matter yield entry JH-851 stood first in rank with yield potential of 209.9 q/ha followed by entries JH-8 and JHO-2000-4 with dry matter yield potential of 136.5 q/ha and 130 q/ha, respectively.

Twenty entries of Sorghum were tested under single cut system and data recorded at 50% flowering stage for Green Fodder Yield (GFY) potential. Out of these entries, entry IS-3225 gave the highest green fodder yield of 352.4 q/ha followed by entry G-84 and IS-3237 with GFY potential of 325.37 q/ha and 320.55 q/ ha, respectively.

In the intermediate zone of Rajouri and Poonch, the major diseases recorded in maize were stalk rot complex (20.8%), foliar blight complex (50.7%), brown spot (26.4%), downy mildew (19.44%), common smut (18.3%), rust (2.6%), banded leaf and sheath blight (25.5%). Whereas, in the temperate areas of Poonch stalk rot complex (16.5%), foliar blight complex (45%), brown spot (20.5%), downy mildew (12.5%), common smut (25%), rust (5.2%), banded leaf and sheath blight (10.7%). Out of several genotypes tested local L-4 was found resistant against stalk rot complex, local C-2, KH-2001 and KH-517 resistant against banded leaf and sheath blight and KH-612, KH-517 and local C-5 resistant against downy mildew.

MAIZE BREEDING RESEARCH SUB-STATION, POONCH

One hundred ten Cytoplasmic Male Lines (CML–CIMMYT), maize lines released inbreds) and seven indigenous inbreds were evaluated in Kharif-2002 and 2003 for screening best inbred on *per se* performance, and ten best inbreds were selected in both white and yellow seed colour to develop diallel single cross maize hybrids during Kharif-2004. Similarly, 40 white seeded and 30 yellow seeded maize inbred lines of medium maturity group were tested for the development of diallel single cross maize hybrids in Kharif-2004.

Two single cut varietal trial on oat with 12 entries and advance varietal trial on oat with 6 entries were conducted. The entry IVOS-7 ranked first for both green fodder yield and seed yield with 107 and 34 q/ha respectively in initial evaluation trial, while in case of advance varietal trial, AOS-1-4 ranked first for greed fodder yield (130 q/ha) and AOS-1-2 for seed yield (31 q/ha).

One hundred five samples of local Rajmash germplasm were collected from Loran, Sabzian and Mandi locations of Poonch Distt. On the basis of survival/ growth data, it was concluded that exotic and local germplasm of Rajmash cannot be maintained in Rainfed condition.

DRY LAND RESEARCH SUB-STATION, DHIANSAR

During survey of Mukundpura, Thakurpura and Lodwal (Distt. Kathua) conducted in monsoon months of (July-Sept.) 2004-05, the papaya *(Carica papaya)* plantation as well as the nursery was found infected by stem/foot rot disease. The disease incidence was 10-20 per cent in nurseries and 5-8 per cent in orchard plantation. From infected plant samples, Pythium and Fusarium species were isolated as the causal organisms.

Helmonthosposium Leaf spot emerged as main maize disease under dry

land condition during all the three seasons of investigation (2002, 2003 and 2004). Out of 57 genotypes evaluated under natural conditions, none was found immune. Three genotypes viz., FH 3077, Harsa Composite and JAUM 7(local) were resistant, ten moderately resistant, nineteen moderately susceptible, eleven susceptible, and the remaining were found highly susceptible. Seed treatment with Carbendazim (1g/kg seed) + *Rhizobium* sp (30 g/kg seed) significantly reduced the disease incidence by 69.36 per cent.

From five years combined data on fertilizer trials, the recommended dose of NPK (60:40:20) coupled with 20 Kg $ZnSo_4$/ha recorded highest grain yield of maize with an average of 27.11 q/ha as compared with other treatments. The treatment, 100 per cent recommended dose of NPK followed closely with an average grain yield of 25.80 q/ha. The per cent increase in grain yield of maize due to different treatments over control ranged from 21.43 to 103.83 per cent.

In Legume system (Black gram), inconsistent effect of different treatments in influencing the maize equivalent yield was observed. In Kharif 2000, treatment with 100 per cent recommended N through inorganic fertilizer, in Kharif 2001, treatment with 15KgN through green leaf + 10Kg N through inorganic fertilizer, in Kharif 2002 and Kharif 2003, treatment with 15 Kg N through green leaf +20Kg N through inorganic fertilizer recorded the highest maize equivalent yield of 24.68, 17.23, 21.27 and 15.92 q/ha respectively. In Kharif 2004, treatment with 15 Kg N through green leaf + 20Kg N through inorganic fertilizer recorded the highest maize equivalent yield of experimentation with an average maize equivalent yield of 9.99 q/ha. The per cent increase in yield over control ranged from 34.33 to 66.86 per cent.

In Cereal + Legume system (Maize + Blackgram), 100 per cent N through inorganic fertilizer) recorded the highest average maize equivalent yield of 23.22 q/ha followed by the treatment with 15 Kg N through green leaf+ 20Kg N through inorganic fertilizer with an average maize equivalent yield of 21.08 q/ha. The lowest grain yield was recorded in control with an average maize equivalent yield of 11.59 q/ha. The increase in grain yield ranged from 32.09 to 100.34 per cent over control with different treatments.

The highest mustard equivalent yield of 11.95 q/ha was recorded with the application of 10 tons of FYM/ha in maize during the preceding Kharif season, followed by recommended NPK (60:40:20 Kg/ha)+$ZnSo_4$ @ 20Kg/ha (11.48 q/ha) and 50 per cent recommended NPK +50 per cent N through FYM (11.32 q/ha with the application of 10t FYM/ha followed by 50 per cent recommended NPK + 50 N per cent through FYM (13.79 q/ha).

The average of four years data of maize crop revealed the highest grain yield of 20.13 q/ha under conventional tillage + interculture followed by 50 per cent conventional tillage + weedicide + interculture with a grain yield of 19.02 q/ha. With regard to nitrogen application, the highest average yield of 20.99 q/ha was recorded with 100 per cent nitrogen through inorganic fertilizer followed by 50 per cent nitrogen through organic manure + 50 per cent nitrogen through organic fertilizer. The lowest grain yield of 18.97 q/ha was recorded when 100 per cent nitrogen applied through organic manure.

Under dry land condition,the highest grain yield of 22.68 q/ha of maize crop was obtained with the treatment- recommended fertilizer+ life saving irrigation and it was statistically at par with treatment with recommended fertilizer + mulching & recommended fertilizer with grain yield of 20.90 & 19.28 q/ha, respectively. The lowest yield was recorded in control plot with grain yield of 13.34 q/ha.

Four years data revealed that the highest average maize grain yield of 25.11 q/ha was obtained with the application of 10t FYM + 40Kg N/ha and it was followed by 10t FYM+ 30Kg N/ha. The control plot gave grain yield of 14.62 q/ha. There was increase of 29.90 to 71.75 per cent due to different treatments over control.

Report of Farmers' Field Day on Oilseeds at village Khara Madana, Distt. Jammu

A farmer's field day was held at village Khara Madana on 30th March, 2005 by DLRSS, Dhiansar, SKUAST -Jammu. The day was celebrated in view of demonstrating successfully laid out 50 Front Line demonstrations of one acre

Frontline demonstration at farmer's field on Gobhi Sarson

Releasing of pamphlet on recommendations for cultivation of gobhi sarson by Hon'ble Vice Chancellor at Farmers' Field Day

each on oilseed (**Gobhi sarson**) during rabi 2004-05 which highlighted use of improved seeds and balanced use of fertilizers in dry land areas of Jammu.

PULSES RESEARCH SUB-STATION, SAMBA

During first year of experimentation, it was observed that out of the various factors, inclusion of improved variety helped to increase the yield by 56.5 and 24.5 per cent in uridbean and moongbean, respectively, whereas, increases recorded due to fertilizers, weed control and plant protection were 9.3, 6.5 and 6.0 per cent in case of uridbean and corresponding figures for moongbean were 6.2, 4.1 and 3.9 per cent.

WATER MANAGEMENT RESEARCH CENTRE, CHATHA

Wheat (PBW-343) following groundnut, received only two irrigations of 6 cm each at Crown Root Initiation (CRI) stage at 114 Days After Sowing (DAS) produced mean grain yield of 2900 kg/ha in 138 days, while mustard (RSP-03) that followed groundnut received two irrigations, one each at pre-sowing & branching stages produced mean oilseed yield of 669 kg/ha in 133 days.

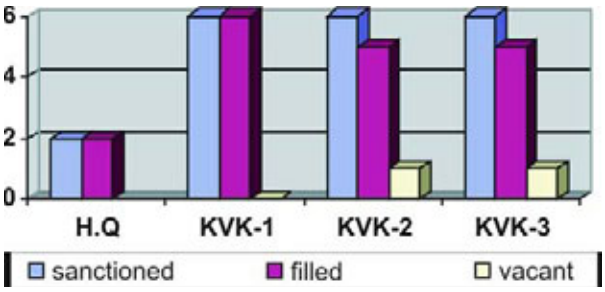
Radish crop (Mino Early Long), following groundnut also received two irrigations (at pre-sowing and at 54 DAS) produced mean root yield of 9033 kg/ ha in about 75 days. Soon after radish, a third crop of Rajmash (*Phaseolus vulgare*, cv. VL-63) was taken, which received five irrigations and produced mean bean yield of 860 to 1030 kg/ ha in 98 to 104 days.

Groundnut (cv ICGS-76) sown in summer months of April & May received 6 to 9 irrigations (6 cm depth) in addition to incident rainfall of 643/694 mm, but produced very poor pod yield of 286 to 432 kg/ha in 150 to 182 days.

5 EXTENSION EDUCATION

For the effective dissemination of technical information and technologies developed by the scientists to farmers and entrepreneurs, SKUAST-J has Directorate of Extension Education (DEE). The Directorate of Extension Education disseminates the technologies, recommendations and technical information material developed through the rigorous and scientific research available with Directorate of Research and various divisions of Faculty of Agriculture & Faculty of Veterinary Sciences & A.H. Some of the major activities pursued by Directorate of Extension Education are as under:

The activities of extension education (exclusively) primarily being carried out by faculty members appointed under three Krishi Vigyan Kendra (KVK). The total manpower with directorate of extension education is given in figure:



(KVK,1,2,3 denote the ones at RS Pura, Rajouri and at Bhadarwah)
Sanctioned/filled faculty strength under directorate of extension education

TECHNOLOGY ASSESSMENT, REFINEMENT AND DISSEMINATION

The Krishi Vigyan Kendras established by the university have been associated with the transfer of technologies in the various areas of Agriculture and allied sectors to cover the diverse agro ecological farming situations and have area specific technologies, the KVKs initiated activities in districts of Jammu, Rajouri and Doda. The major activities carried out by KVKs are on-farm trials, field visits of farmers, vocational trainings to unemployed rural youths/school drop outs, farm women and orientation of extension personnel from the Department of Agriculture and allied line departments.

OBJECTIVES AND BRIEF ACCOMPLISHMENTS OF KVK:

Krishi Vigyan Kendra is an integral part of Directorate of Extension Education and an innovative versatile institution sponsored by ICAR with focus on three main mandates: Farm Advisory Service, Demonstrations; Vocational trainings for farmers, farm women, rural youths and school drop-outs; Operational Research/ On-Farm trials. Three KVKs' one each in the district of Jammu, Doda and Rajouri are in operation. The brief accomplish-ments of each KVK are given hereunder:

1. KVK, R.S. PURA, JAMMU

ON-CAMPUS/OFF-CAMPUS& SPONSORED TRAINING

Areas of Practicing Farmers/Farm women	No. of Courses	Participants(No)						Grand total
		General			SC/ST			
		M	F	Total	M	F	Total	
Agril. Ext.	6	121	2	123	41	-	41	164
LPM	1	4	-	4	4	5	9	13
Crop production	4	88	7	95	12	-	12	107
Home science	3	4	33	37	-	21	21	58
Horticulture	2	45	-	45	21	-	21	66
Plant Protection	9	140	7	147	45	-	45	192
Total	24	402	49	451	123	26	149	600

RURAL YOUTHS (ON CAMPUS COURSES)

Areas	No. of Courses	Participants(No)						Grand Total
		General			SC/ST			
		M	F	Total	M	F	Total	
Apiculture	1	15	-	15	2	-	2	17
Home science	4	-	70	70	-	39	39	109
Mushroom	1	7	-	7	2	-	2	9
Total	6	22	70	92	4	39	43	135

EXTENSION FUNCTIONARIES (ON CAMPUS COURSES)

Areas	No. of Courses	Participants (No)						Grand Total
		General			SC/ST			
		M	F	Total	M	F	Total	
Agriculture Ext.	1	20	1	21	-	-	-	21
Plant Protection	1	15	-	15	-	-	-	15
Total	2	35	1	36	-	-	-	36

SPONSORED TRAINING

Training	Month	Duration (Days)	Participants(No)						Grand Total	Sponsoring Agency
			General			SC/ST				
			M	F	Total	M	F	Total		
Credit Linked Scheme of Rural Youth	March	3	28	-	28	1	-	1	29	Directorate of Marketing and Inspection, Jammu

EDUCATIONAL TOUR FOR FARMERS

Century Krishi Vigyan Mela prosperity through seed at IARI New Delhi

Month	Duration (Days)	Participants(No)						Grand Total	Sponsoring Agency
		General			SC/ST				
		M	F	Total	M	F	Total		
February	3	20	–	20	–	–	–	20	NABARD Jammu

EXTENSION ACTIVITIES UNDERTAKEN

Activities	No.	Participants(No)						Total
		General		SC/ST		Extn. Functionaries		
		M	F	M	F	M	F	
Kisan Gosthi	1	15	–	2	–	–	–	17
Vety. Clinic Camp	1	14	–	10	–	1	–	25

2. KVK, RAJOURI

The details of On-campus / Off-campus & sponsored training are given hereunder:

OFF-CAMPUS

Areas of Practicing Farmers/Farm women	No. of Courses	Participants (No)						Grand Total
		General			SC/ST			
		M	F	Total	M	F	Total	
Agril.Ext.	8	190	4	194	-	-	-	194
Agril. Engg.	2	55	5	60	-	-	-	60
Agro forestry	8	172	12	184	-	-	-	184
LPM	12	300	-	300	-	-	-	300
Crop production	5	111	9	120	-	-	-	120
Home Science	8	-	158	158	-	-	-	158
Horticulture	1	14	2	16	-	-	-	16
Total	44	837	190	1032	-	-	-	1032

ON-CAMPUS

Areas of Practicing Farmers/Farm women	No. of Courses	Participants(No)						Grand Total
		General			SC/ST			
		M	F	Total	M	F	Total	
Agro forestry	2	42	-	42	-	-	-	42
LPM	1	30	-	30	-	-	-	30
Home Science	2	-	28	28	-	-	-	28
Total	5	72	28	100	-	-	-	100

RURAL YOUTHS

Area	No. of Courses	Participants (No)						Grand Total
		General			SC/ST			
		M	F	Total	M	F	Total	
Home Science	1	-	10	10	-	-	-	10
Total	1	-	10	10	-	-	-	10

3. KVK, BHADERWAH

The details of On-campus / Off-campus & sponsored training are given hereunder:-

ON-CAMPUS

Area	No. of Courses	Participants (No)						Grand Total
		General			SC/ST			
		M	F	Total	M	F	Total	
PracticingFarmers/Farm women								
Agril.Extn.	5	35	9	44	17	4	21	65
LPM	5	39	-	39	12	-	12	51
Crop Production	8	99	-	99	32	-	32	131
Home Science	6	-	88	88	-	33	33	121
Horticulture	2	14	-	14	5	-	5	19
Total	26	187	97	284	66	37	103	387
Rural Youths								
Apiculture	1	14		14	4	-	4	18
Home Science	1	-	10	10	-	2	2	12
Total	2	14	10	24	4	2	6	30
Ext. Functionaries								
Crop Production	1	19	-	19	2	-	2	21
Soil Fertility	1	8	-	8	2	-	2	10
Total	2	27	-	27	4	-	4	31

OFF-CAMPUS

Area of Practicing Farmers/Farm women	No. of Courses	Participants(No)		Total
		General	SC/ST	
Agriculture Extension	2	36	6	36
LPM	1	10	3	10
Crop Production	1	18	3	18
Horticulture	1	15	3	15
Total	5	64	15	79

a) Agri-clinic & Agri-business Management:

During 2004-05, first batch of 25 participants completed the training programme under the externally funded scheme on certificate course in agri-clinic & agri-business management. Two success stories from the participants of the first training programme

in agri-clinic & agri-business management were submitted to MANAGE for documentation at national level. The particulars of these success stories are as under: -

FIRST SUCCESS STORY OF AGRI-BUSINESS CENTER:

Kissan Kheti Sewa Kendra, New Bus Stand, Sunderbani, District Rajouri, established by Sh. Rajesh Sudan (Id.No JAM 0028) S/o Sh. Kuldeep Raj Sudan, Ward No 5, Sunderbani who was a registered participant of first training programme of Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu. The entrepreneur is marketing seeds, pesticides and the evergreen decorative plant materials in and around the district Rajouri. Sh. Rajesh Sudan has initiated the activity of his own without taking financial assistance from any financial institute. The documentation of Kissan Kheti Sewa Kendra, a success story from J&K will provide encouragement to other boys and generate spirit of pursuance among his colleagues. The said enterprise is located at a distance of 150 kilometers from the winter capital of Jammu & Kashmir and is well connected with the motorable road only. The area is famous for the cultivation of maize and citrus fruits under rain fed conditions.

SECOND SUCCESS STORY OF AGRI-BUSINESS CENTER:

JK Mushroom House, Village Laulchak, Tehsil R.S.Pura, District Jammu, Sh. Rohit Sharma (Id.No JAM 0010) S/o Sh. Y.R.Sharma, 72 A, Exchange Road, Jammu, after the successful completion of first training programme of agri-clinic & agri-business at SKUAST–J has initiated the venture of cultivation of Button Mushrooms (*Agaricus bisporus*). The enterprise has been started at a distance of 20 km from Jammu. Initially he enterprise has been started in two sheds measuring 60x60 m having mud-plastered roofing. The first crop of button mushrooms has

come up by last week of November. The trainee has initiated the activity without taking financial assistance from any of the financial institute. The marketing of produce has been taken up at local vegetable market and through direct marketing. Under this enterprise, Sh Rohit Sharma has taken bold decision of establishing himself and providing earning to three illiterate persons of concerned region also.

MAJOR ACTIVITIES OF THE DIRECTORATE:

1. FRONT LINE DEMONSTRATION:

The front line demonstrations are being laid by the KVKs at university farms, research center and farmers' field to evoke the interest of farming community for adoption of new innovations and breaking the inhibition barriers.

a) LAYING OUT OF FLDs: During the current year, following front line demon-strations were laid by KVKs in different districts:

Crop	Number of FLDs laid						Total
	Jammu	Kathua	Udhampur	Doda	Rajouri	Poonch	
Maize	261	61	25	500	36	27	910
Mash	5	-	-	5	6	-	16
Moong	-	-	-	-	6	-	06
Rajmash	-	-	-	5	-	-	05
Gram	10	-	-	-	5	-	15
Toria	15	-	-	-	6	-	21
Mustard/ Gobhi Sarson	30	-	-	16	33	-	79
Wheat	42	-	-	-	55	-	97
Soyabean	-	-	-	5	-	-	05
Field pea	-	-	-	5	-	-	05
Oats	-	-	-	14	-	-	14
Total	363	61	25	550	147	27	1173

b) ORGANIZATION OF FIELD DAYS

KVK	Subject	Location (Village)	No. of participants
KVK, Jammu	Toria	Karalian	34
	Oilseeds	Daulatachak	59
KVK, Rajouri	Oilseeds & Pulses	Bhajwal	46

c) TRAINGS

The Directorate organized the eight specialized short-term vocational trainings for extension workers of development department.

Vocational Trainings

KVK	Number of Trainings	Theme areas	Number of participants
KVK, Jammu	1	Apiculture	17
	4	Home Science	109
	1	Mushroom Cultivation	9
KVK, Doda	1	Apiculture	18
	1	Home Science	12

A field day on maize was also organized by the Directorate on 30th September 2004 at village Dhub, Tehsil Samba, District Jammu in which Ex-Vice Chancellor Sh. H.U.Khan was the Chief Guest. About 200 farmers of the area participated. The maize exhibition depicting the samples of the maize collected from all the districts of Jammu region were displayed. All these samples were collected from

Front Line Demonstrations of Maize laid by Directorate of Extension Education under ISOPOM scheme of Directorate of Maize Research, Govt.of India.

d) ORGANIZATION OF SEMINARS/SYMPOSIA/WORKSHOPS ETC.

1) Interactive Horticulture Workshop: The Interactive Horticulture Workshop was organized on 22nd April 2004 at Jammu in which Scientists and Officers of the department of Horticulture, Horticulture Planning and Marketing, JKHPMC, J&K Agro Industries Development Corporation, National Horticulture Board participated. The workshop was held under the chairmanship of Shri B.R.Kundal, IAS, Principal Secretary to Govt., Agriculture Production Department.

2) District Coordination Committee: Meeting for the district Jammu was held at Krishi Vigyan Kendra, Jammu on 17th November 2004 in which the actions taken and follow up by the various line departments and Krishi Vigyan Kendra were reviewed.

3) T&V Monthly Workshops: The broad based extension programme incorporating the farm advisory services has been pursued by the routine monthly visits of resource persons to different district headquarters. The details of the monthly workshops conducted at various district headquarters are placed below:-

S.No.	District	T&V Monthly Workshops	
		Targets	Achievements
1.	Jammu	12	12
2.	Kathua	12	10
3.	Udhampur	12	12
4	Rajouri	11	10
5.	Poonch	10	8
6.	Doda	10	8
	Total	67	60

e. ZONAL RESEARCH AND EXTENSION ADVISORY COMMITTEE MEETINGS:

Directorate of Extension Education convenes ZREAC meetings before Kharif and Rabi seasons every year for planning, organization, monitoring of the extension activities and selection of thrust areas. Besides, technologies developed by the university are finalized for transfer to the field by extension agencies and to be incorporated into the package of practices published by the university. Three ZREAC meetings for Kharif 2004 were organized under the chairmanship of Ex-Vice Chancellor, SKUAST-Jammu during the year in which officers of the state development departments and the scientists of the SKUAST-J participated as per details given below:-

Zone	Zonal Research & Extension Advisory Committee Meetings		
	Districts	**Date**	**Venue**
I	Rajouri & Poonch	2nd June, 2004	Rajouri
II	Jammu & Kathua	8th June, 2004	Jammu
III	Udhampur & Doda	15th June, 2004	Bhaderwah

Zonal Research & Extension Advisory Committee Meetings

1 EXECUTIVE SUMMARY

The University during 2004-05 under the leadership of Dr. Nagendra Sharma, the present Vice Chancellor who took over the reigns of this institute w.e.f. Dec. 2004 and Mr. H.U. Khan (Ex-Vice Chancellor) continued its strive to achieve the goals for the development of competent and professional human resource, solving of farmers' problems through innovative research and transfer of technology in the fields of Agriculture and Veterinary Sciences. Even in spite of the constraints in respect of insufficient scientific and supporting manpower, and the matching infrastructure, the university successfully completed the academic programmes including B.Sc. (Ag.), B.V.Sc. & A.H., M.Sc. (Ag.), M.V.Sc. and Ph.D. carried out assigned research agenda as approved by the Research Council involving almost entire faculty working at both the campuses and at various research stations of the university and undertook numerous initiatives for the transfer of technology to the farmers. The brief summary is given as under:

- The first convocation of the University was held on 17th May, 2004. The Convocation function was presided over by His Excellency Lt. Gen (Retd.) Sh. S.K. Sinha, P.V.S.M., the Governor,J&K State and Chancellor, SKUAST, Jammu. The Convocation was addressed by Dr Mangla Rai,Director General ICAR & Secretary, DARE, Govt of India. As many as 259 students were awarded the degrees. Among them, 15, 121, 64 and 59 students were awarded Ph.D., M.Sc. (Ag.), B.Sc. (Ag.) and B.V.Sc. & A.H. degrees respectively.

- The university has total sanctioned strength of 312 faculty positions with 72, 22 and 6 per cent distribution in Teaching, Research and Extension Education respectively. Under Resident Instructions, the University has 218 as its total faculty strength with 35 Professors, 73 Associate Professors and 110 Assistant Professor level positions. Out of 218, 114 are in faculty of Veterinary Sciences and Animal Husbandry and 104 are in Agriculture. Almost one-third of these positions remained vacant during the period under report. The academic and the gender wise spectrum of the faculty reveals 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 640 non teaching members including administrative, technical, auxiliary and supporting staff.
- The admissions to the various academic programmes were undertaken through Board of Professional Entrance Examinations of Jammu and Kashmir Government in respect of Bachelor's and Master's degree programme; whereas, for doctoral degree programme, the university itself selected the candidates on the basis of merit. As many as 111 and 34 students were admitted to U.G. and P.G. programmes respectively. The number of students who completed their degrees in Agriculture and Veterinary Sciences was 24 and 72 respectively. The total number of students on roll remained 366, with 241 in Veterinary Sciences and 125 in Agriculture. The number of female students was about 15 per cent.
- The students of the university continued to participate in local/state/national level events in extra curricular activities: Besides this, as many as 10 students cleared ICAR's NET; one was selected for IFS and three for KAS services. The university extended all facilities to the students including medical health care through a university dispensary equipped with a full time medical officer and supporting staff with liberal contingency for medicines. About 1200 OPDs were attended and 95 per cent were the students.
- The university released five varieties in different crops. Saanwal Basmati:10 to 15 per cent superior in yield and 10 days early as compared to standard Basmati 370; DGS-1 (Gobhi Sarson): with yield of 19 q/ha having low erucic acid and moderately resistant to aphids; RSPR 01 (Indian Mustard): a high yielding variety of Raya with 40 per cent oil and a yield potential of 19 q/ha and moderately resistant to aphids and Alternaria blight; RSPT O1 (Toria): an early maturing (75-85 days) variety, yielding 7.5 q/ha, having oil content of 40 per cent. A variety of chickpea SCS 3 (Shivani) was released for rainfed climate of

Jammu. The variety has yield potential of 20 q/ha under optimum field management conditions and moderately resistant to wilt and root rot pathogen.

- Improvement in wheat yield with the use of biofertilizers (Azotobactor or Azospirillium with FYM was recorded. Rice (medium duration)-peas-maize (green cob) proved profitable diversified cropping system. For Rice Wheat cropping system, N, P and K @ 100, 50 and 25 Kg/ha with 5 tons of FYM recorded better results. 20 Kg of $ZnSo_4$ was also recommended once in two years. The rice- wheat growing soils were found to be low in available 'N', medium in available 'P' and marginally deficient in available K. Soils of Jammu district showed accumulation of heavy metals in the order of Fe>Mn>Cu>Zn>Cd, but were within the threshold values for growing vegetables.
- In tomato, F-1 hybrid Prithvi was found to yield 40 tons/ha. Palam Priya, Arkel, Bonneville and AP-1 of green peas were also found to be promising with green pod yield of 13.5, 11, 11 and 10.3 tons/ha respectively.
- Temperate mulberry varieties were successfully propagated vegetatively following budding/grafting on TR-10 rootstock with 60 per cent success. Temperature tolerant silkworm races were developed to tolerate high temperature (30 ^{o}C). High yielding races of silkworm for spring crops have also been developed with improved cocoon weight and filament length (800m).
- The use of zero-till fertilizer seed drill was found economical in comparison to other methods of sowing not by increasing the yield, but by saving in resources. For drying of tomato, brinjal and bitter gourd, the suitable temperature has found to be 65 ^{o}, 50 ^{o} and 60^{o}C respectively.
- For the control of root knot nematodes of pulse crop in Jammu, biocontrol agents have been identified. The use of beetle *Zygogramma bicolorata* to control congress grass is also being standardized. Aphid control in wheat was achieved with the application of oxydemeton/methyl parathion and imidacloprid 20 g a.i./ha and imidacloprid 0.6 g a.i./kg seed. Bioagents- *Trichoderma* spp strains viz T14, T23, T25, T27; *Pseudomonas fluorescence*, *Chaetomium globosum* were found effective to control cucumber wilt.
- Propagation in Raj harar was standardized following patch budding and cleft grafting. Twenty three candidate Plus Trees were selected in Jatropha for genetic testing.

- A survey conducted in the existing olive orchards of Doda and Udhampur to ascertain causes of crop failure and low productivity revealed that major causes of low productivity was the neglected state of these orchards. In order to check the fruit drop in walnut, an application of Endosulfan (0.02%) at panicle emergence and repeated application again at fortnight interval, followed by two sprays of NAA (20 ppm) 8 and 6 weeks prior to expect harvest recorded 50 per cent reduction in fruit drop (40% in control).
- Bhaderwah, Chinta valley, Malathi and adjoining areas were surveyed for mosaic disease incidence in Rajmash and the disease incidence varied from 22 to 45 per cent.
- Thirty-three genotypes of oats were tested under single cut programme for forage yield at 50 per cent flowering stage and genotype OS-315 gave highest green fodder yield of 320.5 q/ha. Under multicut regime, genotype OS-295 produced highest green fodder yield of 387.4 q/ha in all the four cuts. In respect of grain yield, entry OS-6 resulted in to the highest grain yield of 42.3 q/ha followed by entries S-3021 and HJ-8, with yield potential of 38.0 q/ha and 34.9 q/ha respectively.
- In Sorghum, out of 20 entries tested under single cut system and data recorded at 50% flowering stage for Green fodder yield(GFY) potential, entry IS-3225 gave the highest GFY potential of 352.4 q/ha followed by entry G-84 and IS-3237 with GFY potential of 325.37 q/ha and 320.55 q/ha respectively.
- In the intermediate zone of Rajouri and Poonch the major diseases recorded in maize were stalk rot complex (20.8%), foliar blight complex (50.7%), brown spot (26.4%), downy mildew (19.44%) and sheath blight (25.5%). Out of several genotypes tested local L-4 was found resistant against stalk rot complex; local C-2, KH-2001 and KH-517 resistant against banded leaf and sheath blight and KH-612, KH-517 and local C-5 resistant against downy mildew.
- 105 samples of local Rajmash germplasm were collected from Loran, Sabzian and Mandi locations of Poonch District. It was concluded that exotic and local germplasm of Rajmash cannot be maintained in rainfed condition.
- Helminthosporium leaf spot emerged as main maize disease under dry land condition during three seasons of investigation i.e. 2002, 2003 and 2004. Out of 57 genotypes of maize evaluated under natural conditions, none was found immune. Three genotypes viz.; FH 3077, Harsa Composite and JAUM 7(local) were resistant.

- In a five years combined data on fertilizer trials, the recommended dose of NPK (60:40:20) coupled with 20 Kg $ZnSO_4$/ha recorded highest grain yield of maize with an average of 27.11 q/ha as compared with other treatments.
- In Cereal + Legume system (Maize + Black gram), 100 per cent N through inorganic fertilizer recorded the highest average maize equivalent yield of 23.22 q/ha followed by the treatment of 15 kg N through green leaf + 20 kg N through inorganic fertilizer with an average maize equivalent yield of 21.08 q/ha. The highest mustard equivalent yield of 11.95 q/ha was recorded with the application of 10 tons FYM/ha in maize during the preceding kharif season followed by recommended NPK (60:40:20 Kg/ha) + $ZnSO_4$ @ 20 Kg/ha.
- During first year of study in uridbean and moongbean, it was observed that out of the various factors, inclusion of improved variety helped to increase the yield by 56.5 and 24.5 per cent respectively over farmer's practices, whereas increases recorded due to fertilizers, weed control and plant protection were 9.3, 6.5 and 6.0 per cent in case of uridbean and corresponding figures for moongbean were 6.2, 4.1 and 3.9 per cent.
- Under water management programme, wheat (PBW-343) following groundnut, receiving only two irrigations of 6 cm each produced mean grain yield of 2900 kg/ha in 138 days, while as mustard (RSP-03) followed by groundnut received two irrigations and produced mean oilseed yield of 669 kg/ha in 133 days.
- Gross anatomical aspects of the immune system, histo-morphological works on superficial lymph nodes and histological studies on the female genital system of Kagani goat were carried out. Under immobilization of *R.oryzae* in agar-agarose and polyacrylamide subjected to varying temperature conditions from 20 ^oC to 40 ^oC under static conditions, the maximum enzyme yield was obtained at 30 °C in agar blocks followed by polyacrylamide blocks and agarose beads.
- Toxicological and biochemical studies of organophosphorus insecticides in sheep and goats were undertaken to determine the pattern of toxic symptoms and establish biomarkers which will help in diagnosis of such toxicosis and also evolve a suitable antidotal treatment for such intoxications. The acute toxicity studies of triazophos and dichlorovos indicated that these insecticides should not be exceeded than the recommended doses.

- The analysis of 925 faecal samples in Jammu district collected from bovine's revealed 62.38 per cent prevalence of helminth parasites. Helminth parasites of Amphistomes (25.12%) were predominant followed by the strongyles (9.78%). Presence of Fasciola, Strongyloides, Ascaris, Trichuris, Moniezia spp. was 5.15, 6.23, 8.01, 0.88 and 0.62 per cent respectively. 822 faecal samples of sheep and goats revealed 77.49 per cent infection of gastrointestinal parasites.
- Tree leaves from fifteen fodder tree species, such as *Acacia nilotica*, *Albizia lebbeck*, *Olea species*, *Berberis species*, *Celtis australis*, *Cordia dichotoma*, *Dalbergia sisso* (Shisham), *Grewia optiva*, *Leucaena leucocephala*, *Mangifera indica* etc. were analysed for proximate and fibre constituents, nitrogen solubility, fibre bound nitrogen and nitrogen fractions. The crude protein (CP) content was maximum in *L. leucocephala* (24.52%) and minimum in *Morus alba* (8.60%) whereas ether extract (EE) content was highest in *M. alba* (9.31%) and minimum in *A. nilotica* (1.73%). The neutral detergent fibre content varied from 13.15% in *M.azedarach* to 53.08% in *Olea species*, whereas acid detergent fibre varied from 10.08% in *M. azedarach* to 55.49% in *C. dichotoma*.
- Studies on the effect of various thickeners viz rice flour, maida, Arhar dal and corn flour on quality of shank-whey soup at 0 (Control), 1,2 and 3 per cent w/v of soup revealed the increase in the level of thickeners, and the pH of the soup (5.20 to 5.65) and consequently decreased the titrable acidity.
- A total of 165 cattle from unorganized farms as cases in Veterinary Clinic and Teaching Hospital at R.S. Pura were studied during the period from May, 2004 to December, 2004. Out of 165 cases, 85 (51.52%) were of endometritis, 42 (25.45%)were of anoestrus, 24 (14.55%) were of an ovulation and 14 (8.48%) were of cystic ovarian degeneration. In 85 cases of endometritis, different antibiotic treatments viz. Gentamycin-M,Tetracycline,Ciprofloxacin, Enrofloxacin and indigenous drugs were tried and Enrofloxacin was found to be most effective.
- Results of the three groups of anesthetic studies (Gr.I-Propofol alone, Gr.II-xylazine + propofol and Gr.III-xylazine + ketamine)in 18 goats and 12 buffalo calves indicated that induction and recovery was rapid in propofol groups of animals. Transient apnoea for 30-50 seconds soon after propofol injection was noticed.
- Metabolic profile study was carried out in pregnant animals wherein sub clinical deficiency of Ca, P, and mild anemia was reported. Anti microbial

sensitivity test in Mastitis revealed that enrofloxacin was highly effective followed by trimethoprim, tetracycline, chloramphenicol, streptomycin, oxytetracycline, gentamycin, clindamycin, cloxacillin, erythromycin, amoxicillin, novobiocin and sulphamethizole. Screening of livestock for Hormoprotozoan diseases and poultry for salimonellosis was carried out. The Hog cholera was first time reported from Jammu.

- Under the project on management of long bone fractures in large animals, metacarpal and metatarsal fractures in equine and metatarsal, metacarpal and tibial fractures in bovine were managed. Tibial fracture in bovine were managed by transfixation and hanging pin caste techniques whereas meta carpal/ metatarsal fractures were managed with U or V splints incorporated POP casts.

- The transfer of technology has been carried out through Krishi Vigyan Kendras and the involvement of subject matter resource personals from the faculty of agriculture and faculty of Veterinary Sciences & animal Husbandry. A new programme initiated by the Hon'ble Vice Chancellor "Village Visit & Stay with Farmers" has proved very effective. The scientists working at different research stations too participated in various extension activities.

- As many as 67 departments functionaries, 2130 farmers/farm women and 175 rural youth were imparted training through 32 different short courses. The trainings were organized in crop production, crop protection, horticulture, home science, soil and fertilizers.

- Under agri-clinic and agri-business management, 25 persons were trained. As many as 1173 Front Line Demonstrations (FLDs) were laid with the highest number of 910 (FLDs) in Maize alone. Educational tour for 20 farmers was arranged to participate in Krishi Vigyan Mela at IARI,New Delhi.

- The University organized as many as 35 professional trainings for the benefit of farmers and departmental functionaries 53 scientists participated in different seminars/symposia/ workshops at state/national level.

- Dr. Nagendra Sharma, the Vice Chancellor, was conferred upon the distinguished Veterinarian Award, 2004. Dr. H.N. Khajuria,DRI,was awarded Meritorious Teacher Award by PAU,Ludhiana and was also nominated by ICAR as member Research Advisory Committee, CRIDA, Hyderabad. Prof. A.K. Srivastav, Dean, Veterinary Sciences & A.H. was selected as member NAS,Allahabad and Fellow of NAS, 2004.Dr R.K.Sharma,DrR.R.Jat and Dr. Rajiv Singh were selected as Editorial Board Member (ISAN), elected as Councillor, North Zone (ISMPP) and awarded "Young Scientist Award" by J&K State Council for Science &Technology respectively.
- In publications, the university brought out Journal of Research (Vol. 3), Achievements of Academic, Research and Extension Education for the period 1999-04 and the Package of Practices of Horticultural crops. As many as 450 publications including book chapters/bulletins/manuals/research papers etc. were published by the scientists in various journals of repute.
- The main library at Chatha with another equally strong unit at R.S. Pura were further strengthened by way of adding 1437 number of books this year raising the library acquisition to 13,905 with 1230 bound journals. As many as 64 and 65 Indian and foreign journals are subscribed. Library is also equipped with LAN & CD-ROM facility with free down loading provision.
- The university operated the total budget of 4342.70 lakh during 2004-05 with over 60 per cent allocated for both the faculties.
- Among various statutory meetings, Board of Management, Academic Council, Research Council, Zonal Extension Advisory Meetings were held accordingly.

5th meeting of Board of Management held on March 18, 2005 chaired by the Vice Chancellor Dr. Nagendra Sharma and attended by the members: Shri B.R. Kundal, Shri. M.I. Khandey, Dr. Seema Wahab, S. Harinder Singh, Sh. Raj Kumar Gupta and Dr. H.N. Khajuria, Non-member secretary

2 INTRODUCTION

On 20th day of September 1999, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu was carved out of erstwhile Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu and Kashmir to cater to the requirements of Jammu Division comprising of six districts - district Doda, Poonch, Rajouri, Udhampur, Jammu and district Kathua. Jammu Division lies between 32°20'N to 33°10'N Latitude and 74°45' E to 74°55' E Longitude with its characteristic climatic zones including sub-tropical, dry temperate, wet temperate and intermediate.

The total area of Jammu division is about 1800 thousand hectares and only 22 per cent of this area is available for agriculture and this accounts for about 70 per cent of total crop production in the state. The major crops produced are rice, wheat and maize. Since 75 per cent of the cultivated area is under rainfed agriculture, emphasis are laid upon the cultivation of less water requiring crop/ tree varieties including oil seeds, pulses, sub-tropical fruits such as guava, ber, aonla, pomegranate, lemons etc. In the typical temperate zone partly falling under districts of Doda, Udhampur and Kathua, efforts have been made to exploit the potential for the cultivation of Saffron (Kishtwar), apples, pears, apricots and various nuts.

In order to bring improvements in existing land use pattern in Kandi areas, new interventions have been initiated. Selection of suitable genotypes, soil and moisture conservation, water-shed management, popularization of having small water harvesting reservoirs for life-saving irrigations and utilization of degraded lands for some economic benefits through the cultivation of diesel plant 'Jatropha' have been taken up on priority. New projects on cultivation of medicinal plants and value addition to the agricultural produce have also been adopted. Since Jammu division is rich in livestock population (5.7 million), the university has taken up the challenges to bring improvements both genetically and in the management including health care through the application of advanced technologies in Veterinary Sciences and Animal Husbandry.

The university presently has three faculties i.e. Faculty of Agriculture and Faculty of Veterinary Sciences & Animal Husbandry and Faculty of Postgraduate Studies with six research stations/sub-stations and a seed production farm. The extension activities are carried primarily by three Krishi Vigyan Kendras (KVK), viz. KVK, R.S. Pura (Jammu), Bhaderwah (Doda) and KVK (Rajouri). A fourth KVK at Reasi (Udhampur) has recently been commissioned. Out of the total 312 faculty positions, the major component i.e. over 70 per cent is in teaching. The faculty distribution in Agriculture and Veterinary Sciences is in 60:40 ratios. Efforts are being made to expand the dimensions of the university by way of having more faculties and the matching human resource and infrastructure.

The university is running two undergraduate degree programmes - B.Sc. (Ag.) and B.V.Sc. & A.H.; and postgraduate degree programmes- M.Sc. (Ag.) in ten disciplines; M.V.Sc. in nine disciplines and Ph.D. programme in six disciplines with total student strength of three hundred sixty six. Efforts have been made to improve the field and laboratory infrastructure to ensure quality education on competitive basis.

This report details the activities carried out during 2004-05. The university in recent past has witnessed a revolutionary change with the joining of the new Vice Chancellor, Dr. Nagendra Sharma w.e.f. Dec. 2004. His rich experience, magnificent potential, far sighted vision, clear perception, effective motivation, deep concern towards peasantry and upright individuality makes him a complete leader to set the right agenda in right direction for an institution like that of an agricultural university. What the university could not do since its inception has been achieved in a short-time after his joining, which includes procurement of the land at Chatha, starting up of agricultural faculty building complex, KVK complex at Rajouri and Bhaderwah, development of Conference Halls at R.S.Pura campus, re-invigoration of veterinary hospital complex etc. involving more than Rupees 50 crores of funds, mobilized from State and ICAR. Not only in context with infrastructures development, a perceptible change in the overall mindset of the faculty and staff of the university through Vice Chancellor's personal interaction/intervention and motivation will go a long way in the transformation of this university into an institution of repute on national/international level.

3 RESIDENT INSTRUCTIONS

During 2004-05, the period under report, the university has made significant achievements in the field of Agricultural education and tried to raise its standards to the national level by the introduction of up-dated curriculum at undergraduate (UG) and post graduate (PG) level, both in Agriculture and Veterinary Sciences, as recommended by Education Division of Indian Council of Agricultural Research (ICAR) and Veterinary Council of India (VCI) respectively. Rural Agriculture Works Experience (RAWE) has also been introduced in B.Sc. (Ag.) programmes to acquaint the students with problems related to farmer's field where as for B.V.Sc. & A.H.; the practical training continued through internship.

Rural Agricultural Work Experience
(Releasing of the report by The Vice Chancellor and Participation of the Students and Farmers)

ACADEMIC POGRAMMES RUN BY THE UNIVERSITY:

1. UG Programme : B.Sc. (Ag.); B.V.Sc. & A.H.
2. PG Programme : M.Sc. (Ag.) : 8 divisions
   Ph.D. : 6 divisions
   M.V.Sc. : 5 divisions

DETAILS OF PG PROGRAMMES:

S.No.	M.Sc. (Ag.)	Ph.D.	M.V.Sc.
1.	Agronomy	Agronomy	Vety. Clinical Medi. & Jurisprudence
2.	Entomology	Entomology	Vety. Preventive Medicine & Epidemiology
3.	Fruit Science & Post Harvest Technology	Fruit Science & Post Harvest Technology	Vety. Physiology
4.	Genetics & Pl. Breeding	Genetics & Pl. Breeding	Vety. Public Health & Hygiene
5.	Plant Pathology	Plant Pathology	Vety. Surgery & Radiology
6.	Soil Sciences & Agril. Chemistry	Soil Sciences & Agril. Chemistry	
7.	Sericulture		
8.	Vegetable science & Floriculture		

FACULTY SPECTRUM:

The classified information pertaining to the faculty strength- both cadre wise and faculty wise with academic spectrum is given under Table -1. As evident, there are 218 faculty positions as sanctioned strength for all the three faculties viz. Faculty of Agriculture, Faculty of Veterinary Sciences & A.H. and Faculty of Post-graduate Studies. The overall faculty strength under Faculty of Agriculture and Faculty of Veterinary Sciences including PG faculty is 104 and 114 respectively (Table 1a).

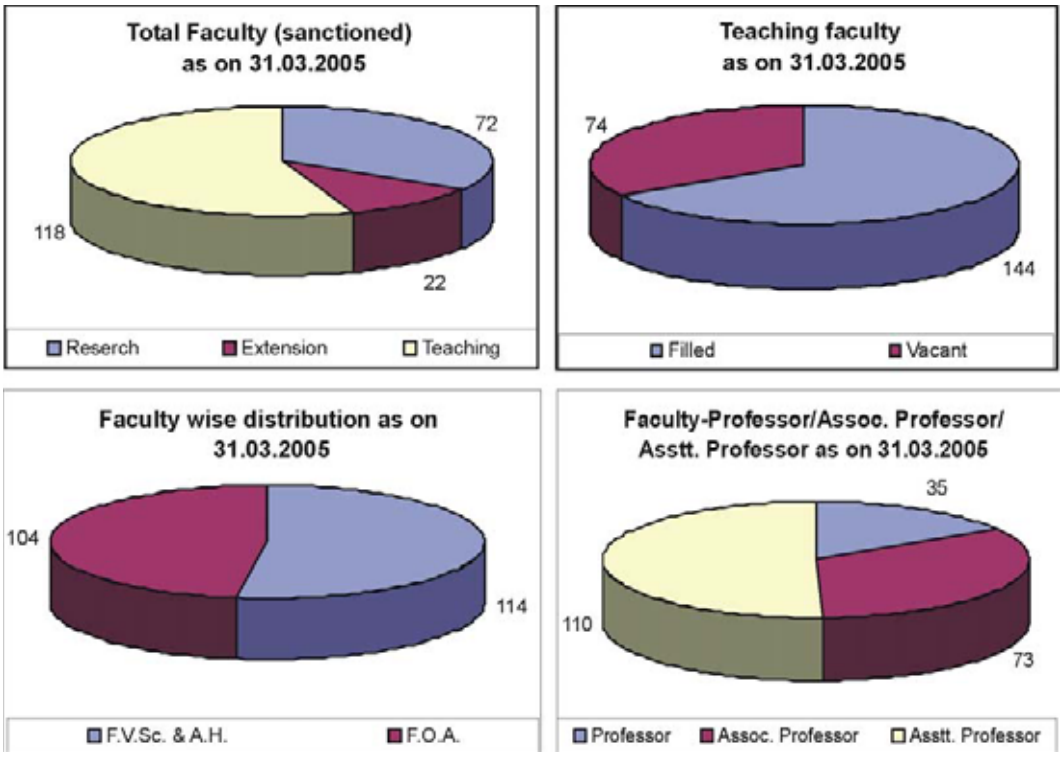


Table 1a: Faculty Strength (2004-05)

Post	FACULTY						Total		
	F.O.A.			F.V.Sc & A.H.					
	Sanctioned	Filled	Vacant	Sanctioned	Filled	Vacant	Filled	Vacant	Total
Professor/ Equivalent*	15	08	07	20	04	16	12	23	35
Associate Professor/ equivalent	36	29	07	37	11	26	40	33	73
Assistant Professor/ Equivalent	53	50	03	57	42	15	92	18	110
Total	**104**	**87**	**17**	**114**	**57**	**57**	**144**	**74**	**218**

Table 1b: Faculty's Academic Spectrum (2004-05)

Post	F.O.A.		F.V.Sc. & A.H.			Total
	Ph.D.	M.Sc.	Ph.D.	M.V.Sc.	M.F.Sc.	
Professor/equivalent	07	–	04	–	–	11
Associate Professor/ equivalent	30	01	09	02	–	42
Assistant Professor/ equivalent	34	15	11	30	01	91
Total	**71**	**16**	**24**	**32**	**01**	**144**

The figures in Table 1b reveal academic spectrum of the existing faculty where in there are 94 faculty members holding Ph.D. degree out of the total of 144. About 10 per cent of the existing faculty constitutes female strength (Table 1c)

Table 1c: Genders in Faculty's Academic Spectrum (2004-05)

Gender	F.O.A.		F.V.Sc & A.H.			Total
	Ph.D.	M.Sc.	Ph.D.	M.V.Sc.	M.F.Sc.	
Male	65	13	24	25	-	127
Female	06	03	-	07	01	17
Total	**71**	**16**	**24**	**32**	**01**	**144**

STUDENTS STRENGTH:

The strength of students admitted to B.Sc. (Ag.) programme was 19 only during academic session 2004-05, where as, for B.V.Sc. & A.H. programme it was 92. The number of students admitted to M.Sc. (Ag.) programme in different divisions of Agriculture was 23 and at Ph.D. level it was 11 during academic session 2004-05. In M.V.Sc., only three students were admitted. The distribution of students year wise, faculty wise and gender wise is given in Table 2(a,b,c). This was against the intake capacity as under.

Intake capacity - Faculty wise

Faculty	Degree Programme	Seats	
		Through BPEE (J&K)	ICAR including SC/ST
F.O.A.	B.Sc. (Ag.)	75	08
F.V.Sc. & A.H.	B.V.Sc. & A.H.	75	08
Faculty of PGS	M.Sc. (Ag.)	38	07
	M.V.Sc.	20	03
	Ph.D.	08	–
Total		**216**	**26**

Table 2a: Number of Undergraduate and Postgraduate Students on Roll (2004-05).

Year	FACULTY						Total
	Under graduate		Post Graduate				
	B.Sc. (Ag.)	B.V.Sc. & A.H.	Agriculture		Veterinary Sciences & A.H.		
			M.Sc. (Ag.)	Ph.D.	M.V.Sc.	Ph.D.	
Ist	19	92	23	11	03	-	148
IInd	09	59	17	06	-	-	91
IIIrd	05	31	01	04	-	-	41
IVth	27	31	-	03	-	-	61
Vth	-	25	-	-	-	-	25
Total	**60**	**238**	**41**	**24**	**03**	**-**	**366**

The total strength of the students on roll at post graduate degree programme under PG Faculty was 68, whereas, in UG programmes in agriculture and Vety. Sciences & A.H., it was 60 and 238 respectively with total of 366 students (Table 2a). In first year class, (UG& PG) the number of students remained the highest (148).

Table 2b: Genders in Undergraduate and Postgraduate Degree Programme (2004-05)

Gender	FACULTY						Total
	Undergraduate		Postgraduate				
			Agriculture		Veterinary Sciences & A.H.		
	B.Sc. (Ag.)	B.V.Sc.& A.H.	M.Sc. (Ag.)	Ph.D.	M.V.Sc.	Ph.D.	
Male	50	205	35	17	02	-	309
Female	10	33	06	07	01	-	57
Total	**60**	**238**	**41**	**24**	**03**	**-**	**366**

Of 366 students, 57 are girl students i.e. about 16 per cent of the total strength, evenly distributed across the faculties (Table 2b). The total number of students who have completed their undergraduate degree is 24 and 72 from Agriculture and in Veterinary Sciences and A.H., respectively. One hundred and three students obtained their degree with 96 in UG and only 07 in PG programme (Table 2c).

Table 2c: Completion of Undergraduate and Postgraduate degrees (2004-05)

Faculty	Degree	Number of students	Total
Undergraduate	B.Sc. (Ag.)	24	96
	B.V.Sc. & A.H.	72	
Postgraduate	M.Sc. (Ag.)	05	07
	Ph.D.	02	
	M.V.Sc.	-	
	Total		**103**

Among these students who qualified for the award of the degrees, 31 were from agriculture and 72 were from Veterinary Sciences.

UNIVERSITY CONVOCATION:

The first convocation of this university was held on May 17, 2004 at Jammu under the leadership of Ex-Vice Chancellor, Mr. H.U. Khan. The Convocation function was presided over by H.E. Lt. Gen. (Rtd.), Sh. S.K. Sinha, PVSM, the

Governor of J&K State and Chancellor, SKUAST-Jammu. Dr. Mangala Rai, Director General, ICAR and Secretary, Department of Agricultural Research and Education, Govt of India was the chief guest and also addressed the Convocation. In this convocation, 64 B.Sc. (Ag.), 59 B.V.Sc. & A.H., 121 M.Sc. (Ag.) and 15 Ph.D. degrees were awarded besides the award of 9 gold medals and 28 merit certificates.

Pass out students' w.e.f. 20-9-1999 to 17-5-2004 (Date of IST convocation)

Degrees	No. of students
B.Sc. (Ag.)	64
B.V.Sc. & A.H.	59
M.Sc. (Ag.)	121
Ph.D.	15
Total	**259**

Table 3: Thesis submitted by Postgraduate students (2004-05)

S.No.	Name of the students	Division	Title of thesis submitted
Ph.D.			
1.	Mrs. Surya Prabha Devi	Entomology	A STUDY OF ASSIMILATORY BEHAVIOUR OF BIVOLTINE SILKWORM (*Bombyx mori* L.) GENOTYPES
2.	Mr. Parshant Bakshi	Pomology & PHT	EFFECT OF POSTHARVEST TREATMENTS ON STORAGE LIFE OF PEACH (*Prunus persica* (L.) *Batsch*)
3.	Mr. Ramakant Sharma	PBG	COMPARATIVE STUDY OF GENETIC VARIABILITY INDUCED BY PHYSICAL AND CHEMICAL MUTAGENS IN BASMATI RICE (*Oryza sativa*. L.)
M.Sc.			
1.	Mr. Jagdish Chander Raina	Entomology	BIO-CONTROL POTENTIAL OF HELICOVERPA ARMIGERA NUCLEAR POLYHEDROSIS VIRUS (HaNPV) ON CHICKPEA AND TOMATO

2.	Mr. Surinder Kumar	Agronomy	PERFORMANCE OF RICE GENOTYPES AT DIFFERENT NITROGEN LEVELS UNDER IRRIGATED CONDITIONS
3.	Mr. Amarjit Singh	Agronomy	EFFECT OF NITROGEN LEVELS AND WEED MANAGEMENT ON GROWTH, YIELD AND QUALITY OF GOBHI SARSON (*Brassica napus* L.) VAR.DGS-1
4.	Mr. Dara Singh	Pomology & PHT	PROPAGATION STUDIES IN AONLA (*Emblica officinalis* Gaerin)

STUDENTS FACILITIES:

Undergraduate students have been taken out for educational tours during summer and winter breaks. The All India educational tour was conducted for the student of 4th year (Ist Semester) B.V.Sc. & A.H. from 12 Feb. to 6 March, 2005 and Dr. S.K. Gupta (Assoc. Prof., VEP) and Dr. Sudarshan Kumar, (Asstt. Prof., ARGO) escorted the tour. The students of this university continued to participate in agriculture youth festivals from time to time. They are also encouraged to get actively involved in other extra curricular activities of the university such as games, open competitions, athletics and cultural programmes and facilities regarding different events are also made available to them so that they can prepare better. For the benefit of the students, there are two libraries, one located at F.V.Sc. & A.H., R.S. Pura and another at F.O.A. Chatha. These libraries are provided with latest books, periodicals, journals and text books so that student can get latest information and technical know how and can do better research and find better placement after completion of their degree.

HOSTELS:

Students have also been provided with better and hygienic accommodation in the hostels. There are three hostels located at university campus R.S. Pura housing 177 students including 30 girls. One newly constructed hostel named as students Hostel was inaugurated by Jenab Mufti Mohd. Sayeed, Hon'ble Chief Minister, J&K State on September 9th, 2004. This newly constructed Hostel has capacity to accommodate 143 boarders; 29 rooms are single seater, 49 rooms are double seater and has 16 single room suits for foreign students with facility of kitchenette and attached restrooms. Spacious and well furnished dinning hall, common room, lawn, courtyard etc. have also been provided in the hostel.

MEDICAL FACILITIES:

The health cover has been provided to the students with medical facilities at both the campuses. One full time medical doctor along with one female staff nurse is provided at the dispensary. The Annual statement of Health Centre from January first to 31st December, 2004 is as under (Table 4).

Table 4: Annual statement of Health Centre from 01-01-2004 to 31-12-2004

S.No.	Type of cases	No.	S.No.	Type of cases	No.
1.	Total OPD	1160	7.	Female	150
2.	Students	1138	8.	Surgical	162
3.	Staff	22	9.	Medical	976
4.	Hostlers	722	10.	Patients referred	11
5.	Non Hostlers	416	11.	Emergencies	7
6.	Male	980			

STUDENTS' ACHIEVEMENTS (SCHOLARSHIP, NET ETC.):

A number of students cleared National Eligibility Test conducted by Agricultural Scientists Recruitment Board (ASRB), Indian Council of Agriculture Research, New Delhi and a few qualified for Kashmir Administrative Services. The details are given in Table 5a and 5b.

Table 5a: Agriculture

S.No.	Name of student	Division	Achievements
1.	Rajeev Bharat	Agronomy	NET(ICAR)
2.	Arvind Kumar Ishar	Entomology	NET(ICAR)
3.	Devinder Sharma	Entomology	NET(ICAR)
4.	Tariq Rasool Rather	Plant Pathology	NET(ICAR)
5.	Sachin Gupta	Plant Pathology	NET(ICAR)
6.	Ms Efath Shehnaz	Plant Pathology	NET(ICAR/CSIR)
7.	Ms Upma Dutta	Plant Pathology	NET(ICAR)
8.	Ashwani Kumar	Pomology & PHT	NET(ICAR)
9.	Ms Kiran Kour	Pomology & PHT	NET(ICAR)
10.	Parshant Bakshi	Pomology & PHT	NET(ICAR)

Table 5b: Veterinary Sciences & Animal Husbandry

S.No.	Name of the student	Achievements
1.	Shahid Iqbal	Selected in IFS
2.	Arun Manhas	Selected in KAS
3.	Khalid Malik	Selected in KAS
4.	Ramnish Gupta	Selected in KAS

EXTRA CURRICULAR ACTIVITIES:

The extra curricular activities of the students are looked after by Incharge Deputy Director Student Welfare located at R.S.Pura under the direct supervision of DRI/Dean PGS, and he is responsible for the maintenance of hostels , co-curricular, extra curricular and allied activities including medical facilities.

NATIONAL INTEGRATION CAMP CUM YOUTH FESTIVAL:

A group of twenty students of this university participated for the first time in the above national event held from October 4 to 10, 2004 at Patnitop (District Udhampur). The team was escorted by Dr. Sudarshan Kumar, (Asstt. Prof, ARGO). The team won three first prizes and one second prize in this Youth Festival .The camp was organized by Patnitop Development Authority at Patnitop, J&K.

INTER UNIVERSITY NATIONAL DEBATE COMPETITION:

One student from faculty of agriculture of this university participated in the Inter University National Debate Competition held at Regional Institute of Cooperative Management, Chandigarh from December 29 to 31, 2004.

ORGANIZATION OF REPUBLIC DAY CELEBRATIONS:

56th Republic day was celebrated in the University Head Quarter and the national flag was hoisted by Hon'ble Vice Chancellor, Dr. Nagendra Sharma. The Vice Chancellor in his Republic Day address emphasized the need for hard work and sincere/dedicated service to make the country strong at global level. The students presented the National Anthem and joined the faculty and staff in the celebrations of the event.

NATIONAL CONFERENCE ON WORLD PEACE:

Dr. S.B. Bakshi, I/C Dy. Director Students Welfare, of this university participated in National Conference on World Peace. For spreading the message

of communal harmony, the Peace March was flagged off from the faculty of Veterinary Sciences & Animal Husbandry which after passing through the main bazaar culminated in the R.S.Pura Campus. An amount of Rs. 3,525/- (Rs. Three thousand five hundred twenty five only) was collected and remitted to the Secretary, National Federation for Communal Harmony (NFCH), New Delhi.

YOUTH FESTIVAL FOR PROMOTING NATIONAL INTEGRATION:

A contingent of four students participated in the Youth Festival organized by Youth Wing, R.E.R.F and Brahma Kumaris' Ishmariya Vishwa Vidyalaya at Chandigarh from December 24 to 30, 2004. A total of 132 participants from 27 Universities and Youth Organizations of North Zone participated in the Festival.

The folk dances, folk songs presented by the students were highly appreciated. The Kashmiri folk song was repeatedly presented in front of all the VIPs during evening camp fire programmes. A dogri poem written by Atul Sharma (student) during National Integration Camp was also liked by all the participants. Active participation in group discussion was made by the students and they won third prize in this competition. The performance of the students of this university was highly appreciated. In two items, Monoacting and self authored poem, the students excelled and won second and third prize respectively.

TRAINING CAMP- ART OF LIVING:

The students of F.V.Sc. & A.H., participated in a Training Camp of Art of Living from 22nd to 28th March , 2005 and Dr. Sudershan Kumar was the Convener. A SUFI ROCK cultural evening was also held on 28th March , 2005 and all faculty members of F.V.Sc. & A.H, R.S.Pura participated.

Students participated in Peace March held on the occasion of Youth Festival for promoting National Integration at Chandigarh.

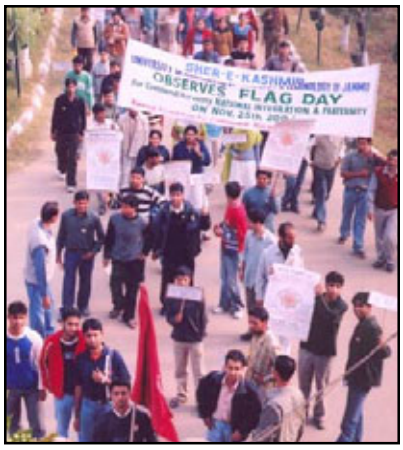
Student receiving third prize in self authored poem during Youth Festival at Chandigarh

COMMUNAL HARMONY CAMPAIGN:

The Communal Harmony Week was observed by the university from November 19-25, 2004. During the week long programme the students of the university were briefed about the importance of promotion and fostering communal harmony, national integration and fraternity especially in our state. The activities being undertaken by National Foundation for Communal Harmony (NFCH) were also elaborated.

November 25 , 2004 was observed as Communal Harmony Flag Day by pinning of flags. A massive rally of staff and students of the university in collaboration with Ministry of Youth Affairs and Sports was held. Twelve Universities from all over India participated in the event which includes: Delhi, Madras, Dr. Y.S. Parmar University of Horticulture and Forestry, Solan, University of Jammu, Maharishi Dayanand Swarswati University, Ajmer, Mohan Lal Sukhadia University, Udaipur and Meghalaya University etc. The students of this university won the first prize in State ex-position.

In Essay competition, the student won the first prize on the topic "Why Youth is called wheel of progress in every Nation"? The Volley ball team of the University won the first prize beating team of Chaudhary Charan Singh Haryana Agricultural University, Hisar by a very good margin in straight sets. The students participated in carrom, kabbadi, tug of war. Spiritual Wisdom, a programme was organized by the Prajapita Brahma Kumaris Ishwariya Vishwa Vidyalaya, World Head Quarters at Mount Abu on February 11-14, 2005 at Shantivan, Abu Road, Rajasthan, and the students of this university also participated in that spiritual programme.



Organization of Communal Harmony rally and Flag Day

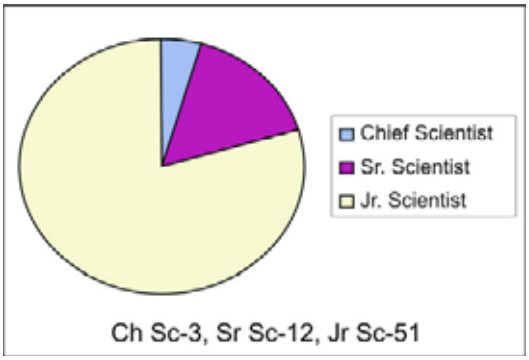
4 RESEARCH

The research is carried out both by the faculty placed under Faculty of Agriculture at Chatha/Faculty of Veterinary Sciences & Animal Husbandry, R.S. Pura and by the scientists working at different regional research station/sub station of the university, as per the programme approved in Research Council Meeting (RCM). As already pointed out, there are only 70 sanctioned positions (including Head Office and seed production farm, Chakroi) of the scientists who are exclusively engaged in research at different research stations under overall control of Directorate of Research. Out of these sanctioned positions, about 50 were filled up by 31.03.2005. Whereas, the rest remained vacant during 2004-05. The distribution of these scientists at different research stations is given under table 6:

Table 6: Scientific Strength at different Research stations/Sub stations/schemes

S.No	Research Stations & Schemes	Sanctioned	Filled	Vacant
1	RARS, Rajouri	14	12	02
2	PRSS, Samba	04	02	02
3	DLRSS, Dhiansar	07	04	03
4	RHRSS, Bhaderwah	12	10	02
5	RRSSF, Raya	04	01	03
6	MBRSS, Poonch	04	03	01
7	Water Management Research, Chatha	05	05	00
8	Cropping System Research, Chatha	04	04	00
9	All India Coordinated Wheat Improvement Project, Chatha	01	01	00
10	All India Coordinated Rice Improvement Project, Chatha	04	04	00
11	AICRP on Agrometeorology, Chatha	02	02	00
12	AICRP on Dry land Agriculture, Dhiansar	03	03	00
13	Seed Production Farm, Chakroi (R.S. Pura)	02	02	00
	Total	**66**	**53**	**13**

It is evident from the figures in the table that there is meager research staff at all the research stations except for the ones at Rajouri and Bhaderwah. Among these scientists, the cadre-wise distribution is given in the following figure:



Cadre-wise distribution of Scientists

RCM held on March 1-2, 2005

The research outputs as accrued from different faculties and research stations are reported as under:

A. FACULTY OF AGRICULTURE

AGRONOMY

- Use of biofertilizers like *Azotobacter* or *Azospirillium* coupled with FYM and 80 kg N / ha resulted into grain yield of wheat at par with 120 k g N/ ha alone.
- Inoculation of Phosphate Solublizing Bacteria (PSB) coupled with recommended dose of phosphorus mainly through Single Super Phosphate (SSP) or Rock Phosphate increased the productivity of rice –wheat cropping system besides improving the beneficial micro-organism for making the unavailable form of phosphorus form the nutrient pool of soil to the plants in available form.
- A cropping sequence involving rice (medium duration)-peas-maize (green cobs) proved profitable diversified cropping system under assured irrigation system.
- Evaluation of agro-technology under On Farm Research Programme indicated that N P&K @ 100, 50 and 25 kg/ha coupled with 5 t FYM to both rice and wheat performed better under irrigated conditions of Jammu.
- Application of Pendimethalin @ 1.00 g a.i/ha proved an effective weed control

measure in maize-pulse intercropping system with a weed control efficiency of 72 per cent over check.

- Studies on gobhi-sarson revealed that application of 60 kg N/ha and pre plant incorporation of fluchloralin @ 1 kg a.i/ha not only improved the growth and yield of gobhi-sarson but also gave higher net returns.
- PR-113 variety of rice performed better at nutrient dose of 120 kg N, 60 kg P_2O_5 and 30 kg K_2O/ha.

SOIL SCIENCE AND AGRICULTURAL CHEMISTRY

- **Residual effect of zinc application:** 20 kg $ZnSO_4$ per hectare was recommended for zinc deficient soils of rice-wheat cropping system as single application in every two years.
- **Characterization of ground/surface water in Jammu district:** Water samples from tube wells, ponds, nallas covering various parts of Jammu were analysed to assess suitability for irrigation and was found to be safe for irrigation.

OLERICULTURE AND FLORICULTURE

- In a trial on hybrid tomato, F_1 hybrid Prithavi has been identified as a top high yielding variety with yield potential of 40 tons/ha. US-620 and Lehar followed it with yield potential of 34 tons and 32 tons/ha, respectively.
- 19 varieties of green peas were evaluated during Rabi 2004-05. Top ranking varieties were Palam Priya, Arkel, Bonneville and AP-1 with green pod yield of 13.5, 11, 11 and 10.3 tons/ha, respectively.
- Two dark green fruit, single plant selections of Okra are under evaluation

BIOCHEMISTRY AND PLANT PHYSIOLOGY

- **Standardization of agro techniques for olive:** A private olive orchard at Dhramtal, Chenani has been adopted in November, 2004 for conducting the experimental trial on physiological basis of fruiting, nutritional studies and other agro-techniques for Olive. Chemical analysis of soil samples for initial status of the soil revealed that the experimental block is low in nitrogen and medium in phosphorus, potassium and boron. A fertilizer trial in a randomized block design has been laid with four levels each of nitrogen, phosphorus and potassium with 3 replications. Further research work is under progress.

- Studies on physiological parameters of growth and production in gobhi sarson (*Brassica napus L.*) ecotypes released at different intervals: Experimental field trial has been laid under RBD during rabi season 2004 at Chatha with 4 varieties of gobhi sarson viz. DGS1, GSL1, GSL2 and ISN602. Phenophase wise growth data has been recorded on the leaf appearance, leaf expansion, branch appearance, floral bud appearance etc. Also biomass has been recorded at periodic intervals of 15 days for calculation of CGR, RGR, NAR, SLW etc. and partitioning of dry matter. Simultaneously leaf samples have been preserved for biochemical analysis. Data analysis is under progress.

AGRICULTURAL ECONOMICS AND STATISTICS

- **Prospects and problems of vegetables and fruit growers of Jammu and Udhampur districts:** The compilation of the already collected data from Udhampur block is under process. The information will be consolidated on various aspects of farm size, area under different vegetables, production, marketing surplus, marketing channels and various costs incurred by the farmers etc. However, the information pertaining to another block Chenani is under collection and therefore final compilation and analysis of the data will be completed after undertaking data from both the selected blocks.

- **Economics of marketing channels and price spread of Basmati in Jammu:** The collection of primary data through personal interview with enlisted farmers in the study area has been completed. Compilation, tabulation and analytical work is in progress.

SERICULTURE

- **Bioassay of mulberry varieties by feeding to silk worm:** The objective of this experiment is to test the feeding quality of improved mulberry genotypes collected from outside sources. This study has been divided into two; evaluation of spring specific genotypes and autumn specific genotypes. In the spring specific genotypes; S54, Chinese white, TR-4, TR-8, have shown good results in the form of worm shell per cent. For autumn season genotype, Rokokayso, Gosherami, Fukushima, Enshutakasuka are producing good results on the basis of shell percentage. Confirmation of these results shall be carried out in coming rearing season before recommendations are passed on to user departments.

- **Vegetative propagation of temperate mulberry varieties under local conditions:** Temperature varieties of mulberry are shy rooters failing to

survive if raised from cuttings. Generally these varieties are propagated by root grafting. The objective of present study is to attain maximum survival by budding and grafting. 15 varieties of mulberry have been tested for propagation. On an average 55 per cent success rate has been achieved. However between two methods of propagation, 60 per cent survival was observed by budding as against 51 per cent in case of grafting. Rootstock used was TR-10. The experiment is being repeated to confirm the results.

- **Evolution of temperature tolerant silkworm races:** The objectives of this programme are to develop silkworm races and hybrids suited for a) high temperature rearing during autumn season and b) high yielding races suited for spring season. For attaining objective a) high temperature rearing during autumn season eight silk worm line have been developed having tolerance to high temperature (30 °C). Hybrids have been prepared from these lines. Two hybrids have been short listed for their tolerance to temperature as well as high yields in the form of cocoon weight ranging from 2.0 to 2.5 gm and cocoon shell weight ranging from 0.42 to 0.47 gm. Filament length of 800 m has been attained. The parameters selected for evaluation are as per the benchmarks set by silkworm race authorization committee for north India. These lines /hybrids shall be reared in autumn 2005 to confirm the results. To achieve the second objective (b), seven lines have been purified and developed with a cocoon weight ranging from 1.65 to 1.96 g, shell weight ranging from 0.365 to 0.399 and shell ratio being 19.36 to 22.25 %. Diallel crosses have been prepared and shall be checked in coming rearing season. The selected hybrids shall be reared for three seasons before applying for approval from race authorization committee.

- **Phyto-morphology and silk worm bioassay on some improved varieties of mulberry:** PG student initiated work on above mentioned topic during the fag end of year in March, 2005. Observations have been completed and data are being compiled.

AGRICULTURAL ENGINEERING

- **Performance evaluation of different sowing equipment for wheat crop:** The two year experimentation indicated the best performance of traditional seed cum fertilizer drill (38.16 q/ha) followed by zero till ferti. seed drill(35.92 q/ha), conventional method (34.93 q/ha) and Raised Bed Planter(29.22 q/ha), respectively. There is very slight difference between zero till ferti seed

drill and traditional seed drill, later being better but the zero till. Ferti. seed drill seems to be promising one since it has a saving of Rs 2000 per hectare on land preparation; the crop establishment is advanced by 10 to 15 days beside it requires less labour and ensure timelines of sowing operation in Rice-Wheat cropping system.

- **Heated air drying of locally available vegetables of Jammu region:** Moisture loss data during drying of the tomato slices (Pusa Ruby) at 45°, 55°, 65°, 75°, 85° and 95 °C were recorded and dried samples, thus obtained, were evaluated for optimization of temperature. The drying characteristics and development of thin layer drying model analysis is in process. Based on the optical density (OD) measurements an index of non-enzymatic browning and organolaptic evaluation, the best temperature for drying of tomato, brinjal and bitterguord slices were found to be 65°, 50° and 60 °C, respectively. The study will help local entrepreneurship for processing of such vegetables.

- **Training and Demonstration of Power Tillers for Mechanizing Horticultural Operations:** The power tiller VST 130 DI and KAMCO 90 ER along with the attachment like pit diggers, cultivator, M.B. Plough, bund maker, axial flow pump, potato digger, planter, trolley and boom sprayer have been procured under the project. A demonstration unit on drip irrigation at Chatha and an experiment on performance evaluation on drip irrigation on papaya crop within kandi belt have been laid at Dhiansar. For popularizing the power tiller, its attachment and pressurized irrigation system demonstrated at various places like Chatha, Udheywalla, R.S.Pura and Ballore village of Jammu district where in 254 farmers have participated. The studies conducted under DOAC project in ten villages of Kathua District have indicated that annual utilization of draught animal power ranged between 215.73 hours per pair to 659.73 hours per pair.

Table 7: Draught animal power utilization pattern in Kathua District

S.No.	Category of the farmers	DAP utilization (hr/ha)
1	Medium large (> 4 ha)	1350.00
2	Small medium (2-4 ha)	477.50
3	Small (1-2 ha)	283.26
4	Marginal (< 1 ha)	194.96

ENTOMOLOGY

- Two species of root knot nematodes, *Helicotylenchus spp*. and *Tylenchorhynchus spp*. were found infesting pulse crop in Jammu. Some biocontrol agents have also been isolated and their multiplication and identification is being carried out. Management studies against wheat aphid revealed that oxydemeton–methyl and imidacloprid 20g a.i./ha and Imidacloprid 0.6g a.i/kg seed were highly effective in reducing the population of the aphids considerably and increased the grain yield. Studies on establishment and biocontrol potential of *Zygogramma bicolorata* on congress grass showed that the beetle started diapausing from October onwards and complete cessation of activity was noticed in December. The activity was resumed in last week of March onwards and population is following inclining trend till date. The data is being recorded on the impact of beetle in term of population and reduction of vigour of plant vis a vis the plant flushes germinated during different months of the year. The studies so far showed that the beetle could suppress the Parthenium germinated during post monsoon period only. Further, the plants germinated before or after the monsoon remained unaffected due to the reason that the beetle undergoes diapause during the period. Hence, effort are required to break the diapause of beetle or to evolve the winter resistant strain of this beetle.

- Studies on insecticide resistance against *Helicoverpa armigera* showed that the pest is acquiring differential degree of resistance in Jammu region coupled with increased ratio of resistance through various generations. Novel biopesticides based up on indigenous isolates of indigenous HaNPV strains were developed and their field potential was evaluated. It was revealed that the isolate from Samba was the most virulent and its application @ 5 $x10^{12}$ PIBs alone or in combination with *Trichogramma pretiosum* was effective in suppressing the population of this pest on tomato. However in chickpea, its combined application at half the dose i.e 250 LE with 0.035 % Endosulfan was found equally effective.

AGROFORESTRY

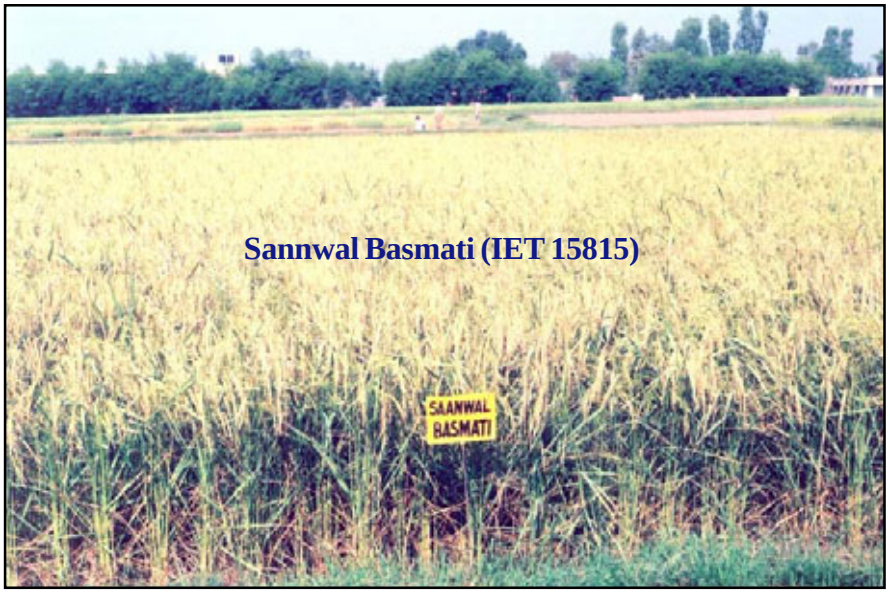
- Experiments conducted on vegetative propagation of Raj harad (*Terminalia chebula)* resulted into 82 and 68 per cent success in patch budding and cleft grafting respectively. A clonal orchard of Replicas established at FOA, Chatha. Grafted plants have also been distributed to Development Departments, NGO's and farmers.

- Identified and marked 23 candidate plus trees (CPT's) of *Jatropha curcas* in various parts of Jammu division. Seed collection from these trees as well as other sources outside the state has been undertaken for establishing progeny trials in the nursery for further field testing and screening of superior planting material.

GENETICS AND BREEDING

Following varieties of field crops were released by the division during the period under report:

- **Rice Variety-Sannwal Basmati (IET 15815):** It is a medium tall Basmati variety of *indica* group of rice developed through secondary selection in Basmati growing belt of R. S. Pura area of Jammu district. It has an average height of 140-145 cm having compact and straight panicle; slow senescence. It is moderately resistant to shattering, slightly responsive to fertilizers than Basmati 370. The variety matures in 140-145 days (seed to seed) with an advantage of earliness of about 10 days over Basmati 370.The variety has a yield advantage of 10.0 to 15.0% over Basmati 370.The variety is recommended for Basmati growing belts of Jammu & Kathua districts. The variety has quality parameters at par with Basmati 370.



Sannwal Basmati (IET 15815)

- **Gobi Sarson Variety - DGS-1:** It is a tall, early maturing and high yielding variety of gobhi sarson. It is profusely branched with intense pod bearing capacity. Its leaves are thick, smooth and sweet in taste. The plants are stout and do not lodge. It has comparatively low erucic acid (26%) and glucosinolate (20-30 μ moles/g defatted meal). It is moderately resistant to aphids and Alternaria blight. It yielded 19.0 q/ha in research and 12.0 q/ha in farmers field.

Gobi Sarson Variety - DGS- 1

- **Indian mustard Variety- RSPR 01:** It is a tall, early maturing and high yielding variety of raya. Plants are stout and do not lodge. It is moderately resistant to aphids and Alternaria blight. It has 40 per cent oil content. On an average it yielded 10 q/ha on farmer's field. It matures in 140-150 days. This variety has been tested in All India Coordinated trials and yielded (19.20 q/ha) against national check (17.3 q/ha).

Indian mustard Variety- RSPR 01

- **ToriaVariety- RSPT 01:** It takes 75 to 85 days to mature. Because of its early maturity, it fits well in Toria- Wheat rotation. It gives an average yield of 7.5 quintle per hectare. Its oil content is 40 per cent. The variety was approved for release in representative areas of Jammu, Kathua, Udhampur and Naushehra of Jammu Division of J&K State.

ToriaVariety- RSPT 1

- **Chickpea variety- Shivani (SCS-3):** Developed by Pulses Research Sub-Station, Samba, Shivani is a desi gram high yielding variety having brown, medium bold seed. It is drought resistant, moderately tolerant to pod borer and moderately resistant to wilt and root rot diseases. Under optimum management conditions, the yield potential of the variety is 20 q/ha. Protein content of the variety is in the range of 22-24 per cent.

Chickpea variety- Shivani (SCS-3)

PLANT PATHOLOGY

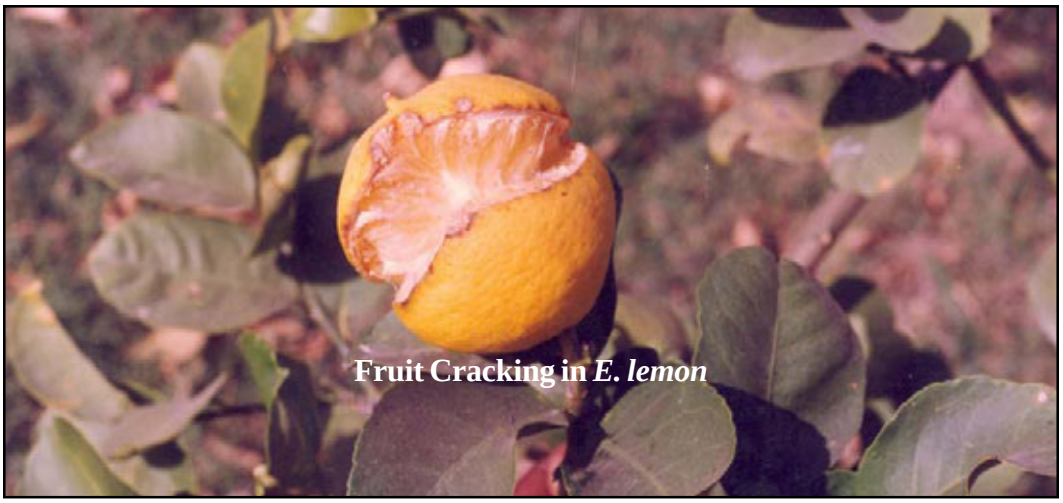
- Among various bioagents and fungicides tested in the field, the resident isolates of *Trichoderma* spp. Viz. T_{14}, T_{23}, T_{25},T_{27} and non resident *Chaetomium globosum* and *T. viride* (IARI, New Delhi) and *Pseudomonas flourescens*(Pantnagar) and fungicides viz., carbendazim, Saaf and thiophanate methyl were found most effective against cucumber wilt.
- Out of 20 genotypes of uridbean tested, SUS-1, SUS-2, SUS-3 and SUS-4 gave resistant reaction against the foliar disease.
- Several isolates of *Trichoderma viride*, *T. harzianum*, *T. virens, Chaetomium globosum*, *Aspergillus flavus, A. tereus*, *A. niger* and *Trichothecium roseum* were collected from the soils of different agro-climatic zones of Jammu Division. These isolates were evaluated individually against the major soil borne pathogens viz., *Fusarium oxysporum*, *F. solani* and *Sclerotium rolfsii* for their biological control efficacy. One isolate each from *T. viridie*, *T. harzianum* and *T. virens* exhibited superior biocontrol properties in suppressing the growth of the pathogens tested. The selected biocontrol isolates have been mass multiplied and shall be transferred to the field in the current year for field evaluation.
- During *rabi* 2004-05, 611 germplasm lines of wheat under PPSN, SAARC, TPN and Multiple Disease Screening Nursery (MDSN) has been tested against rusts, smuts, powdery mildews and foliar blights.

POMOLOGY AND POST HARVEST TECHNOLOGY

- **Introduction of sub-tropical Peach and Pear cultivars:** Under this project, seventeen cvs of pear and fifteen cvs of peach have been introduced from different parts of India and the observations on morphological and physiological characters were recorded. The cv Florda Prince, Early Grand and Shan-e-Punjab were found promising during initial stage.
- **Standardization of maturity indices in Pears:** Maturity indices of pear cv. LeCont and Pathernakh were standardized for Sub-tropical conditions of Jammu. LeCont and Pathernakh pear take 129-135 and 148-156 days respectively to mature from full bloom.
- **Runner production of strawberry and its distribution:** Runner production of strawberry cvs. is major problems for its cultivation under sub-tropical conditions due to intense heat. However the problem was overcome by using

different shade nets for runner production. The runners were distributed to farmers.

- **Effect of plant growth regulators on fruit drop in mango cv. Dashehari**: Following the trials, it is recommended that for effectively controlling the fruit drop in mango cv. Dashehari, plants should be sprayed with 30 ppm NAA at pea stage followed by repeated spray after 15 days or 20 ppm NAA spray at marble stage and followed another repeated spray after 15 days.
- **Fruit cracking in** *E. lemon*: Cracking of lemon was effectively controlled with the spray of 40 ppm NAA twice in the month of July.



Fruit Cracking in *E. lemon*

- **Jamun (***Syzgium cumini***) dehydration at low temperature under vaccum**: The product retains its colour if dehydrated under aforesaid conditions. The fruits can also be utilized for preparation of a ready to serve beverage having natural and an attractive colour. A Food Quality Control Laboratory is under establishment with the assistance of Ministry of Food Processing Industries, Govt. of India.
- **Peach was subjected to various post-harvest techniques to extend its storage life**: Refrigerated storage coupled with modified atmospheric packaging was found most suitable for its storage. The problem of chilling injury during refrigerated storage can be reduced by intermittent warming of fruit.

B. FACULTY OF VETERINARY SCIENCES & ANIMAL HUSBANDARY

VETERINARY ANATOMY AND HISTOLOGY

Gross anatomical aspects of the immune system of Kagani goat has been studied. Histomorphological works on superficial lymph nodes of Kagani goat has been conducted. Gross and histological studies on the female genital system of Kagani goat have also been conducted. In addition, gross anatomical works on the appendicular skelton of some wildlife species available in Jammu region such as Leopard, Samber deer and Barking deer has been studied

VETERINARY BIOCHEMISTRY

The Immobilization of *R. oryzae* in agar, agarose and polyacrylamide was subjected to varying temperature conditions from 200 to 400 °C under static conditions. The maximum enzyme yield was obtained at 300 °C in agar blocks followed by polyacrylamide blocks and agarose beads. Furthermore, the enzyme recovery from agar immobilized *R. oryzae* was maximum when wheat bran was used as support media during immobilization. The agar blocks with wheat bran under specified conditions (100mM, pH 6.5 phosphate buffer and 30 °C) was successfully reused for four times. However under immobilized conditions the enzyme activity was low compared to free mycelium.

VETERINARY PHARMACOLOGY AND TOXICOLOGY

Toxicological and biochemical studies of organophosphorus insecticides in sheep and goats were undertaken with a view to determine the pattern of toxic symptoms and establish biomarkers which will help in diagnosis of such toxicosis and also evolve a suitable antidotal treatment for such intoxications.

The acute toxicity studies of triazophos and dicholorvos have been conducted in Bakerwali goats. Both insecticides were shown to induce marked toxic symptoms & biochemical alterations thereby indicating that their margin of safety is low for this species.

The results indicate that these insecticides should not be exceeded than the recommended doses lest these induce toxic symptoms and biochemical alterations in the goats. The erythrocyte cholinesterase is a good bio-maker in predicting the exposure to these insecticides in this species.

Studies on Pharmacokinetics of antibacterial drugs were also under taken in goats. The disposition kinetics of cephalosporins (Cefuroxime & Ceftriaxone), in goats were studied using microbiological assay methods for assaying these antibacterial drugs in the blood of goats. Based on the drug levels in the blood at

different time intervals various pharmacokinetic parameters were determined. Such studies help in evolving an exact dosage regimen that needs to be administered in animals to combat infections amenable to these antibacterial drugs.

VETERINARY PARASITOLOGY

The species wise finding of survey of helminth parasites affecting livestock in Jammu region are as under:

Bovines: 925 faecal samples collected from bovines in R.S.Pura, Bishnah and Samba tehsils of Jammu district and Bilawar tehsil of Kathua district revealed 62.38 per cent prevalence of the parasite. Amphistomes (25.12%) were predominant, followed by the strongyles (9.78%). Presence of Fasciola, Strongyloides, Ascaris, Trichuris, Moniezia spp. was 5.15, 6.23, 8.01, 0.88 and 0.62, per cent respectively. Mixed infection with one or more helminthic ova was also detected in 8.27 per cent bovines. Helminthic infection was recorded throughout the year with seasonal variation i.e. highest during rainy (69.75 %) followed by winter (58.87%) and Summer (55.13 %), respectively.

Sheep and Goat: 822 faecal samples collected from sheep and goats from R.S.Pura, Bishnah and Samba tehsils of Jammu district and Bilawar tehsil of Kathua district revealed 77.49 per cent infection of gastrointestinal parasites. Strongyles (47.13%) were predominant followed by Eimeria (8.23%), Amphistomes (6.07%), Trichuris (4.08%), Strongyloides (3.27%), Fasciola (2.98%), Dicrocoelium (2.83%) and Moniezia (0.83%) spp. Mixed infection with one or more gastrointestinal ova was also detected in 14.51 per cent animals only. Gastroin-testinal parasitic infection was recorded throughout the year with seasonal variation i.e. highest during rainy; July-October (84.12%) followed by summer; March-June (80.03%) and winter November-February (72.21%), respectively.

Equines: Prevalence studies of helminths in equines of Jammu region (Horses-265 and Mules-162) based on faecal examination revealed 77.75 per cent infection. The samples were found positive for parasitic ova viz. Strongyles (66.04%), Strongyloides (16.39%), Ascarids (4.68%), Oxyurids (7.72%), Amphistomes (3.74%) and mixed infection was 20.84 per cent. However, faecal examination of equines of Katra region (81.72%) revealed higher infection rate as compared to R.S. Pura region (60.34%) of Jammu. The over all prevalence of infection was 82.14 per cent in Summer (June, July & August), 68.08 per cent in Autumn (Sept., Oct. & Nov.), 77.77 per cent in Winter (Dec., Jan. & Feb.) and 75.22 per cent in spring (March, April & May)

One village, namely Chak Siyan (R.S.Pura Tehsil) with 57 number of families having total livestock 170 was adopted for complete deworming of parasites. First deworming of all the animals was done on 29th April 2004.

VETERINARY PUBLIC HEALTH AND HYGIENE

- Testing of milk and indigenous milk products for hygienic quality.
- Studies on myiasis in sheep and goats.
- Studies on hydatidiosis in meat animals.
- Studies on mastitic milk.
- Screening for brucellosis and tuberculosis.
- Running an extension campaign regarding Zoonoses and their control using novel strategy of reaching the unreached through school children and farmers in rural areas.

ANIMAL NUTRITION

Fifteen tree leaves such as *Acacia nilotica* (Kikar), *Albizia lebbeck* (Sirin), *Olea species* (Olive), *Berberis species* (Kimalh), *Celtis australis* (Khirk), *Cordia dichotoma* (Lasura), *Dalbergia sisso* (Shisham), *Grewia optiva* (Dhaman), *Leucaena leucocephala* (Subabool), *Mangifera indica* (Mango leaves), *Melia azedarach* (Drenk), *Morus alba* (Toot/Shtoot), *Prunus species* (Apricot), *Quercus dilatata* (Moru) and *Zizyphus jujuba* (Ber) were analysed for proximate and fibre constituents, nitrogen solubility, fibre bound nitrogen and nitrogen fractions. There was variation in proximate and fibre composition. The crude protein (CP) content was maximum in *L. leucocephala* (24.52%) and minimum in *M. alba* (8.60%) whereas ether extract (EE) content was highest in *M. alba* (9.31%) and minimum in *A. nilotica* (1.73%). The neutral detergent fibre content varied from 13.15 per cent in *M. azedarach* to 53.08 per cent in *Olea species*, whereas acid detergent fibre varied from 10.08 per cent in *M. azedarach* to 55.49 per cent in *C. dichotoma*.

The total nitrogen (N) solubility in borate phosphate buffer varied from 11.20 per cent in *C. dichotoma* to 63.00 per cent in *Dalbergia sisso*. It appears that protein from *Dalbergia sisso*, *M. azedarach*, *G. optiva* and *L. leucocephala* would be degraded quickly in the rumen because of their high N solubility and that from *Quercus species*, *A. nilotica*, *Olea species* and *C. dichotoma* would be degraded slowly. The neutral detergent insoluble nitrogen content was maximum in Olea leaves (56.63%) and minimum in *M. azedarach* leaves (3.00%). The nitrogen fraction A

having instantaneous and complete rumen degradability ranged from 8.40 per cent in *C. dichotoma* to 50.40 per cent in *Dalbergia sisso*, whereas nitrogen fraction B1 having high ruminal degradability varied from 2.30 per cent in *C. dichotoma* to 18.20 per cent in *M. azedarach*. The protein fraction B2 having low ruminal degradability but complete digestibility in intestine was highest in *A. lebbeck* (64.88%) and lowest in *Dalbergia sisso* (19.83%), whereas, nitrogen fraction B3 having lowest ruminal degradability was maximum in 22.83 per cent in *G. optiva* and minimum in *M. azedarach* (0.90%). The nitrogen fraction C which is unavailable to the ruminant animal varied from 2.10 per cent in *M. azedarach* to 53.06 per cent in *Olea species*. On the basis of present studies it appears that *A. lebeck*, *Berberis species*, *Dalbergia sisso*, *L. leucocephala*, *M. alba*, *M. azedarach* and *Z. jujuba* are good fodders for ruminants.

ANIMAL GENETICS AND BREEDING

About one hundred forty Bakarwali goats were measured/recorded for growth/ morphometry.

LIVESTOCK PRODUCT TECHNOLOGY

Effect of various thickeners viz rice flour, maida, arhar *dal* and corn flour on quality of shank-whey soup at 0 (control), 1, 2 and 3 per cent w/v of soup were tested. The increase in the level of thickeners increased the pH of the soup (5.20 to 5.65) and consequently decreased the titratable acidity of shank-whey soup (0.18 to 0.14). The increase in level of thickeners also linearly increased the overall nutritive value in terms of total solids content (6.36 to 11.76 %), crude protein content (2.50 to 2.70%) content except ether extract (0.60 to 0.5%) and lactose content (2.35 to 2.10%). However, not much difference in terms of ash content. In general, incorporating thickeners @ 1 to 2 per cent level improved overall sensory attributes of the products viz. colour and appearance (7 to 7.25%), flavour (7 to 7.25) and overall palatability (7 to 7.25%) of the products. Incorporation above 2 per cent level decreased the scores for above sensory attributes of the product (7.25 to 6.5%). The increase in level of thickeners linearly increased the consistency of the product and consequently decreased the meat flavour intensity. From this experiment, it is concluded that thickeners can be utilized in making nutritive soup. The maximum level of incorporation should not exceed two per cent level to get better improvement in terms of sensory attributes of the product.

ANIMAL REPRODUCTION, GYNAECOLOGY AND OBSTETRICS

Uterine samples of cattle from unorganized farms, suffering from endometritis were collected and culture sensitivity tests were carried out in collaboration with Division of Veterinary Microbiology and Division of Veterinary Public Health. The gynoecia-clinical (per rectal palpation and visual inspections of external genitalia) criteria adopted by the research staff for categorizing the conditions were as follows:

1) Anoestrus
2) Cystic Ovaries
3) Endometritis
4) An ovulation

A total of 165 cattle from unorganized farms and cases in Veterinary Clinic and Teaching Hospital at R.S. Pura were studied during the period from May, 2004 to December, 2004. Out of 165 cases, 85 (51.52 %) were of endometritis, 42 (25.45 %) were of anoestrus, 24 (14.55 %) were of an ovulation and 14 (8.48 %) were of cystic ovarian degeneration.

In 85 cases of endometritis, different antibiotic treatments viz. Gentamycin, Tetracycline, Ciprofloxacin, Enrofloxacin and indigenous drugs were tried and Enrofloxacin was found to be most effective. In anoestrus cows, Receptal (GnRH) was more effective than indigenous drugs. In an ovulation, GnRH was found to be more effective than hCG and Placentrex. In cystic ovarian degeneration cases also, GnRH was found to be more effective than hCG.

A total of 35 isolates were collected. *E.coli* was found highest in percentage i.e 15 of 35(42.85%). These isolates were subjected to *in-vitro* antimicrobial sensitivity test by standard disc diffusion method. The result of the antimicrobial sensitivity test revealed maximum sensitivity to Enrofloxacin (80 %) followed by Gentamycin (70 %) and Ciprofloxacin (60 %).

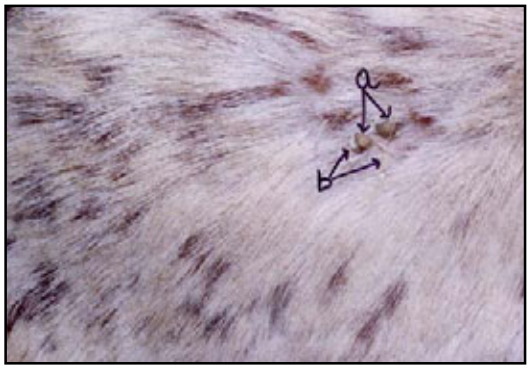
VETERINARY SURGERY AND RADIOLOGY

Results of the three groups of anaesthetic experiments (Gr.I-Propofol alone, Gr.II-Xylazine + Propofol and Gr.III- Xylazine + Ketamine) already conducted in 18 goats and 12 buffalo calves indicate that induction and recovery was rapid in propofol groups of animals. *Transient apnoea* for 30-50 seconds soon after Propofol

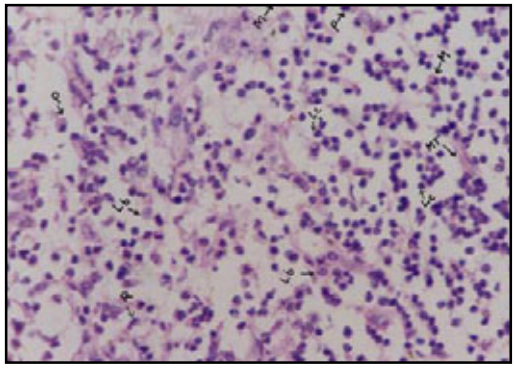
injection was noticed. A decrease in RT., RR.; TEC and Hb and an increase in HR, TLC, Serum ALT, AST, BUN, Creatinine and Glucose were found in all the groups.

VETERINARY CLINICAL MEDICINE AND JURISPRUDENCE

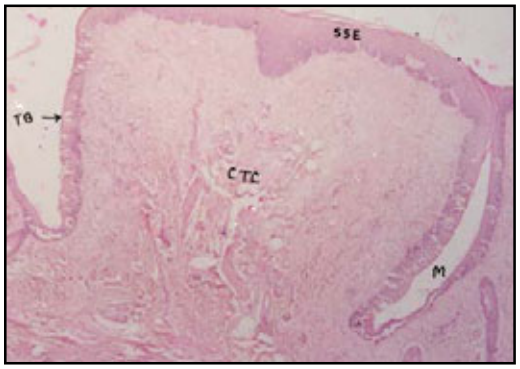
Metabolic profile study was carried out in pregnant animals wherein sub clinical deficiency of Ca, P, and mild anaemia was reported. Antimicrobial sensitivity test in Mastitis revealed that enrofloxacin was highly effective followed by trimethoprim, tetracycline, chloramphenicol, streptomycin, oxtetracycline, gentamicin, clindamycin, cloxacillin, erythromycin, amoxicillin, novobiocin and sulphamethizole. A baseline survey was conducted in J&K and Udhumpur districts was carried out there anaemia, hypoalbunemia and hypoglycaemia was reported.



***Hypoderma crossi* Larvae (a) in goats surrounded with pyogenic material (b)**



No.1. Photomicrograph showing different cell populations in the lymph node of adult Bakarwali goat as Plasma cell (P) Macrophase (M), Lymphocyte (Lc), Lymphoblast (Lb), Reticular cell (R) and Medullary traveculae (MT).



No.2. Photomicrograph of the Tongue of a Himalayan Black bear showing Stratified squamous epithelium (SSE), Connective tissue core (CTC), Moat (M) and Taste bud (TB).

Goat warble fly infestation, caused by fly *Hypoderma crossi* was studied in four tehsils of Jammu district over a three year period between January 2002 and December 2004. The clinico parasitological examination of 1294 goats revealed 26.42 per cent warble infestation. The prevalence was 40.08 per cent in Samba tehsil, whereas no animal was found positive for warble infestation at Ranbir Singh Pura, Jammu and Bishnah tehsils of Jammu district as the climatic conditions are not favorable for larval development of fly. Warbles were found in goats from late September to early March. Clear seasonal variation were observed in prevalence and intensity, with the highest warbles on back of goat in winter (80.45%) followed by autumn (65.43%) and spring (1.90%) whereas no infestation in summer and rainy season.

VETERINARY EPIDEMIOLOGY AND PREVENTIVE MEDICINE

- Screening of livestock for Hormoprotozoan diseases.
- First report of Hog cholera from Jammu.
- Screening of poultry for salimonellosis.

VETERINARY AND ANIMAL HUSBANDRY EXTENSION

Study of Ethnoveterinary practices of Jammu: The preliminary studies on existing ethno veterinary practices of Jammu region were completed. It was found that a wide variety of substances are frequently used in treatment of various common conditions. The conditions like diarrhoea, indigestion, bloat, FMD, HS, mastitis, pneumonia, skin affections, retained placenta, plant poisonings, etc. are treated using a variety substances like camphor, cedar wood oil,jaggery, lajbati leaves *(Mimosa pudica),* rice gruel, asoeftida, patrees, safed musli,chirate leaves, etc.

Backyard Poultry Farming in Jammu Region- Present status and future strategies: In this project an attitude scale using Likert's method of summated rating was constructed. The scale contained 15 items in all and the reliability coefficient using Rulon's formula was found out to be 0.92, indicating fairly high reliability.

Further studies in the project are directed towards identifying the existing Backyard units in the study area and studying their profiles.

Extension Activities:

1. The division is actively engaged in running an extension campaign on milk and meat born zoonoses. In the campaign high risk groups are identified and targeted for increasing awareness. A novel strategy for targeting school children is also being tried in this campaign. An effort has been made to cover both consumers and producers regarding hygienic practices.

2. Training programmes organization: Active support has been rendered in different capacities in the training programmes organized in F.V.Sc & A.H. For the past one year, all the organizational aspects like planning, execution, monitoring, coordination, evaluation, etc. are being dealt for the training programmes organized in the faculty.

3. The division has organized two training programmes for field veterinarians of Animal and Sheep Husbandry Department, Jammu.

VETERINARY CLINICS AND TEACHING HOSPITAL

Under the project on management of long bone fractures in large animals, metacarpal and metatarsal fractures in equine and metatarsal metacarpal and tibial fractures in bovine were managed. The fractures fixation technique used was on the merit in each case. Tibial fracture in bovine were managed by transfixation and hanging pin caste techniques whereas meta carpal / metatarsal fractures were managed with U or V splints incorporated POP casts. Future work on use of intramedullary devices for repair of long bone fractures in large animals is in progress. Under the project titled" Comparative efficacy of autogenous synovial, Diclofenac sodium, Triamcinolone and ultrasound therapy in aseptic arthritis in animals", the results obtained from the pilot trials were applied in clinical cases of arthritis in equine brought to the veterinary clinic, involving the hock joint, knee joint and fetlock joint. The animals showed varying degree of lameness. The synovial fluid collected from these joint showed an increase in volume, presence of RBCS, the specimens were dark yellow and turbid and contained large number of leucocytes and/or cell and cartilage debris. Resolution of inflammatory changes in the joint and synovial fluid and improvement in the gait of the animals was much better in the group of animals in which Triamcinolone was given intra-particularly on two occasions at two weeks internal than those in which Diclofenac sodium was used weekly on two occasions. The work is in progress.

Students busy in Teaching Hospital Course Practicals

C. RESEARCH STATIONS/SUB-STATIONS

REGIONAL HORTICULTURE RESEARCH SUB-STATION, BHADERWAH

A survey was conducted in the existing Olive orchards of Doda and Udhampur to ascertain causes of crop failure and low productivity of these orchards. The survey revealed that major causes of low productivity are the neglected state of these orchards. A manual on "Olive Production Technology" has been prepared for the use of growers and field functionaries.

In order to check the fruit drop in walnut, an application of Endosulfan @ (0.02%) at panicle emergence and repeated application at fortnight interval, followed by two sprays of NAA (20 ppm) at 8 and 6 weeks prior to expect harvest

recorded 19 per cent fruit drop and 22.22 kg yield per tree as compared to 40.25 per cent fruit drop and 15.36 Kg yield per tree recorded in untreated trees. Three grafting techniques viz. tongue, cleft and whip and three budding methods; patch, chip and annular were tried in February-March and June-July respectively during 2004 on walnut rootstocks. The highest bud take (32%) was achieved in patch budding followed by chip budding (28%).

A field trial for the evaluation of different fungicides against corn rot of saffron revealed that carbendazim and carboxin (steeping before planting + drenching) were effective in checking the corm rot.

Thirty three locations in and around Bhaderwah, Chinta valley, Malathi and adjoining areas were surveyed for estimation of mosaic disease incidence in Rajmash and found that the disease incidence varied from 22 to 45 per cent.

REGIONAL AGRICULTURAL RESEARCH STATION, RAJOURI

Thirty three genotypes of oats were tested under single cut programme for forage yield at 50 per cent flowering stage. Genotype OS-315 gave highest green fodder yield of 320.5 q/ha. Genotypes next in order were OS-296 and Black Nip with green fodder yield of 312.5 q/ha and 304.5 q/ha, respectively. Whereas in respect of dry matter yield, genotype JH-99-2 ranked first with 50.4 q/ha.

Under multicut schedule, genotype OS-295 produced highest green fodder yield of 387.4 q/ha in all the four cuts, followed by genotypes OS-315 and OS-297 with green fodder yield of 383.66 q/ha and 377.5 q/ha, respectively. Whereas, in respect of dry matter yield, genotypes OS-295 and OS-315 also gave maximum dry mater yield of 62.4 q/ha and 59.9 q/ha respectively. In respect of grain yield, entry OS-6 resulted into maximum grain yield of 42.3 q/ha followed by entries S-3021 and HJ-8, with yield potential of 38.0 q/ha and 34.9 q/ha, respectively, whereas in respect of Dry Matter yield entry JH-851 stood first in rank with yield potential of 209.9 q/ha followed by entries JH-8 and JHO-2000-4 with dry matter yield potential of 136.5 q/ha and 130 q/ha, respectively.

Twenty entries of Sorghum were tested under single cut system and data recorded at 50% flowering stage for Green Fodder Yield (GFY) potential. Out of these entries, entry IS-3225 gave the highest green fodder yield of 352.4 q/ha followed by entry G-84 and IS-3237 with GFY potential of 325.37 q/ha and 320.55 q/ ha, respectively.

In the intermediate zone of Rajouri and Poonch, the major diseases recorded in maize were stalk rot complex (20.8%), foliar blight complex (50.7%), brown spot (26.4%), downy mildew (19.44%), common smut (18.3%), rust (2.6%), banded leaf and sheath blight (25.5%). Whereas, in the temperate areas of Poonch stalk rot complex (16.5%), foliar blight complex (45%), brown spot (20.5%), downy mildew (12.5%), common smut (25%), rust (5.2%), banded leaf and sheath blight (10.7%). Out of several genotypes tested local L-4 was found resistant against stalk rot complex, local C-2, KH-2001 and KH-517 resistant against banded leaf and sheath blight and KH-612, KH-517 and local C-5 resistant against downy mildew.

MAIZE BREEDING RESEARCH SUB-STATION, POONCH

One hundred ten Cytoplasmic Male Lines (CML–CIMMYT), maize lines released inbreds) and seven indigenous inbreds were evaluated in Kharif-2002 and 2003 for screening best inbred on *per se* performance, and ten best inbreds were selected in both white and yellow seed colour to develop diallel single cross maize hybrids during Kharif-2004. Similarly, 40 white seeded and 30 yellow seeded maize inbred lines of medium maturity group were tested for the development of diallel single cross maize hybrids in Kharif-2004.

Two single cut varietal trial on oat with 12 entries and advance varietal trial on oat with 6 entries were conducted. The entry IVOS-7 ranked first for both green fodder yield and seed yield with 107 and 34 q/ha respectively in initial evaluation trial, while in case of advance varietal trial, AOS-1-4 ranked first for greed fodder yield (130 q/ha) and AOS-1-2 for seed yield (31 q/ha).

One hundred five samples of local Rajmash germplasm were collected from Loran, Sabzian and Mandi locations of Poonch Distt. On the basis of survival/ growth data, it was concluded that exotic and local germplasm of Rajmash cannot be maintained in Rainfed condition.

DRY LAND RESEARCH SUB-STATION, DHIANSAR

During survey of Mukundpura, Thakurpura and Lodwal (Distt. Kathua) conducted in monsoon months of (July-Sept.) 2004-05, the papaya *(Carica papaya)* plantation as well as the nursery was found infected by stem/foot rot disease. The disease incidence was 10-20 per cent in nurseries and 5-8 per cent in orchard plantation. From infected plant samples, Pythium and Fusarium species were isolated as the causal organisms.

Helmonthosposium Leaf spot emerged as main maize disease under dry

land condition during all the three seasons of investigation (2002, 2003 and 2004). Out of 57 genotypes evaluated under natural conditions, none was found immune. Three genotypes viz., FH 3077, Harsa Composite and JAUM 7(local) were resistant, ten moderately resistant, nineteen moderately susceptible, eleven susceptible, and the remaining were found highly susceptible. Seed treatment with Carbendazim (1g/kg seed) + *Rhizobium* sp (30 g/kg seed) significantly reduced the disease incidence by 69.36 per cent.

From five years combined data on fertilizer trials, the recommended dose of NPK (60:40:20) coupled with 20 Kg $ZnSo_4$/ha recorded highest grain yield of maize with an average of 27.11 q/ha as compared with other treatments. The treatment, 100 per cent recommended dose of NPK followed closely with an average grain yield of 25.80 q/ha. The per cent increase in grain yield of maize due to different treatments over control ranged from 21.43 to 103.83 per cent.

In Legume system (Black gram), inconsistent effect of different treatments in influencing the maize equivalent yield was observed. In Kharif 2000, treatment with 100 per cent recommended N through inorganic fertilizer, in Kharif 2001, treatment with 15KgN through green leaf + 10Kg N through inorganic fertilizer, in Kharif 2002 and Kharif 2003, treatment with 15 Kg N through green leaf +20Kg N through inorganic fertilizer recorded the highest maize equivalent yield of 24.68, 17.23, 21.27 and 15.92 q/ha respectively. In Kharif 2004, treatment with 15 Kg N through green leaf + 20Kg N through inorganic fertilizer recorded the highest maize equivalent yield of experimentation with an average maize equivalent yield of 9.99 q/ha. The per cent increase in yield over control ranged from 34.33 to 66.86 per cent.

In Cereal + Legume system (Maize + Blackgram), 100 per cent N through inorganic fertilizer) recorded the highest average maize equivalent yield of 23.22 q/ha followed by the treatment with 15 Kg N through green leaf+ 20Kg N through inorganic fertilizer with an average maize equivalent yield of 21.08 q/ha. The lowest grain yield was recorded in control with an average maize equivalent yield of 11.59 q/ha. The increase in grain yield ranged from 32.09 to 100.34 per cent over control with different treatments.

The highest mustard equivalent yield of 11.95 q/ha was recorded with the application of 10 tons of FYM/ha in maize during the preceding Kharif season, followed by recommended NPK (60:40:20 Kg/ha)+$ZnSo_4$ @ 20Kg/ha (11.48 q/ha) and 50 per cent recommended NPK +50 per cent N through FYM (11.32 q/ha with the application of 10t FYM/ha followed by 50 per cent recommended NPK + 50 N per cent through FYM (13.79 q/ha).

The average of four years data of maize crop revealed the highest grain yield of 20.13 q/ha under conventional tillage + interculture followed by 50 per cent conventional tillage + weedicide + interculture with a grain yield of 19.02 q/ha. With regard to nitrogen application, the highest average yield of 20.99 q/ha was recorded with 100 per cent nitrogen through inorganic fertilizer followed by 50 per cent nitrogen through organic manure + 50 per cent nitrogen through organic fertilizer. The lowest grain yield of 18.97 q/ha was recorded when 100 per cent nitrogen applied through organic manure.

Under dry land condition,the highest grain yield of 22.68 q/ha of maize crop was obtained with the treatment- recommended fertilizer+ life saving irrigation and it was statistically at par with treatment with recommended fertilizer + mulching & recommended fertilizer with grain yield of 20.90 & 19.28 q/ha, respectively. The lowest yield was recorded in control plot with grain yield of 13.34 q/ha.

Four years data revealed that the highest average maize grain yield of 25.11 q/ha was obtained with the application of 10t FYM + 40Kg N/ha and it was followed by 10t FYM+ 30Kg N/ha. The control plot gave grain yield of 14.62 q/ha. There was increase of 29.90 to 71.75 per cent due to different treatments over control.

Report of Farmers' Field Day on Oilseeds at village Khara Madana, Distt. Jammu

A farmer's field day was held at village Khara Madana on 30th March, 2005 by DLRSS, Dhiansar, SKUAST -Jammu. The day was celebrated in view of demonstrating successfully laid out 50 Front Line demonstrations of one acre

Frontline demonstration at farmer's field on Gobhi Sarson

Releasing of pamphlet on recommendations for cultivation of gobhi sarson by Hon'ble Vice Chancellor at Farmers' Field Day

each on oilseed (**Gobhi sarson**) during rabi 2004-05 which highlighted use of improved seeds and balanced use of fertilizers in dry land areas of Jammu.

PULSES RESEARCH SUB-STATION, SAMBA

During first year of experimentation, it was observed that out of the various factors, inclusion of improved variety helped to increase the yield by 56.5 and 24.5 per cent in uridbean and moongbean, respectively, whereas, increases recorded due to fertilizers, weed control and plant protection were 9.3, 6.5 and 6.0 per cent in case of uridbean and corresponding figures for moongbean were 6.2, 4.1 and 3.9 per cent.

WATER MANAGEMENT RESEARCH CENTRE, CHATHA

Wheat (PBW-343) following groundnut, received only two irrigations of 6 cm each at Crown Root Initiation (CRI) stage at 114 Days After Sowing (DAS) produced mean grain yield of 2900 kg/ha in 138 days, while mustard (RSP-03) that followed groundnut received two irrigations, one each at pre-sowing & branching stages produced mean oilseed yield of 669 kg/ha in 133 days.

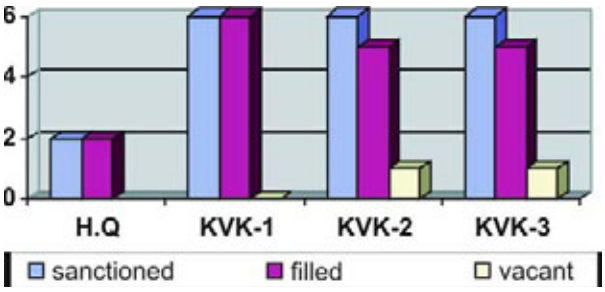
Radish crop (Mino Early Long), following groundnut also received two irrigations (at pre-sowing and at 54 DAS) produced mean root yield of 9033 kg/ ha in about 75 days. Soon after radish, a third crop of Rajmash (*Phaseolus vulgare*, cv. VL-63) was taken, which received five irrigations and produced mean bean yield of 860 to 1030 kg/ ha in 98 to 104 days.

Groundnut (cv ICGS-76) sown in summer months of April & May received 6 to 9 irrigations (6 cm depth) in addition to incident rainfall of 643/694 mm, but produced very poor pod yield of 286 to 432 kg/ha in 150 to 182 days.

5 EXTENSION EDUCATION

For the effective dissemination of technical information and technologies developed by the scientists to farmers and entrepreneurs, SKUAST-J has Directorate of Extension Education (DEE). The Directorate of Extension Education disseminates the technologies, recommendations and technical information material developed through the rigorous and scientific research available with Directorate of Research and various divisions of Faculty of Agriculture & Faculty of Veterinary Sciences & A.H. Some of the major activities pursued by Directorate of Extension Education are as under:

The activities of extension education (exclusively) primarily being carried out by faculty members appointed under three Krishi Vigyan Kendra (KVK). The total manpower with directorate of extension education is given in figure:



(KVK,1,2,3 denote the ones at RS Pura, Rajouri and at Bhadarwah)
Sanctioned/filled faculty strength under directorate of extension education

TECHNOLOGY ASSESSMENT, REFINEMENT AND DISSEMINATION

The Krishi Vigyan Kendras established by the university have been associated with the transfer of technologies in the various areas of Agriculture and allied sectors to cover the diverse agro ecological farming situations and have area specific technologies, the KVKs initiated activities in districts of Jammu, Rajouri and Doda. The major activities carried out by KVKs are on-farm trials, field visits of farmers, vocational trainings to unemployed rural youths/school drop outs, farm women and orientation of extension personnel from the Department of Agriculture and allied line departments.

OBJECTIVES AND BRIEF ACCOMPLISHMENTS OF KVK:

Krishi Vigyan Kendra is an integral part of Directorate of Extension Education and an innovative versatile institution sponsored by ICAR with focus on three main mandates: Farm Advisory Service, Demonstrations; Vocational trainings for farmers, farm women, rural youths and school drop-outs; Operational Research/ On-Farm trials. Three KVKs' one each in the district of Jammu, Doda and Rajouri are in operation. The brief accomplish-ments of each KVK are given hereunder:

1. KVK, R.S. PURA, JAMMU

ON-CAMPUS/OFF-CAMPUS& SPONSORED TRAINING

Areas of Practicing Farmers/Farm women	No. of Courses	Participants(No)						Grand total
		General			SC/ST			
		M	F	Total	M	F	Total	
Agril. Ext.	6	121	2	123	41	-	41	164
LPM	1	4	-	4	4	5	9	13
Crop production	4	88	7	95	12	-	12	107
Home science	3	4	33	37	-	21	21	58
Horticulture	2	45	-	45	21	-	21	66
Plant Protection	9	140	7	147	45	-	45	192
Total	24	402	49	451	123	26	149	600

RURAL YOUTHS (ON CAMPUS COURSES)

Areas	No. of Courses	Participants(No)						Grand Total
		General			SC/ST			
		M	F	Total	M	F	Total	
Apiculture	1	15	-	15	2	-	2	17
Home science	4	-	70	70	-	39	39	109
Mushroom	1	7	-	7	2	-	2	9
Total	6	22	70	92	4	39	43	135

EXTENSION FUNCTIONARIES (ON CAMPUS COURSES)

Areas	No. of Courses	Participants (No)						Grand Total
		General			SC/ST			
		M	F	Total	M	F	Total	
Agriculture Ext.	1	20	1	21	-	-	-	21
Plant Protection	1	15	-	15	-	-	-	15
Total	2	35	1	36	-	-	-	36

SPONSORED TRAINING

Training	Month	Duration (Days)	Participants(No)						Grand Total	Sponsoring Agency
			General			SC/ST				
			M	F	Total	M	F	Total		
Credit Linked Scheme of Rural Youth	March	3	28	-	28	1	-	1	29	Directorate of Marketing and Inspection, Jammu

EDUCATIONAL TOUR FOR FARMERS

Century Krishi Vigyan Mela prosperity through seed at IARI New Delhi

Month	Duration (Days)	Participants(No)						Grand Total	Sponsoring Agency
		General			SC/ST				
		M	F	Total	M	F	Total		
February	3	20	–	20	–	–	–	20	NABARD Jammu

EXTENSION ACTIVITIES UNDERTAKEN

Activities	No.	Participants(No)						Total
		General		SC/ST		Extn. Functionaries		
		M	F	M	F	M	F	
Kisan Gosthi	1	15	–	2	–	–	–	17
Vety. Clinic Camp	1	14	–	10	–	1	–	25

2. KVK, RAJOURI

The details of On-campus / Off-campus & sponsored training are given hereunder:

OFF-CAMPUS

Areas of Practicing Farmers/Farm women	No. of Courses	Participants (No)						Grand Total
		General			SC/ST			
		M	F	Total	M	F	Total	
Agril.Ext.	8	190	4	194	-	-	-	194
Agril. Engg.	2	55	5	60	-	-	-	60
Agro forestry	8	172	12	184	-	-	-	184
LPM	12	300	-	300	-	-	-	300
Crop production	5	111	9	120	-	-	-	120
Home Science	8	-	158	158	-	-	-	158
Horticulture	1	14	2	16	-	-	-	16
Total	44	837	190	1032	-	-	-	1032

ON-CAMPUS

Areas of Practicing Farmers/Farm women	No. of Courses	Participants(No)						Grand Total
		General			SC/ST			
		M	F	Total	M	F	Total	
Agro forestry	2	42	-	42	-	-	-	42
LPM	1	30	-	30	-	-	-	30
Home Science	2	-	28	28	-	-	-	28
Total	5	72	28	100	-	-	-	100

RURAL YOUTHS

Area	No. of Courses	Participants (No)						Grand Total
		General			SC/ST			
		M	F	Total	M	F	Total	
Home Science	1	-	10	10	-	-	-	10
Total	1	-	10	10	-	-	-	10

3. KVK, BHADERWAH

The details of On-campus / Off-campus & sponsored training are given hereunder:-

ON-CAMPUS

Area	No. of Courses	Participants (No)						Grand Total
		General			SC/ST			
		M	F	Total	M	F	Total	
PracticingFarmers/Farm women								
Agril.Extn.	5	35	9	44	17	4	21	65
LPM	5	39	-	39	12	-	12	51
Crop Production	8	99	-	99	32	-	32	131
Home Science	6	-	88	88	-	33	33	121
Horticulture	2	14	-	14	5	-	5	19
Total	26	187	97	284	66	37	103	387
Rural Youths								
Apiculture	1	14		14	4	-	4	18
Home Science	1	-	10	10	-	2	2	12
Total	2	14	10	24	4	2	6	30
Ext. Functionaries								
Crop Production	1	19	-	19	2	-	2	21
Soil Fertility	1	8	-	8	2	-	2	10
Total	2	27	-	27	4	-	4	31

OFF-CAMPUS

Area of Practicing Farmers/Farm women	No. of Courses	Participants(No)		Total
		General	SC/ST	
Agriculture Extension	2	36	6	36
LPM	1	10	3	10
Crop Production	1	18	3	18
Horticulture	1	15	3	15
Total	5	64	15	79

a) Agri-clinic & Agri-business Management:

During 2004-05, first batch of 25 participants completed the training programme under the externally funded scheme on certificate course in agri-clinic & agri-business management. Two success stories from the participants of the first training programme

in agri-clinic & agri-business management were submitted to MANAGE for documentation at national level. The particulars of these success stories are as under: -

FIRST SUCCESS STORY OF AGRI-BUSINESS CENTER:

Kissan Kheti Sewa Kendra, New Bus Stand, Sunderbani, District Rajouri, established by Sh. Rajesh Sudan (Id.No JAM 0028) S/o Sh. Kuldeep Raj Sudan, Ward No 5, Sunderbani who was a registered participant of first training programme of Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu. The entrepreneur is marketing seeds, pesticides and the evergreen decorative plant materials in and around the district Rajouri. Sh. Rajesh Sudan has initiated the activity of his own without taking financial assistance from any financial institute. The documentation of Kissan Kheti Sewa Kendra, a success story from J&K will provide encouragement to other boys and generate spirit of pursuance among his colleagues. The said enterprise is located at a distance of 150 kilometers from the winter capital of Jammu & Kashmir and is well connected with the motorable road only. The area is famous for the cultivation of maize and citrus fruits under rain fed conditions.

SECOND SUCCESS STORY OF AGRI-BUSINESS CENTER:

JK Mushroom House, Village Laulchak, Tehsil R.S.Pura, District Jammu, Sh. Rohit Sharma (Id.No JAM 0010) S/o Sh. Y.R.Sharma, 72 A, Exchange Road, Jammu, after the successful completion of first training programme of agri-clinic & agri-business at SKUAST–J has initiated the venture of cultivation of Button Mushrooms (*Agaricus bisporus*). The enterprise has been started at a distance of 20 km from Jammu. Initially he enterprise has been started in two sheds measuring 60x60 m having mud-plastered roofing. The first crop of button mushrooms has

come up by last week of November. The trainee has initiated the activity without taking financial assistance from any of the financial institute. The marketing of produce has been taken up at local vegetable market and through direct marketing. Under this enterprise, Sh Rohit Sharma has taken bold decision of establishing himself and providing earning to three illiterate persons of concerned region also.

MAJOR ACTIVITIES OF THE DIRECTORATE:

1. FRONT LINE DEMONSTRATION:

The front line demonstrations are being laid by the KVKs at university farms, research center and farmers' field to evoke the interest of farming community for adoption of new innovations and breaking the inhibition barriers.

a) LAYING OUT OF FLDs: During the current year, following front line demon-strations were laid by KVKs in different districts:

Crop	Number of FLDs laid						Total
	Jammu	Kathua	Udhampur	Doda	Rajouri	Poonch	
Maize	261	61	25	500	36	27	910
Mash	5	-	-	5	6	-	16
Moong	-	-	-	-	6	-	06
Rajmash	-	-	-	5	-	-	05
Gram	10	-	-	-	5	-	15
Toria	15	-	-	-	6	-	21
Mustard/ Gobhi Sarson	30	-	-	16	33	-	79
Wheat	42	-	-	-	55	-	97
Soyabean	-	-	-	5	-	-	05
Field pea	-	-	-	5	-	-	05
Oats	-	-	-	14	-	-	14
Total	363	61	25	550	147	27	1173

b) ORGANIZATION OF FIELD DAYS

KVK	Subject	Location (Village)	No. of participants
KVK, Jammu	Toria	Karalian	34
	Oilseeds	Daulatachak	59
KVK, Rajouri	Oilseeds & Pulses	Bhajwal	46

c) TRAINGS

The Directorate organized the eight specialized short-term vocational trainings for extension workers of development department.

Vocational Trainings

KVK	Number of Trainings	Theme areas	Number of participants
KVK, Jammu	1	Apiculture	17
	4	Home Science	109
	1	Mushroom Cultivation	9
KVK, Doda	1	Apiculture	18
	1	Home Science	12

A field day on maize was also organized by the Directorate on 30th September 2004 at village Dhub, Tehsil Samba, District Jammu in which Ex-Vice Chancellor Sh. H.U.Khan was the Chief Guest. About 200 farmers of the area participated. The maize exhibition depicting the samples of the maize collected from all the districts of Jammu region were displayed. All these samples were collected from

Front Line Demonstrations of Maize laid by Directorate of Extension Education under ISOPOM scheme of Directorate of Maize Research, Govt.of India.

d) ORGANIZATION OF SEMINARS/SYMPOSIA/WORKSHOPS ETC.

1) Interactive Horticulture Workshop: The Interactive Horticulture Workshop was organized on 22nd April 2004 at Jammu in which Scientists and Officers of the department of Horticulture, Horticulture Planning and Marketing, JKHPMC, J&K Agro Industries Development Corporation, National Horticulture Board participated. The workshop was held under the chairmanship of Shri B.R.Kundal, IAS, Principal Secretary to Govt., Agriculture Production Department.

2) District Coordination Committee: Meeting for the district Jammu was held at Krishi Vigyan Kendra, Jammu on 17th November 2004 in which the actions taken and follow up by the various line departments and Krishi Vigyan Kendra were reviewed.

3) T&V Monthly Workshops: The broad based extension programme incorporating the farm advisory services has been pursued by the routine monthly visits of resource persons to different district headquarters. The details of the monthly workshops conducted at various district headquarters are placed below:-

S.No.	District	T&V Monthly Workshops	
		Targets	Achievements
1.	Jammu	12	12
2.	Kathua	12	10
3.	Udhampur	12	12
4	Rajouri	11	10
5.	Poonch	10	8
6.	Doda	10	8
	Total	67	60

e. ZONAL RESEARCH AND EXTENSION ADVISORY COMMITTEE MEETINGS:

Directorate of Extension Education convenes ZREAC meetings before Kharif and Rabi seasons every year for planning, organization, monitoring of the extension activities and selection of thrust areas. Besides, technologies developed by the university are finalized for transfer to the field by extension agencies and to be incorporated into the package of practices published by the university. Three ZREAC meetings for Kharif 2004 were organized under the chairmanship of Ex-Vice Chancellor, SKUAST-Jammu during the year in which officers of the state development departments and the scientists of the SKUAST-J participated as per details given below:-

Zone	Zonal Research & Extension Advisory Committee Meetings		
	Districts	**Date**	**Venue**
I	Rajouri & Poonch	2nd June, 2004	Rajouri
II	Jammu & Kathua	8th June, 2004	Jammu
III	Udhampur & Doda	15th June, 2004	Bhaderwah

Zonal Research & Extension Advisory Committee Meetings