

ANNUAL REPORT

2003-2004



**Sher-e-Kashmir University of Agricultural
Sciences & Technology of Jammu**

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Sher-e-Kashmir
University of Agricultural Sciences & Technology of Jammu
Head Office, Railway Road, Jammu-180 012

Website : www.skuastjammu.org

From Vice-Chancellor's Desk



It is a matter of great pleasure to present the Annual Report of the University for the period 2003-04 highlighting the achievements in the fields of teaching, research and extension education. The SKUAST of Jammu was established with the objectives of producing trained manpower, conducting extensive research and extension in the domains of agriculture, horticulture and animal husbandry in Jammu region.

The University had 101 teachers/scientists, 153 technical staff and 271 non-technical staff to start with in 1999 and the present sanctioned staff strength is 1289 out of which 926 posts are filled. Recruitment of scientists has been made through selection of candidates competing at national level and the vacancy positions available have also been advertised and will be filled up shortly.

The patronage and guidance received from the Pro-Chancellor and Chancellor of the SKUAST of Jammu during the year has resulted in appreciable growth of the University.

I take this opportunity to place on record my thanks to all the members of statutory governing and decision making bodies and officers of the University for their initiatives and cooperation to make this University a premier institute of learning, research and extension.

Jammu

September Q1, 2004.

(H. U. Khan)



PREFACE

The present Annual Report chronicles the progress/achievements made by the University during the year 2003-04 in reference to the mandated objectives of teaching, research and extension education.

Thanks are due to officers, scientists, teaching and non-teaching members of both the faculties of the University for their sincere efforts resulting in progress and growth of the University. The efforts put in by Mr. C.L.Raina, Asstt. Director Research and Mrs. Heney Koul, Asstt. Registrar for compilation and presentation of the Annual Report in the present form are commendable and I place on record my appreciation to them. The typing and computerization of the Report by Sh. Dinesh Khajuria, Computer Assistant and Sh. Rajesh Singh Manhas, Jr. Steno. is duly acknowledged.

(Prof. A.R. Nazki)

Registrar



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INTRODUCTION

Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu is functioning at Jammu with its territorial jurisdiction covering entire Jammu region. Jammu region comprises of Jammu, Kathua, Poonch, Rajouri Udhampur and Doda districts with an area of 26293 sq. Km. Jammu region comprises of three district agro-climatic zones, the sub-tropical area, the mid-hills and the temperate area with wide variability in climate, soil type, flora and fauna. Jammu province with only 13% of geographical area of the State accounts for 49% of the agricultural land area and 80% of the state's wheat area. The total cultivated area of the region is 3.73 lac hectare. The cropping intensity of the region is more than 200%, contributing 9.3 lac tonnes of food production out of the State total of 14 lac tonnes. The main crops grown are rice, maize, wheat, oil seeds, pulses, potato, vegetables, fruits and nuts.

Animal Husbandry, supplemental to agriculture, is a strong source of rural income and employment. The livestock population of the region include 16.23 lac cattle, 7.08 lac buffaloes, 16.06 lac sheep, 13.51 lac goats and 55.25 lac poultry (Digest of Statistics, J&K 2000-01). Major land portion of Jammu province is under grasslands and forests.

Jammu region has the potential for growing sub-tropical fruits like mango, ber, litchi, citrus and grapes. Sub-temperate and temperate fruits such as peach, plum, olive, strawberry, pecannuts, apple, pear and walnuts are also grown. The prevailing agro-climatic conditions also are conducive for growing of high value horticultural species such as saffron, black zeera, morchella and others.

The SKUAST of Jammu was the second Agricultural University to be established in the State of Jammu and Kashmir in the year 1999 through an Act of Legislature. It is a member of Indian Agricultural Universities Association. This University, besides producing trained manpower has taken up area specific & need based research and extension in the domains of agriculture, horticulture and animal husbandry. The thrust areas have been identified and stress is being laid on area specific problems and enhancing the productivity of cereals, pulses, oil seeds, fruits, vegetables, nuts, spices and also on development of sericulture, apiculture, grass land, agro-forests and aromatic & medicinal plants. Genetic improvement of live stock is being given the top priority and initiatives have been taken in this regard besides disease control.

Objectives of the University:

The University has the mandatory responsibility of teaching, research and extension education in agriculture and allied fields. The specific objectives among others include:

- Imparting quality education at under-graduate and post-graduate levels in agriculture, veterinary sciences and animal husbandry and other allied branches of learning and scholarship such as horticulture and forestry.
- Furthering the advancement of learning and prosecution of research in agriculture, animal husbandry and other allied branches; and
- Undertaking the extension education of such sciences for the benefit of the rural people.

Status:

The SKUAST of Jammu is the second Agricultural University of technology for agriculture and rural development in the region which was established in the year 1999 through an Act of Legislature having active membership of Indian Agricultural Universities Association.

The strength of teaching members has risen up to 78 in faculty of Agriculture and 60 in faculty of veterinary sciences & Animal Husbandry. During the year, there were 334 students pursuing their studies in undergraduate, post-graduate and doctoral programme in both the faculties of the University.

There are three Directorates in the University which monitor the activities at the corporate level of the University as per their three mandate i.e. Teaching, Research and Extension Education.

The University is playing a pivotal role in the economic development of the region, by generating trained manpower and undertaking both basic and applied research in agriculture, horticulture and animal husbandry. Besides this, University also plays important role in transfer of technology for the benefit of the rural people of the division forms an integral part of extension activities.

Location:

The University head quarters is presently located at the Railway Road, Jammu and its faculty of Agriculture is located at Chatha and Udheywalla which are about 12 and 7 Kilometer away from Jammu (Tawi) Railway Station respectively. The R.S.Pura campus of the University houses the faculty of Veterinary Sciences & Animal Husbandry, which is at a distance of 20 Kilometer from the head office.

Organization and Management:

The management and administration structure of University is illustrated as an organogram:

EXECUTIVE SUMMARY

Bachelor, Master and Doctoral degree programs and training programs offered by the University at its various campuses progressed satisfactorily as per the schedule during the year 2003-04. Requisite emphasis was laid on both on-campus and off-campus research and transfer of technology activities.

Human Resource Development:

Starting with a meagre teaching staff of 59 teachers in the year 1999, the University has taken giant strides in the field of education by raising the strength of faculty to 135 members in the faculty of agriculture and faculty of veterinary sciences & A.H. The educational standards are at par with national standards as per the guidelines recommended by ICAR for agriculture and VCI for veterinary sciences. Rural Agriculture Work Experience (RAWEX) has also been introduced in the agriculture graduation program to acquaint the students with problems relating to farmers field. Under graduate, Post Graduate and Doctorate level programs are available in both the faculties.

During the year under report, the enrolment for under graduate programme in Agriculture was **23**, Vety. Science & A.H - **83**, Master degree in Agriculture - **18**, Master degree in Veterinary Sciences & AH - **4** and Ph.D (Agri.) – **8**. The admission to graduate and postgraduate programmes against free/ payment seats for the academic session 2003-04 was made on the basis of selection/ allotment of candidates by Board of Professional Entrance Examinations, J&K. The selection and admission to B.V.Sc & A.H. against NRI category and Ph.D programme was made by University itself. Eighteen students fulfilled the requirements for award of graduation degree in agriculture and ten in Vety. Sciences & A.H. Requirements for the award of M.Sc (Agri) and Ph.D. (Agri) degrees were completed by 20 and 05 students respectively.

Research:

In order to resolve the existing and emerging location specific problems being faced by the farmers, the scientists of SKUAST of Jammu are conducting result oriented research in agriculture, animal sciences and allied fields. The University has initiated the

process of improving productivity by utilizing both conventional and newly emerging techniques for meeting requirements of ever increasing population. In addition to internal research projects, the scientists are conducting research on twenty-three externally funded projects. The external funding is from NATP, DST, NHB and Central Zoo Authority.

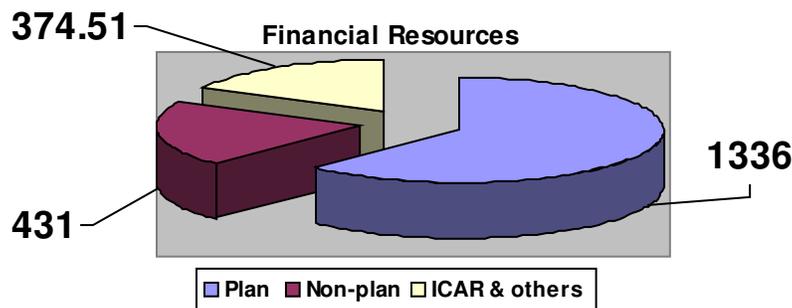
Extension Education:

The SKUAST of Jammu is playing a pivotal role of vital link between the technology developers and technology users. For dissemination and adoption of technologies by the farmers/entrepreneurs this vital link is being strengthened by utilizing established and latest innovative methodologies. Training programmes to apprise the farmers and field functionaries on latest know-how have been organised by the University.

The Krishi Vigyan Kendras functioning in three districts of Jammu region namely Doda, Jammu and Rajouri districts are involved in dissemination and adoption of technologies by the farmers by conducting adaptive trials and front line demonstrations. Field days and trainings are also organised by the KVKs.

Financial Resources:

SKUAST of Jammu being a SAU derives financial support from both plan and non-plan schemes of the State. During the year under report, University got Rs. 1336.00 lac as approved outlay under plan as per the revised estimates. Under non-plan scheme an amount of Rs. 431.00 lac were received. Indian Council of Research and other funding agencies provided funding support to the tune of Rs 374.51 lac for research and allied programmes being perused by the University.



Statutory Meetings Held

A) University Council:

First meeting of University Council of SKUAST of Jammu was held under the chairmanship of H.E. Lt. General (Retd.) S.K.Sinha, PVSM, the Governor, J&K State (Hon'ble Chancellor) on 3rd October, 2003 in Raj Bhavan, Srinagar. The meeting was attended by Jenab Mufti Mohd Sayeed, Hon'ble Chief Minister, J&K (Hon'ble Pro-Chancellor), Jenab Abdul Aziz Zargar Hon'ble Minister for Agriculture Production, Animal Husbandry & Cooperatives, J&K, Jenab H.U.Khan, Hon'ble Vice-Chancellor SKUAST of Jammu, Dr. Anwar Alam. Hon'ble Vice-Chancellor, SKUAST of Kashmir, Mr. B.R.Kundal, IAS, Principal Secretary, Agriculture Production Department, J&K and Prof. A.R.Nazki, Registrar SKUAST of Jammu as non-member secretary.

Mr. H.U.Khan, Vice-Chancellor, SKUAST of Jammu, presented the salient achievements made by the University since its inception in Sept. 1999.

The University Council reviewed the progress made on all the agenda points put forth in the agenda. Annual Report of the University and the budgetary provisions allocated were also reviewed by the Council. Hon'ble Chancellor noted with appreciation the initiatives taken by the University on Research, Teaching and Extension Education activities since its inception. Hon'ble Pro-Chancellor and other members of the Council also expressed their satisfaction over the growth of the University.

B) Board of Management:

Third meeting of the Board of Management of SKUAST of Jammu was held on 27.01.2004 under the Chairmanship of Mr. H.U.Khan, Hon'ble Vice-Chancellor.

C) Research Council

During the year under report two meetings of Research Council (3rd and 4th) were held on May 27-28, 2003 and December 26-27, 2003 respectively.

The meetings were chaired by Hon'ble Vice-Chancellor and eminent scientists from outside the state were invited as experts to review the progress of on going research projects and evaluate the new proposed projects for their technical soundness and adoption.

D) Extension Council

E) Academic Council

2nd meeting of Academic Council was held on 5th July, 2003 under the Chairmanship of Jenab, H.U.Khan, Hon'ble Vice-Chancellor

ACADEMIC ACHIEVEMENTS

Keeping in view the future challenges and relevance to changing aspirations and needs, educational system of the University is very dynamic with frequent evaluation and modification of teaching methodologies. In the recent past, the University has taken various steps to further improve the quality of teaching as per the course curricula.

The University offers two under graduate degree course besides M.Sc (Ag.) in eight subjects, M.V.Sc in five subjects and Ph.D programme in six disciplines. Course curriculum has been adopted as per Indian Council of Agricultural Research for B.Sc(Ag.) and for B.V.Sc & A.H by Veterinary Council of India. The admission to UG courses both in Agriculture and Veterinary was granted to the students who had cleared the common entrance test of J&K Govt. and also to the students selected and nominated by the ICAR and VCI, New Delhi.

The faculty of Agriculture is partly stationed at Chatha and Udheywalla campus. The faculty of Veterinary and Animal Husbandry is functional at R.S.Pura. The programme wise detail is given below:

Enrolment of students (Programme wise) for 2003-04.

Programme	No. of students
B.Sc (Ag.)	23
B.V. Sc & A.H	83
M.Sc (Ag.)	18
Ph.D	08
M.V.Sc	04
Total:	136

Pass Out (Programme wise) for 2003-04

Programme	No. of students
B.Sc (Ag.)	18
B.V. Sc & A.H	10
M.Sc (Ag.)	21
Ph.D	05
Total	54

Infrastructure facilities:

Scholarships:

For UG students of both faculties, financial assistance provided in the form of post matric and frontier scholarships during 2003-04 is as under:

Faculty	Post Matric		Frontier	
	No.	Amount (Rs.)	No.	Amount (Rs.)
FOA	9	63,230	8	70,250

Library:

Library is the backbone of an educational institution and it requires regular updating . The Central Library is located at main campus, Chatha and partly at R.S. Pura.

The library has also computer facilities. During 2003-04 the library had procured 966 books out of which Dr. Kaul and Dr. Grover donated 22 books. 75 foreign Journals and 18 Indian Journals were also subscribed. 852 books were issued to staff and 5253 books to students. Library has also procured 318 books for SC & ST students

Hostel :

The Boys hostel is located at R.S.Pura having 44 rooms. This hostel has 21 triple seater on the ground floor and 21 double seater on the first floor. T.V, Newspaper facilities, indoor games, volleyball, badminton and table tennis etc. are available to the hostel boarders.

A new hostel building has been constructed at R.S.Pura, which has 94 rooms it can accommodate 140 students in total. Separate hostel accommodation is available for girl students of the University. At present 125 students are residing in the hostels out of which 20 are female and 105 are male students

Medical:

24 hours medical and health services are provided through one Medical Officer in the medical dispensary at R.S.Pura. The number of patients treated during the year are:

Type of patients	No.
OPD	1126
Surgical	176
Medical	950
Patients referred to Medical Hospital Jammu/ Govt. Medical College Jammu	5
Emergency	25

Extra Curricular Activities:

Extra curricular activities such as inter faculty matches of football, volleyball, cricket, tug of war, table tennis, badminton and kabaddi were organised. Students also played indoor games and took part in different events of athletics. Debates and cultural programmes were also held during the year under report.

University sent a team of 29 students including 17 boys and 12 girls to represent SKUAST of Jammu in 5th All India Agriculture University Youth festival held at Maharana Pratap University of Agricultural Sciences and Technology, Udaipur from Feb. 24-28, 2004. The presentation of programme was highly appreciated by all the delegates and guests present in the Youth Festival. In this competition 1000 students from 34 States Agricultural Universities, 5 deemed Universities and the Central Agricultural University, Imphal participated.

Study Tour:

Educational tours for undergraduate students were organized during the summer and winter break within the state and to neighboring states. It provided an opportunity to the students to interact with students and staff members of other educational institutes.

RESEARCH ACHIEVEMENTS

Agriculture:

Agro-Forestry

Study results of four-year field plantation of 43 *Populus deltoids* revealed that five clones viz. G₃, S₇C₁₅, G₄₈, S₂C₂ and D₁₂₁ are out performing. However, field testing for one more year will continue for final recommendation under sub-tropical irrigated conditions of Jammu Division.

Completed the identification and marking of candidate plus trees (CPT's) of three important multipurpose trees viz *Terminalia chebula*, Retz, *T. ballerica* and *Sapindus mukorossi* Gaertn. Work on further propagation of these trees is in progress for quality planting material.

Achieved mass multiplication of three important fast growing multipurpose tree species i.e. *Paulownia tomentosa*, *P.fortunes* and *P. fargesii* through root cuttings in the nursery.

Establishment of Herbal Garden at Main Campus Chatha, for the ex-situ conservation, education, demonstration and supply of quality planting material to the farmers. The work on collection of germplasm of medicinal and aromatic plants has been initiated. In all 53 medicinal and aromatic plants species were introduced. Further survey for collection of more species is in progress.

Agronomy

Increasing trends in grain yield of both the crops in the rice-wheat cropping system was recorded upto 120 KgN/ha application but when inoculated with biofertilizers (*Azolla* and BGA in rice and *Azotobacter* and *Azospirillum* in wheat) the response was significant only upto 80 Kg N/ha which concomitantly resulted in producing reasonable gains in terms of higher net returns and benefit cost ratio.

In transplanted rice, a combination of herbicides i.e. Butacholr followed by Almix @ 1.000+0.004 Kg. a.i/ha applied 3 and 21 days after transplanting proved very effective for control of broad spectrum weeds.

Studies on PR series of rice varieties indicated that PR-113 performed better and required a fertilizer dose of 120, 60 and 30 Kg of N, P₂, O₅ and K₂O/ha.

The incorporation of rice crop residue of in wheat and wheat residues in rice coupled with inoculation of *Trichoderma viridii* (Cultured separately with FYM) and 20 Kg N/ha increased crop productivity with an average increase of 12.2% and 23.5% in wheat & rice grain yield respectively.

Analysis of weather data revealed that the rainy season extends from 26th week to 36th week and sowing of rainfed crops like maize and kharif pulses can be taken during the period in Kandi belt of Jammu.

Biochemistry & Plant Physiology

The variety K9943 of wheat grown under agro-climatic conditions of Jammu was found to be best for chapatti making under the project titled “ Quality characterization of wheat cultivars grown under Jammu region”.

Under the project titled “Evaluation of different genotypes of wheat for drought tolerance”, the RSP 81 was found most suitable variety for Jammu.

Open top chamber experiment was conducted to study the partitioning of carbon and nitrogen in response to high CO₂ concentration in soyabean and potato. Soyabean & potato both responded to CO₂ enrichment and nitrogen supply.

Optimum growth and yield response to soybean was obtained at 60 Kg ha⁻¹ of nitrogen instead of its recommended dose 50 Kg ha⁻¹ and optimum growth and yield response to potato was obtained at 150 Kg ha⁻¹ of nitrogen instead of its recommended dose 125 Kg ha⁻¹.

Entomology

Explorative survey for baculoviruses of lepidopterous insects-pests was conducted in three districts of Jammu division viz. Jammu, Udhampur and Kathua. A large-scale field collection of larvae from different locations was maintained on semi synthetic diet in laboratory. Larvae showing the characteristic symptoms were sorted out and kept separately for the isolation of virus. So far, six geographical isolates, three each of HaNPV and SINPV has been isolated and characterized. SINPV was also isolated from naturally infected cadavers from two sites. The natural incidence of HaNPV varied in different locations over the period of study (12th SW to 20th SW) from 1.0 to 11.3%. Whereas, the highest incidence of virus was observed during 18th SW in subtropical plains. In intermediate zone it was noticed about 2 weeks later. The pathogenicity of these isolates was proved through Koch's postulates. Each isolate was maintained in Laboratory for further studies. The mass production of SINPV was partially standardized with respect to optimum inoculum dose (5x10⁶ POB's/larvae), larval age (9 days), incubation period (7 days) and harvesting stage of larvae (moribund). One of the most virulent isolate was multiplied in laboratory for testing its efficacy in field after standardization of POB's count/ml. Small-scale field trials were conducted at two locations viz. Udheywalla and Satwari to generate the efficacy data of this isolate alone and in combination with the recommended insecticides, biopesticides and bioagents against *Heliothis armigera* in tomato. In trial 1st conducted at Satwari, all the treatments were targeted against high-density larval population of pest on hybrid variety namely Sonali. It was found that all treatments comprising the application of virus alone @ 500LE/ha, *Bacillus thuringiensis*@ 1 kg/ha single combined application of half dose of virus (250LE) + Endosulfan (0.035%) NPV 250LE + Bt 0.5kg/ha resulted in remarkable reduction in larval density and fruit damage after 7 and 14 days of treatment applications. While the fruit damage followed a declining trend in all the treatments from 0-14 days of application (35-15%) the increase in marketable yield in all the treatments over control ranged from 60.70 to 101.70 per cent. The maximum protection of the crops from pest and highest marketable yield of hybrid tomato was obtained with the treatment comprising the application of HaNPV 250LE + 0.035% Endosulfan/ha followed by the application Ha NPV @500LE/ha (25Kg/Plot). The trial 2nd was conducted at Research Farm, Faculty of Agriculture, Udheywalla on tomato variety Pusa Ruby in Randomized Block Design (RBD) comprising of 12 treatments, each replicated thrice in plots of (3x2.5m). The data depicted that following the treatment applications: the larval density

followed a declining trend after 1,7,14, and 21 days in all the treatments. It was interesting to note that the pest population after 21 days of treatment applications indicated an inclining trend in almost all the treatments. Hence, a second spray after 15 days of first spray is required. The data on fruit damage and yield showed that all the treatments proved effective in protecting the fruits from pest and increasing the marketable yield of fruits. The fruit damage in all the treatments ranged from 14.2 to 17.7 percent in comparison to as high as 37.7 per cent in control. The highest marketable yield (15.94 Kg/plot) was recorded in the plots sprayed with 0.07% Endosulfan (T₆) followed by the application of NPV 500LE/ha (T₃). The encouraging results evidenced by the local isolate of Ha NPV hold an ample scope for its sustainable utilization in various agro-ecosystems.

During 2003, trials were laid in farmer's field as well as at Udheywalla to meet out the objectives of losses due to root knot nematode *Meloidogyne incognita* infesting brinjal. The crop was protected by application of Carbofuran alone and Carbofuran in combination with Endosulfan. The results of the experiments revealed that the avoidable yield losses in brinjal due to this nematode in unprotected plots were 17.7 percent in 2002 and 12.9 percent in 2003

Five colonies of *Apis cerana* on 4 frame bees were procured from Doda during March, 2003. Bees were quite active, collecting nectar and pollen up to April, thereafter their foraging activities and strength started declining. As the temperature rose above 38⁰C the bees became restless and tried to abscond. The colonies could survive during summer due to various practices adopted but their strength did not build up and number of bees decreased considerably. The colonies had to be united and reunited to make them survive. Bees were attacked by several species of mites, wasps and ants, which cause considerable damage. Wax moths are of serious concern, which result in absconding the colonies. *A. cerana* colonies have a great tendency to abscond.

The incidence of *Helicoverpa armigera* in tomato growing belts of sub-tropical and intermediate zones was moderate. The per cent fruit infestation was also high in the sub-tropical zone. However the mean plant infestation was more in intermediate zone. The management of *H. armigera* with different IPM modules incorporating bioagents, botanicals, microbials and safer insecticides has been recorded and is being analyzed.

Chemical control of foliage feeding aphids of wheat: The number of aphids recorded 24 h before the treatment did not differ significantly but after 1 day of the application of insecticides. It was observed that imidacloprid (0.8) and oxydemeton-methyl (2.5) were highly effective in reducing the population of the aphids considerably and were at par with each other as compared to untreated check.

Effect of insecticidal seed treatment on germination, termite damage and yield of wheat: The differences in plant population in row were statistically non-significant. The data on per cent damaged shoots did not reveal any shoot damage. All the insecticidal treatments gave higher grain yield than untreated check.

Preliminary evaluation of promising breeder's material for aphid infestation: Among 12 wheat lines sown under irrigated conditions, none was found immune to the aphid infestation. However only three lines viz. CBW 09, 2329 and Raj 1555 recorded low infestation falling under resistant category where as in rain fed timely sown wheat entries, only two viz. C- 306 and K-9904 were considered as resistant. All other entries in both the categories were observed to be moderately resistant to aphid infestation.

National Screening nursery-I "Advance varietal trial": 191 genotypes/ varieties of rice were tested in advanced stage against leaf folder and the observations were recorded at 45 and 60 days after transplanting (DAT). The damage score ranged

from 1-7 at 45 DAT wherein, 10 genotypes were found resistant, 77 moderately resistant, 94 moderately susceptible and 10 susceptible against leaf folder. Similarly at 60 DAT, the score ranged from 1-9. None of the entries was found free from leaf folder attack. However, 4 entries were found resistant (NDR-2065, NDR-2067, NDR-1095) and PAU 2935-16-3-5-2), 60 moderately resistant, 73 moderately susceptible, 50 susceptible and 4 highly susceptible to leaf folder.

National screening nursery-II “ Initial varietal trial”: 473 genotypes/ Varieties of rice were tested at initial stage against leaf folder and the observations were recorded at 45 and 60 days after transplanting (DAT). The damage score ranged from 1-7 at 45 DAT wherein, 23 genotypes were found resistant, 210 moderately resistant, 230 moderately susceptible and 10 susceptible against leaf folder. Similarly at 60 DAT, the score ranged from 1-9. None of the entries was found free from leaf folder attack. However 6 entries were found resistant (NDRK 5085, NDR 40063-20-1, NDR 40053-5-8-2, NDR 9830139, IR 72014-II-NDR-35 & NDR 3128), 136 moderately resistant, 201 moderately susceptible, 124 susceptible and 6 highly susceptible to leaf folder.

Insecticide Evaluation: Ten insecticides were evaluated against leaf folder during the year. The results revealed that all insecticides were significantly superior over control (Untreated). Confider 350 EC and Confider 200 SL were found most effective followed by Carina 50 EC.

Zygomma bicolorata, an exotic beetle for Congress grass suppression: Three species of predatory bugs were found preying upon *zygomma bicolorata* in Jammu region. These comprised two species of pentatomid bugs and one assassin bug. The appearance of these bugs follows a definite succession pattern coinciding with availability of host range in the field conditions. It was found that the pentatomid bugs fed exclusively upon grubs while assassin preyed upon both grub and adult stage.

Olericulture & Floriculture

The PGRs of ginger representing remote and isolated areas of J&K along with a few fresh accessions from the other sources have been planted in May 2003. The work on morphological characterization was done earlier and work on molecular characterization through RAPD has been initiated at PAU, Ludhiana. The DNA of 24 accessions has been isolated and qualified and further work on PCR is in progress.

Micro-propagation protocol developed for one locally adapted genotype/ accession has been refined and tested on a wide range of genotypes. The protocol is both reproducible and dependable. The aseptic cultures obtained on MS medium containing higher doses of cytokinin (5-10mg/l BAP) and lower dose of auxins (0.5 mg/ NAA) responded towards shoot proliferation and further multiplication on medium with lower concentration of BAP (2-2.5 mg/l)+ NAA(0.5mg/l)

Germplasm of turmeric, onion, tomato, chilli, cucurbits (summer squash, long melon, round melon, bitter gourd and cucumber) and exotic vegetables is being maintained at Udheywala/Chatha. Seed production of knolkhol(white vienna derivative) has been demonstrated under Rajouri and Jammu conditions. The seeds produced from crop raised in Rajouri has given good crop in the demonstration trials.

Evaluation of chillies hybrids under subtropical conditions of Jammu have shown that institutional hybrids CH-1 and CH-3 have shown 21% and 43% increase in yield over variety Punjab Lal. Punjab Lal recorded highest number of fruits per plant.

Three varieties of Tuberose viz calcutia single, calcutia double and swarnrekha were collected with colour orange, red and white of gerbera were collected from local nursery and planted at Chatha.

Onion: The results of one year study shows that application of pendimethalin and fluchloralin at 1.87 l/ha coupled with one hoeing at 45 days of transplanting gave good weed control and high weed control efficiency (WCE) of 83%.

Chilli: The experiment was conducted on variety pusa jawala with herbicides stomp, basalin and treffan, in association with hand hoeings.

Kiwi: In vitro cultures of kiwi plants var. Alison were initiated from shoot buds of 1-2 cm size.

Plant Pathology

Rice:

Trial conducted at Bhadherwah revealed that application of Sumi-8 25 WP (0.1%) and SIVIC 75 WP (0.06%) as foliar spray were found most effective in reducing the rice blast infection.

Neem preparation viz. Ahook (5 ml/l) and Neemazal (3ml/l) were effective in reducing leaf blast and sheath blight disease of rice.

Wheat:

580 wheat germplasm/lines comprising of PPSN, SAARC and TPN supplied by Directorate of Wheat Research were screened against rusts and foliar blights under natural conditions. HPW 223, HPW 226,HPW 230, HS 445, VL 849, VL 852 and UP 2425 were found highly resistant.

Oil seeds:

Out of 50 germplasm lines, five lines viz. EC 338997, PBC-9921, PBN-2001, EC-339000 and PBN- 2002 were found resistant to white rust. None of the genotype was found resistant to alternaria blight.

Pulses:

Out of 19 genotypes of moong, only NDM 97-1 gave highly resistant reaction against foliar diseases viz leaf spots, anthracnose and yellow mosaic, and out of 39 mash genotypes SUS-1, SUS-2, SUS-4, SUS-6 were resistant to the above disease.

Vegetables:

Growing tomato nursery under protected conditions (White fly proof net house) and transplanting in second fortnight of October reduced leaf curl incidence by 55.56 and 57.15% in pusa Ruby and Selection I respectively. Gibberellic acid (10%) as root dip and spraying Bougainvillea leaf extract (10%) was also effective in managing the diseases. PS-II, Indam, Hisar Anmol and NDT-73 cultivars were found to be resistant.

Biological Control:

Bio-control agent viz, *Trichoderma* spp. *Chaetomium* spp. *Aspergillus flavus*, *Pseudomonas fluorescence* and *Bacillus subtilis*, isolated from differnt agroclimatic zones of Jammu division have been tested against soil borne pathogens viz. *Rhizoctonia*, *Sclerotinia sclerotium* and *Fusarium* species. *Trichoderma* spp were found most effective in invitro conditions.

Plant Breeding & Genetics

Wheat:

Two new promising wheat strains viz RSP 417 and RSP 423 developed by this division were nominated for national initial evaluation trials under Directorate of Wheat Research. RSP 312-1 gave the highest yield of 37.59 Q/ha that was followed by RSP 312-2 at RARS, Rajouri. The minikits of both these wheat strains were distributed in mid hill zone for their performance and acceptability at farmers level. Recently developed wheat variety RSP-455 derived from a cross between WH-542/Raj 6516 showed outstanding performance and is being nominated for national testing during rabi 2004-05.

Rice:

A new Basmati cultivar RR 564, nominated in All India Rice Improvement Testing programme in IVT-BT (Initial varietal trial –Basmati type) during the kharif 2001 was consistent in its performance with regard to yield and quality parameters. As a result of which the test entry was promoted to ACT-1 BT (Advance varietal Trial-1 Basmati Type) of Kharif 2002 and further promoted to AVT-1 BT during Kharif 2003. Because of its superiority over basmati 370, the culture is being nominated for its release in Jammu region.

Oil Seeds:

Gobhi Sarson(*B.napus*):-A new cultivar of Gobhi Sarson RSPN-26 was evaluated in initial evaluation trial of All India Co-ordinated Trial during rabi 2002-03 giving an yield of 10.28 Q/ha.

Raya (*B. juncea*):- RSPR-03 a new cultivar of Raya was evaluated in initial evaluation trial under the National Research centre on Rapeseed-mustard, Bharatpur and it yielded 15.48 Q/ha.

Toria (*B. campestris*): - In *B. campestris* var.toria, a new proposal for the identification of RSPT-1 has been submitted to State sub committee for varietal release.

Pomology & PHT:

Fifteen low chilling cultivars (cvs) of peach have been introduced at three sites from different part of the country. Out of these four cvs namely Florda- Princes, Early Grand, Shan-e-Punjab and Sharbiti have come into bearing.

Kiwi fruit was introduced and planted at Rajouri, Bhaderwah and Udheywalla. 27 strawberry cultivars have been collected and planted at Udheywalla for evaluation and Gorilla, Chandler and Belrubi cultivars have been successfully regenerated under sub-tropical condition by using 50% agro shade net and 12,000 runners have been distributed among the farmers as incentive.

Soil Science & Agricultural Chemistry:

A survey of major fruit crops viz citrus, mango, guava and ber was conducted to determine the nutritional disorders and to ascertain the cause of declining yields. The results suggested that Jammu region was marginally suitable for fruit growing and indicated inadequacies of N,P,K,S and Zn both in soil and leaf samples

Five Hundred surface soil samples (0-15 cm) were collected from Jammu, Kathua, Rajouri, Udhampur and Doda districts of Jammu region. The soil samples after processing were analyzed for various physico- chemical parameters as per standard procedures. These soils exhibited normal electrical conductivity in the range of 0.01 - 0.90 dSm⁻¹ with a mean value of 0.15 d Sm⁻¹. The organic carbon content of the studied soils varied from very low to very high (0.11 to 2.28%). The soils of subtropical areas (Jammu & Kathua) were lower in organic carbon content (0.55, 0.78%) than the intermediate soils of Udhampur and Rajouri (0.65, 0.85%).

Agricultural Engineering:

Data collected from 120 villages (40 each from Jammu, Kathua and Udhampur Districts) in order to formulate a long-term mechanization strategy formulation under DOAC (Deptt of Agriculture & Cooperation) project was sent to IASRI, Pusa, New Delhi for further compilation analysis and final report formulation at National level.

A well-equipped full-fledged laboratory has been established at Chatha under the project titled “ Heated air drying of locally available vegetables of Jammu region”. The set up includes (a) Drying chamber (b) Plenum chamber (c) Heater (d) Auto-transformer (e) Centrifugal Electric blower and (e) Digital Temperature Indicator.

Front line demonstrations (FLD) are being conducted by using Pantnagar Zero Till cum Ferti Seed Drill in different villages (Chatha, Chak Mohmmad Yar, Seer Balah & Mokhey). The technology got overwhelming response in the area. CIAE, Bhopal on the recommendation of ICAR, has released supply of two zero-till cum Ferti seed Drills and one Raised Bed planter.

Two power tillers namely VST shakti 130 D1 and KAMCO ER-90 have been purchased. A drip irrigation system has been installed for peach and pear plantation at main campus Chatha approximately in 6-canal area. Sprinkler irrigation system has been procured. Some power tiller attachments have been purchased from TNAU, Coimbatore.

25 years (1976-2000) rainfall data of Jammu District, for developing a relationship between rainfall with runoff variation has been analyzed. It has been found that the excess rainfall of 20-200 mm is available from July to middle of September, and 30-40 mm from January to February and a deficit of 20-160 mm from February to till June.

Based on optical density (OD) measurement, an index of non-enzymatic browning and organoleptic evaluation, the best temperature for drying tomato slices (Pusa rubi) was found to be 65⁰ C. A temperature range of 45-95 ⁰C was used for this study.

Agricultural Economics & Statistics:

To study the contribution of farm women towards agriculture in Jammu, sample size of 30 families from each village of the study area was identified and the analyzed data revealed that total employment level in Bishnah and R.S.Pura blocks were 1, 32, 551 and 1,27, 529 man days respectively out of which family labour was 1,11,495 man days in R.S.Pura block and 1,24,907 in Bishnah block. In both these blocks the total hired

labour for performing various agricultural operations were 8,034 man days (R.S.Pura) and 7,644 man days (Bishnah).

Female family labour contributes 45.50 per cent and 45.91 per cent towards farm and non-farm sector occupations in R.S. Pura and Bishnah respectively as compared to their male counterparts in both these blocks.

The preliminary information pertinent to the project entitled “ Prospects and problems of vegetables and fruit growers of Jammu and Udhampur districts of J&K State” has been collected from various sources like Directorate of Agriculture/ Horticulture, JKHPMC etc. as also through internet.

Agricultural Extension Education:

The Rural Agricultural Work Experience (RAWE) programme has been organized for the students of B.Sc (Ag.). The RAWE programme was started in August, 2003. Village Balah and Banota of R.S.Pura were adopted to act as interactional laboratory for RAWE students. Attached to 26 host farmers of both adopted villages, the students conducted techno-economic survey of the villages, laid out field demonstrations of zero tillage, line sowing and balanced use of fertilizers and use of plant protection measures on wheat production technologies. Besides this live demonstrations on fruit and vegetables preservation were also conducted for farmwomen and rural youth. The concluding function of RAWE was organized at village Balah in which the Hon'ble Vice-Chancellor, Principal Secretary, Agriculture Production Deptt., Director Agriculture, officers and scientists of SKUAST of Jammu participated. In addition to this farmers and farmwomen of both the villages participated.

Sericulture:

8 silkworm lines have been isolated and purified under the programme ‘Evolution of temperature tolerant races of silkworms’. These lines were subjected to diallel cross to find out the best combinations of hybrids for rearing especially during autumn season. Two hybrids namely H 12 (CMCB X APC) and H 51 (APC X DMC) have been identified with the cocoon weight of 2.08 gm and shell percentage of 17.31 and 17.79 per cent respectively. Seed of these hybrids has been prepared for field evaluation.

Certain combination of bleaching powder, lime blended with fungicide (Captan) and copper sulphate resulted in better survival of worms under the programme ‘Comparative efficiency of different disinfectants against silkworm pathogens’.

Five new races introduced from Central Silk Board, Mysore were evaluated against the parents lines of silkworm hybrids used locally under the programme ‘Maintenance of silkworm germplasm’.

Three mulberry varieties were introduced and are being evaluated under the programme ‘Introduction, conservation and evaluation of mulberry germplasm’. Two types of mulberry varieties i.e. diploid and triploid were subjected to alkalinity test by way of maintenance of different grade alkalinity in the soil for growing cuttings.

Regional Horticulture Sub-station, Bhandarwah:

Survey has been conducted in existing olive orchards of Doda and Udhampur district in order to ascertain causes of crop failures and low productivity of orchards which revealed that neglect state of these orchards is the major cause. Soil analysis of the samples collected from these orchards indicate that soil varies from gravels to clay with pH ranging from 4.0 to 6.9 and has low N,P& K contents.

A trial has been laid out on ten-year-old uniform walnut trees to check fruit drop. The preliminary investigation reveal that application of endosulfan (0.2%) at panicle emergence and repeated again at the time of fruit set and followed by two sprayers of NAA (20 ppm), 8 and 6 weeks prior to expected harvest resulted in maximum fruit retention. Final recommendations will be given after the harvest during 2004-05.

Five fungicides namely Carbendazim 50WP (0.2%), Copperoxychloride 50WP (0.3%), Onaceb 75 WP(0.25%), Carboxin 75 WP(0.1%) are under evaluation for their efficacy against corm rot during the first and second years i.e. Oct. – Nov. 2002-03, 1667 & 1410 flowers were harvested.

Pulse Research Sub-station, Samba:

An experiment entitled “ Evaluation of nutrient requirement of newly evolved varieties of urdbean was carried out with five varieties namely Pant U-19, SUS-1, SUS-2, SUS-4 and SUS-7 with varying fertility levels. SUS-1 out yielded all other strains with respect to grain yield (680 Kg/ha) and closely following was the variety SUS-4 (640Kg/ha) where as Pant U-19 recorded lowest grain yield of 430 Kg/ha.

Twenty-two entries of chickpea were evaluated for yield and yield contributing characters. Entries SCS-1, SCS-15, SCS-16 ranked top with grain yield of 1864, 1714 and 1635 Kg/ha respectively. Superiority over best check GNG-469 was 14.6%, 7.1% and 2.6% respectively.

Three high yielding kabuli gram entries have been identified for Jammu region, namely BG-1053, GNG 1388 and SCS-1. The grain yield obtained from them was 1778, 1773 and 1742 Kg/ha respectively

In a morphological screening study on 31 elite lines of chickpea, four high yielding bold seeded entries were selected for further testing. They are SEL-77, SEL-12, GGC-01 and SL-44 with 100 seed weight 32, 29.5, 27.7 and 28.3 gm and grain yield 1360, 1660, 1800 and 2090 Kg/ha respectively.

Trial conducted on urdbean for three years (2001-2003), high yielding varieties SUS-1, SUS-2 and SUS-4 have been identified with average grain yield potential of 987.2, 977.4 and 902.0 Kg/ha respectively as against superior check Pant U-19 yielding on average 640 Kg/ha.

The average yield of two promising strains of moong bean SMS-1 and SMS-2 was 990.3 and 842.1 Kg/ha respectively.

Sh. H.U.Khan, Hon'ble Vice-Chancellor presided over the function “Pulse Day-cum-Kissan Mela” which was organized at Pulses research sub-station on 28th Oct. 2003. About 200 farmers participated in the Mela. Minikits of vars. SCS-3 and SCS-16 were also distributed amongst the farmers.

Water Management Research Centre:

Research activities of the centre during the report period include results of the on station experiments conducted at the New Campus, Chatha. Rabi season crops and summer maize (for green cobs), summer sown groundnut and Kharif rice.

The centre organized “Jal Yatra celebrations” during December 2003 to create mass awareness on judicious use of fresh water resources.

Maize Breeding Research Sub-station, Poonch:

Rajmash:

105 samples of local rajmash germplasm were collected from Loran, Sabjian and Mandi location of Poonch district. Most of the samples collected from the standing crop at maturity stage.

Potato:

To explore the possibility of virus free potato seed production many locations from Mandi to upper reaches of loran valley were surveyed.

40 FLD's on maize crop were conducted during Kharif 2003 on farmer's field in different areas of Poonch District. A farmer's field day was also organized in Mangnar village in which 65 progressive farmers and ladies participated. The programme was chaired by Associate Director Research, Rajouri and was addressed by many Scientists & Agriculture Extension Officers.

Vety. Sciences & Animal Husbandry:

Vety. Public Health & Hygiene:

260 samples have been screened under the research project entitled "Studies on hygienic quality of milk with special reference to zoonotically important pathogens" Hygienic quality as assessed by standard plate count method, is mentioned below:

60% of udder milk samples	=	Very good to fair
40% of vessel milk samples	=	Very good to fair
40% of market milk	=	Good to fair

udder milk>vessel milk> market milk

Isolation of Pathogenic organisms:

84 isolates have been isolated from various sources. These include:

Staphylococcus	40
E. Coli	23
Streptococcus	5
Salmonella	3
Pseudomonas	3
Sarcina	5
Anthracooid organisms	5

150 milk samples were screened for Brucella using MRT. About 5% milk samples were detected positive by MRT.

Vety. Epidemiology and Preventive Medicine:

By this division disease investigation/outbreaks attended were:

- The division attended the outbreak of haemoprotozoan diseases at Cattle breeding farm Belicharana.
- The serum samples were collected for screening of Infectious Bovine Rhinotracheitis (IBR)

- The out breaks of “Foot and Mouth Disease” from villages Fatwal Banachak of Tehsil Bishnah, lower Badhori of Tehsil Samba and Seer Balah and Kortana Khurd of Tehsil R.S.Pura of Jammu district were attended. The serum and tongue epithelium samples sent to IVRI, Mukteshwar and Hissar confirmed it as FMD.
- The blood samples collected from poultry slaughter shops of Jammu district were screened and found positive for infection of *Salmonella pullorum*.
- The cases and samples referred to division for confirmation of various diseases were processed and communicated to concerned.
- The outbreak of *Hemorrhagic septicemia* at Abdullian village of R.S.Pura tehsil was attended.
- An outbreak of suspected Nematodiasis was attended at Dairy Goat Farm, Rajbagh.
- A suspected outbreak of TGE at Indira Nagar, village of R.S.Pura Tehsil was attended.

Two days training programme on “Important emerging diseases of livestock and their control” for field veterinarian from Animal and Sheep husbandry Deptt was organized.

Vety. Animal Reproduction, Gynaecology & Obstetrics:

110 cattle from unorganized farms and cases in veterinary clinics and teaching hospital at R.S.Pura were studied. Out of 110 cattle, 72 (65.46%) were of endometritis, 20(18.18%) were of Anoestrus, 14 (12.73%) were of anoulation and 4(3.63%) were of cystic ovary degeneration.

In 72 cases of endometrits, different antibiotic treatment viz. Gentamycin, Tetracycline, Enrolfloxacin and Ingigenous drugs were tired Enrofloxacin was found to be most effective. In Anoestrus cows, Receptal (GnRH) was more effective than indigenous drugs. In anoulation cases GnRH was found to be more effective than hcG and placentrax. In cystic ovanan degeneration cases, GnRH was also found effective than hcG.

Vety. and Husbandry Extension:

Ethnoveterinary practices in Jammu region are the holistic livestock health care and management methodologies adopted by non-literate cultures. These practices have been percolating from one generation down to the next by oral transmission. As such sometimes it vanishes with the death of the owner of knowledge. This is where the ethno veterinary practices distinguish itself from well-documented system of medicines so-called Ayurveda, Sidha, Unani, and others. Considering the above situations, the present study was an attempt to document and identify the various ethno veterinary medicines of animal husbandry in order to search out the beneficial aspects of traditional practices as well as those that could be improved through sciences based technologies.

A base line survey on Backyard Poultry farming was conducted in randomly selected 10 villages of R.S.Pura Tehsil of Jammu district, to gain the first hand information about the existing status of rural poultry.

Vety. Clinics & Teaching Hospital:

20 clinical camps were organized in which 1263 animals were treated. 806 animals were treated in the hospital (Referred cases) during the year.

Vety. Animal Nutrition:

This division organized two days training programme on 3rd & 4th March , 2004 on “Quality control of feed ingredients and compounded feeds” for veterinary officers of Sheep & Animal Husbandry Deptt. of Jammu division.

Vety. Parasitology:

500 faecal samples of different livestock viz. sheep, goat, cattle, buffalo, horses and pigs from R.S.Pura, Jammu, Samba and Katra Tehsil of Jammu region were screened to know the intensity of various parasitic infections. Out of total animals 338 (67.60%) were found positive for various types of parasitic infection. Predominant parasites found were Amphistomes, Strongyles, Strongyloides, Trichuris species, Moniezia, Fasciola species and mixed infection.

EXTENSION EDUCATION ACHIEVEMENTS

Directorate of Extension Education has the mandate “to undertake the Extension Education of Agriculture, Animal husbandry and other allied sciences for the benefit of the rural people of the State.”

T&V programme has been reoriented by Directorate of Ext. Education as broad based extension programme under which various activities viz Farm advisory services, trainings, meetings are taken up. As a part of farm advisory service at district level, University organizes monthly visit of resource persons deputed from different divisions of Faculty of Agriculture/Faculty of Veterinary Sciences & Animal Husbandry of SKUAST of Jammu.

Monthly workshops

S.No	District	Target	Achievements
1	Jammu/Kathua	12	12
2	Udhampur	12	10
3	Rajouri	10	8
4	Poonch	10	8
5	Doda	9	8
Total		53	46

Trainings:

Directorate of Extension Education organized demand driven training programmes to up grade and refresh knowledge of field functionaries of the state line departments as well as for the farmers to improvise their knowledge with latest technical know-how on the subject. These programmes were organized in collaboration with various divisions of both the faculties or through KVKs. A number of short term vocational courses in bee-keeping, mushroom growing , fruit preservation and goat rearing were also organized for farmers, farm women and youth.

Trainings conducted through faculty of Agriculture:

S.No	Division	Farmers Trainings	In-service Trainings (Staff of line department)
1.	Agril. Engineering	--	4
2.	Agro-forestry	--	1
3.	Agronomy	--	3
4.	Entomology	1	1
5.	Olericulture & Floriculture	--	1
6.	Plant Breeding & Genetics	--	3
7.	Plant Pathology	2	--
8.	Pomology & PHT	--	3
9.	Sericulture	--	6
10.	Soil Sciences & Agril Chemistry	--	3
Total		3	25

Trainings conducted through faculty of Veterinary Sciences & Animal Husbandry:

S.No	Division	Farmers Trainings	In-service Trainings (Staff of line department)
1.	Animal Nutrition	--	1
2.	Veterinary & A.H. Extension	--	1
3.	Veterinary Surgery & Radiology	--	1
4.	Veterinary Parasitology	--	1
5.	Veterinary Public Health & Hygiene	--	1
6.	Livestock Product Management	1	--
7.	Veterinary Clinics & Teaching hospital	1	1
8.	Veterinary Gynecology & Obstetrics	1	1
9.	Veterinary Epidemiology & Preventive medicine	--	1
	Total	3	8

Zonal Research & Extension Advisory committee:

ZREAC meetings are convened by the Directorate of Extension Education before Kharif and Rabi seasons every year for planning, organization, monitoring of the extension activities and selection of thrust areas. Two ZREAC meetings have been organized during the year in which officers of development departments and scientists of SKUAST participated.

Diffusion of innovations through mass media:

To support wider publicity of the research, the extension network is supplemented by preparing and distributing extension literature in the form of pamphlets, leaflets, folders, brochures, technical bulletins news letter and package of practices in collaboration with various divisions of FOA, F.V.Sc & A.H and KVKs.

12 pamphlets, 13 bulletins and 16 folders have been prepared by FOA, 25 pamphlet, 4 bulletin and 5 folders published by F.V.Sc & A.H.

The Directorate in collaboration with executive officers of Prasar Bharti has tied up schedules for telecast of television programmes by University scientists on key issues of farming and allied activities, 57 messages were delivered by the scientists through TV.

Cyber Extension:

SKUAST- Jammu was the first agricultural University to be linked with National Institute of Extension Management, Hyderabad, through video conferencing under information technology network programme. As a result of this facility, SKUAST of

Jammu is connected with 18 other training centres across the country. The face-to-face interaction with experts and farmers of these regions is undertaken regularly to share information on key issues related to agriculture and allied fields.

SKUAST Jammu joined the National network of Agri-clinic and Agri-business training centre scheme launched by Govt. of India in collaboration with MANAGE Hyderabad, SFAC and NABARD. In the first phase 60 participants had been allotted and 29 agricultural graduates have already completed their training

Kissan Call Centre:

For prompt redressal of problems and in order to provide easy access to the farmers a Kissan Call Centre has been established at SKUAST of Jammu Head Office. Its toll free number is 2477007. The farmers' complaints and queries are passed on to concerned scientist and the remedies are suggested to them on priority through the Call Centre.

Krishi Vigyan Kendra:

At present three KVKs one each in the district of Jammu at R.S. Pura, Doda district at Bhaderwah and at Rajouri for Rajouri district are in operation under the SKUAST of Jammu. Efforts are also being made to establish new KVK in the remaining three districts i.e. Udhampur, Poonch & Kathua in order to have complete network in whole of the Jammu province.

Krishi Vigyan Kendra (R.S. Pura Jammu)

The activities undertaken by KVK, R.S. Pura are detailed hereunder:

Front line Demonstrations (FLD)

Front line demonstration is a concept of demonstration, conducted under the close supervision of the scientists to demonstrate the technology. In the current year KVK Jammu has laid down the demonstration on Rice (Jaya), Maize (Vijay composite) and Mash (PU-19). The detail of FLD laid in Kharief and Rabi are as under.

Kharief 2003

S. No.	Crop/variety	Area (Ha)		No. of farmers/ demonstrations
		Proposed	Actual	
1	Rice (Jaya)	4.0	4.8	12
2	Maize (Vijay composite)	4.0	4.0	17
3	Mash (PU-19)	4.0	4.0	32

Rabi 2003-04

S. No.	Crop/variety	Area (Ha)		No. of farmers/ demonstrations
		Proposed	Actual	
1	Wheat (PBW-343/ PBW-175)	9.0	9.6	31
2	Toria (RSPT-1)	8.0	8.0	31
3	Gobi Sarsoon (GSL-1)	10.0	10.0	29

Other activities

- ❖ Kissan Goshthis
- ❖ Farmer's Awareness Camp (Grameen Bhandharan Yojna)
- ❖ Field Days
- ❖ Veterinary camps
- ❖ World food day is observed on 16th of October and KVK-Jammu has celebrated this day for the first time

Budget Allocation & Expenditure Statement

S. No.	Object of Exp.	Allocation 2003-04	Exp. Ending March
1	Salary	30.00	20.79
2	TE	0.50	0.47
3	Recurring conti./ POL/	3.00	2.97
4	Vocational Training	8.00	0.00
5	Works	0.10	0.00
6	Library	0.00	0.00
7	Others		
TOTAL		41.60	24.23

Revolving Fund Details

Details	Amount
Fixed Deposit Receipts (FDR)	Rs. 19,00,000.00
Cash in bank as on 11/2/2004	Rs. 1,28,066.93
Amount realized on account of sale proceeds from Department of Agriculture	Rs. 2,41,428.00
Total	Rs. 22,69,494.93

Farmers' Training Programmes

As per the mandate of KVK, three types of the training programmes are to be organized i.e. Farmers Training Programme, Vocational Training programme and In-service Training Programme. The details are given as under.

Training Programme organised during the year 2003 (Jan- Dec)			
Types of trainings	Target	Achievement	No. of participants
Farmers' Training Programme	31	44	1255
Vocational Training Programme	5	5	85
Inservice Training Programme	5	5	58

Details of Training Programme organised during the year 2003 (Jan- Dec)

Vocational Training Programme

S No.	Name of the Trg.	Target					Achievement					No. of participants				
		Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
1	Goat rearing	1	0	0	0	1	0	1	0	0	1	0	10	0	0	10
2	Bee Keeping	0	0	1	0	1	0	0	1	0	1	0	0	20	0	20
3	Mushroom cultivation	0	0	1	0	1	0	0	1	0	1	0	0	8	0	8
4	Plant Protection	0	0	0	1	1	0	0	0	1	1	0	0	0	12	12
5	Crop Production	0	0	0	1	1	0	0	0	1	1	0	0	0	35	35
	Total					5					5					85

Farmers' Training Programme

S. No.	Name of the Trg.	Target	Achievement	No. of participants
1	Crop Production	6	10	385
2	Horticulture	3	1	25
3	Plant Protection	8	8	189
4	Agri. Engg.	4	9	222
5	Home Science	2	0	0
6	Agro forestry	0	0	0
7	Olericulture	0	7	267
8	Animal Science	8	9	167
9	Goat rearing	1	1	10
10	Bee Keeping	1	1	20
11	Mushroom cultivation	1	1	8
12	Plant Protection	1	1	12
13	Crop Production	1	1	35
	Total:	36	49	1240

DETAILS OF QUARTER WISE TRAINING PROGRAMMES ORGANIZED.

During the year 2003 (Jan- Dec)

S No.	Name of the Trg.	Target					Achievement					No. of participants				
		Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
1	Crop Production	1	3	1	1	6	1	7	1	1	10	15	279	44	47	385
2	Horticulture	0	1	1	1	3	0	0	0	1	1	0	0	0	25	25
3	Plant Protection	1	1	3	3	8	1	0	4	3	8	30	0	94	65	189
4	Agri. Engg.	0	2	1	1	4	0	7	1	1	9	0	167	23	32	222
5	Home Science	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0
6	Agro forestry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Olericulture	0	0	0	0	0	2	0	1	4	7	106	0	31	130	267
8	Animal Science	1	1	2	4	8	1	2	2	4	9	15	32	38	82	167
	Total:					31					44					1255

Inservice Training Programme

S No.	Discipline	Target					Achievement					No. of participants				
		Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
1	Plant Protection	0	1	0	0	1	0	1	0	0	1	0	11	0	0	11
2	Agricultural Engineering	0	0	1	0	1	0	0	1	0	1	0	0	26	0	26
3	Crop Production	1	0	0	1	2	1	0	0	1	2	7	0	0	9	16
4	Watershed Management	0	0	0	1	1	0	0	0	1	1	0	0	0	5	5
	Total:					5					5					58

Q1 First Quarter from Jan 1- March 31

Q2 Second Quarter from April 1 - June 30

Q3 Third Quarter from July1 - Sep 30

Q4 Fourth Quarter from Oct 1- Dec 31

Seed production

The KVK is producing seed for the department of Agriculture. It has earned a name for the quality seed production. The details of seed supplied to the department of Agriculture are as under.

Details of seed supplied to department of Agriculture during Rabi 2003

Cropping season	Crop	Variety	Category of seed produced			Source of seed sown	Qty supplied (Qts)	Remarks
			Br	F	C			
1	2	3	4			5	6	7
Rabi: 2002-03	Wheat	PBW.175	Y	-	-		5.60	Revenue realised= Rs. 1,46,408.00 (Rs. One lakh, fourty six thousand, four hundred and eight only)
		PBW.343	Y	-	-		8.35	
		Raj 3077	Y	-	-		10.40	
		PBW.343	-	Y	-		56.80	
		Raj.3077	-	Y	-		12.40	
<p>Bill amounting to Rs. 1,59,420.00 (Rs. One lakhs fifty nine thousand four hundred twenty only) Submitted to Jt. Director inputs Agri Deptt for payment.</p>								

Details of seed supplied to department of Agriculture during Kharief 2003

Cropping season	Crop	Variety	Category of seed produced			Source of seed sown	Qty supplied (Qts)	Remarks
			Br	F	C			
Kh: 2003	Rice	B.370	-	-	Y	Dept of Agriculture	48.24	
Kh: 2003	Rice	B.370	-	Y	-		--	

KVK Rajouri:

Established in 2003 has started its operation as per following details:

Field Level Demonstrations:

S.No.	Crop	Number of Demonstrations	Area (ha)	Beneficiaries
1.	Rice	1	0.5	8
2.	Wheat	1	0.5	8
3.	Maize	1	0.5	8
4.	Toria	1	5.0	NA

KVK, Bhaderwah:

Established in 2003 has started its operation as per following details:

Demonstrations:

S.No.	Crop	Number of Demonstrations	Area (ha)	Beneficiaries
1.	Mustard	2	5.0	13

Other Practical Demonstrations:

1. *Use of rhizobium culture to berseem / pulse crops*
2. *Use of foliar application of nutrients*
3. *Pre-sowing seed treatment in rice*
4. *Pre-sowing treatment of saffron corms.*

Base- Line Surveys Conducted:

Six villages in Tehsil Bhaderwah have been surveyed. All the six villages are situated at the same topography with temperate agro-climatic conditions. There were no marked differences in the level of literacy, family size, size of holding, cropping pattern and cultural practices followed by the farmers.

Mass Awareness Programme:

Under National Watershed Development Programme, awareness camps were organized in different blocks of District Doda in collaboration with state line departments to mitigate the problem of farmers for irrigation water. Two watershed projects have been undertaken by KVK under Drought Prone Area (DPA) Programme.

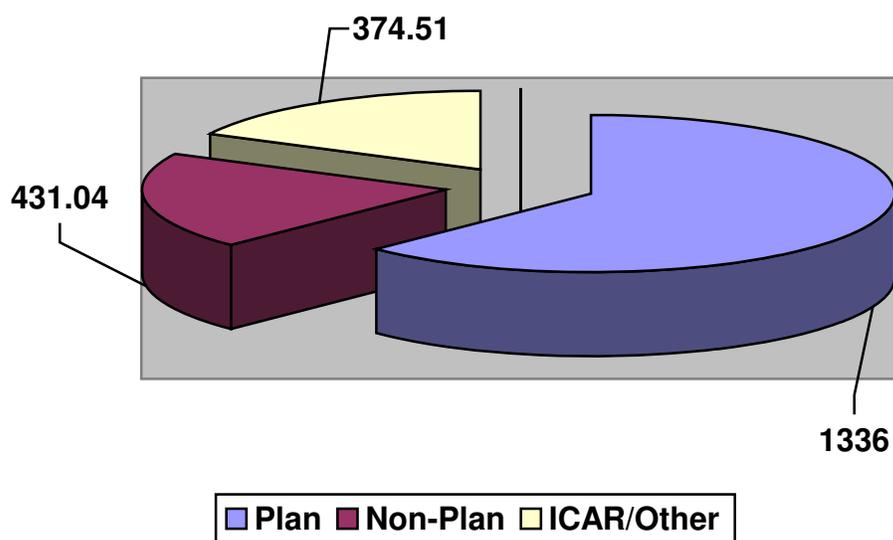
FINANCIAL RESOURCES

The Govt. of Jammu & Kashmir provides funds for the payment of salaries to the employees and for the development of infrastructure, research and other activities under plan & non-plan schemes. The ICAR/other agencies also provide funds for the various projects/schemes of the SKUAST of Jammu. The details of funds released are given below:

Funds received during the year 2003-04:

Source		Amount
		Rs.(in lacs)
Non-plan	-	431.04
State plan	-	1336.00
ICAR/others	-	374.51

Plan	Non-plan	ICAR/others
1336.00	431.04	374.51



Details of Plan Expenditure Incurred During the Year 2003-04

(Amount in Lacs)

Sr. No	Object Head of Expenditure	Approved Outlay 2003-04	Revised Estimates	Expenditure (Provisional)
1	2	3	4	5
	i) Revenue			
1.	Salaries-Committed	570.00	637.84	629.48
2.	Post Sanctioned but vacant (Token Provn.)	--	--	--
3.	For Regu. of D/Wagers	--	--	--
4.	Salaries-Exp.	--	--	--
5.	Salaries (Pay Revision)	--	--	--
6.	D.A./IR (Fresh)	8.00		
7.	Wages (Daily Wagers)	4.00	4.14	4.13
8.	Wages (Casual/ Seasonal)	8.00	16.50	14.99
9.	TE/POL	13.00	15.00	13.72
10.	Office Expenses	25.00	30.00	23.01
11.	Rent/Rates/Taxes	3.00	3.00	1.63
12.	Telephone	5.00	5.02	4.43
13.	Stipened/Scholarship	1.50	1.50	--
14.	Pub/Information	5.00	5.00	1.38
15.	Training	2.00	2.50	0.75
16.	Books/Library	50.00	60.00	52.32
17.	Research/Survey	5.50	5.50	4.38
18.	Others	--	--	--
	Total Revenue	700.00	786.00	750.22
	ii) Capital			
19.	Land Acquisition*	--	300.00	--
20.	On-Going Works	15.00	17.00	17.00
21.	New Works	120.00	120.00	112.20
22.	Mach./Equipment	90.00	83.86	21.49
23.	Raw Material/Drugs	15.00	13.25	6.34
24.	Subsidy/Incentive	--	--	--
25.	Loans	--	--	--
26.	Grants/Share capital	--	--	--
27.	Up-gradation Grants	--	--	--
28.	Others:	10.00	15.89	13.45
	Total Capital	250.00	550.00	170.48
	Total (Rev. + Capt.)	950.00	1,336.00	920.70

* Funds released on 31.03.2004 for acquisition of land at Chatha are available in the shape of a Hundi

Grant-in-aid State Non-Plan – Revised Estimates 2003-04.

Revised estimates in respect of State Non-Plan for the financial year 2003-04 proposed by the SKUAST-Jammu were discussed with the Financial Commissioner, Finance Department, J&K State on 31.12.2003 and after detailed discussion revised estimates to the extent of Rs. 431.04 lacs were agreed to against the approved allocation of Rs. 425.49 lacs. As against the approved revised estimates of Rs. 431.04 lacs, expenditure to the extent of Rs. 394.06 lacs (as detailed below) was incurred thereby leaving a closing balance of Rs. 105.75 lacs as on 31.03.2004.

(Amount in Lacs)

Sr. No	Unit of Appropriation	Approved Outlay 2003-04	Actuals 2003-04
1.	Salaries	212.95	177.25
2.	Wages	6.70	3.99
3.	Pension, Gratuity & Commutation	80.39	79.26
	Total	300.04	260.05
4.	T.E./POL	7.50	6.26
5.	Office Expenses	10.00	11.69
6.	Liveries	1.00	0.78
7.	R&M of Auto/Machinery	6.00	6.30
8.	Research Operation Cost		
	i) Chemicals & Glassware	3.00	0.97
	ii) Seed & Plant Material	3.00	1.27
	iii) Pesticide and Fertilizer	3.00	1.53
9.	University Publication	5.00	0.97
10.	Maintt. & Repair of R&B	50.00	63.66
11.	Feed & Fodder	4.00	0.28
12.	Medicines	1.50	0.74
13.	Audit Fee	4.00	2.74
14.	Study Tour	2.00	1.89
15.	Legal and Professional Charges	5.00	10.81
16.	Cont. to Agril University Association	0.60	0.49
17.	Sumptuary Allowance	0.30	0.29
18.	Electricity Charges	15.00	18.85
19.	Statutory Meetings	1.50	1.11
20.	Telephone Expenses	3.00	0.42
21.	Internship Allowance	2.16	1.19
22.	Rent, Rate & Taxes	3.44	1.34
	Total	131.00	133.56
	Grand Total	431.04	394.06

CAMPUS DEVELOPMENT

Availability of Land:

At the time of establishment of SKUAST of Jammu, an area of 282.07 acres of land available as Research Stations, Sub-Stations and Guest House at Jammu, came in as constituent unit from erstwhile SKUAST, J&K. Subsequently 108 acres land situated at villages of Rakh Chatha and Chatha was transferred from Animal Husbandry Deptt. to the University. 200 acres of land situated at Chakroi was transferred to University from the Agriculture Deptt. , Jammu. Process of acquisition of additional 3594 kanals of land at the villages of Chatha, Rakh Chatha and Shahzadpur Gujran contiguous to the University land had been initiated through the Revenue authorities of the state.

Construction and Maintenance:

Estate division is the servicing unit of the University. This division looks after the construction of official/ residential/ non-residential buildings/ roads, general maintenance of buildings, water supply, electrification and conservancy services in all the campuses of the University. During the year 2003-04 requisite funds for ongoing works, maintenance & repair of roads & buildings were allotted to this organization. Execution of different works in the University has been taken up and work progress is satisfactory.

Planning and land scaping of Main Campus at Chatha:

The bids received from selected architects/firms registered with the Council of Architecture, New Delhi were assessed by high level committee and it has accorded its approval to the final conceptual plan of the main campus at Chatha.

LINKAGES AND COLLABORATION OF SKUAST OF JAMMU IN INDIA AND ABROAD INCLUDING EXTERNALLY FUNDED PROJECTS

ICAR Institutes

Directorate of:

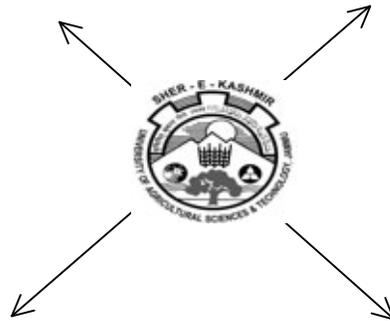
- Rice Research, Hyderabad
- Wheat Breeding (IARI), New Delhi
- Oil Seeds (Hyderabad)
- Forages (Jhansi)

Indian Institutes of Pulses Research, Kanpur

Govt. of India

Organizations:

- Department of Science & Technology (DST)
- Department of Biotechnology (DBT).



Other Organizations

National Horticulture Development Board
National Agriculture Technology Project (NATP).

International Organizations

- International Rice Research Institute, Manila Philippines
- Centro Internacionale de mejoramiento de maizy trigo (CIMMYT)
- International Maize and Wheat Improvement, Centre

ONGOING RESEARCH PROJECTS

	Name of Project	P.I.	Funded by	Total cost (Rs. in lacs)
1.	Improvement of productivity of migratory buffalo herds	Dr. N.A.Sudhan	NATP	14.20
2.	Development of IPNS in maize and rice based cropping system in hills	Dr. Anil Sharma	NATP	9.47
3.	Development of eco-friendly and women oriented production and protection technologies for rice-based cropping system	Dr. Dileep Kachroo	NATP	20.65
4.	Exploitation of bio-dynamics of crop residue management in rice wheat cropping system under adequate and limited moisture condition	Dr. Dileep Kachroo	NATP	22.77
5.	Development of cost effective technology for treatment of choes (rainy season torrents)	Dr. A.K. Raina	NATP	31.02
6.	Nutrient dynamics in representative Agro-ecological soils of J&K State	Dr. Pardeep Wali	NATP	19.45
7.	Introduction and evaluation of low chilling cultivars of pear and peach for commercial cultivation in Jammu region	Dr. A.K.Singh	NATP	15.37
8.	Characterization, evaluation of plant genetic resources of selected spices of J&K and their sustainable utilization through use of bio-fertilizers and bio-pesticides.	Prof. R.K.Gupta	NATP	20.48
9.	Management of fruit	Dr. R.K.Arora	NATP	21.86

	borer, <i>Helicoverpa armigera</i> (Hub.) on tomato in sub-tropical and intermediate zones of Jammu.			
10.	Development of viral biopesticides for the management of important lepidopterous insect pests of vegetable crops in Jammu (J&K)	Dr. R.K.Gupta	NATP	19.66
11.	Rain water management on water shed (MICRO) basis in sub-mountain region	Dr. K.R.Sharma	NATP	27.52
12.	Heated air drying of some locally available vegetables tomato, brinjal, bittergourd, knol-khol of Jammu region (J&K State)	Dr. C.K.Lidhoo	NATP	10.20
13.	Impact of Ravi Tawi irrigation on soil health of subtropical zone of Jammu	Dr. V.K.Jalali	NATP	14.31
14.	Magnitude of insecticidal contamination in <i>in vitro</i> market samples of vegetables in Jammu (J&K) and its management.	Dr. R.M.Bhagat	NATP	21.68
15.	Diagnosis of the Nitrogen status on potato and soybean under elevated CO ₂ conditions for maximum yield	Dr. Avinash .C. Srivastava	DST	4.10
16.	Training and demonstration of power till for mechanizing horticultural operations	Er. Sushil Sharma	NHB	10.00
17.	Study relating to formulating long term mechnization strategy for each agro-climatic zone/ state	Dr. Sushil Sharma	ICAR	1.52
18.	Training &	Dr. R.M.Sharma	NHB	9.69

	demonstration on hi-tech production and post harvest management of strawberry <i>Fragaria ananassa</i> under Jammu plains.			
19.	Development of scented basmati hybrids using cytoplasmic male sterile system in rice in Jammu region.	Dr. R.K.Salgotra	DST	1.91
20.	Training and demonstration on Hi-tech production of cut flowers under Jammu plains	Dr. Ashutosh Mishra	NHB	9.15
21.	Commercialization of promising low chilling cultivars of peach in sub-tropical region of Jammu.	Dr. A.K.Singh	NHB	2.06
22.	Mineral imbalances in livestock with reference to soil-plant animal relationship	Dr. Rajiv Singh	DST	13.93
23.	Root Knot nematodes infesting pulse crops in Jammu and their management	Dr. Virinder Koul	ICAR	16.01

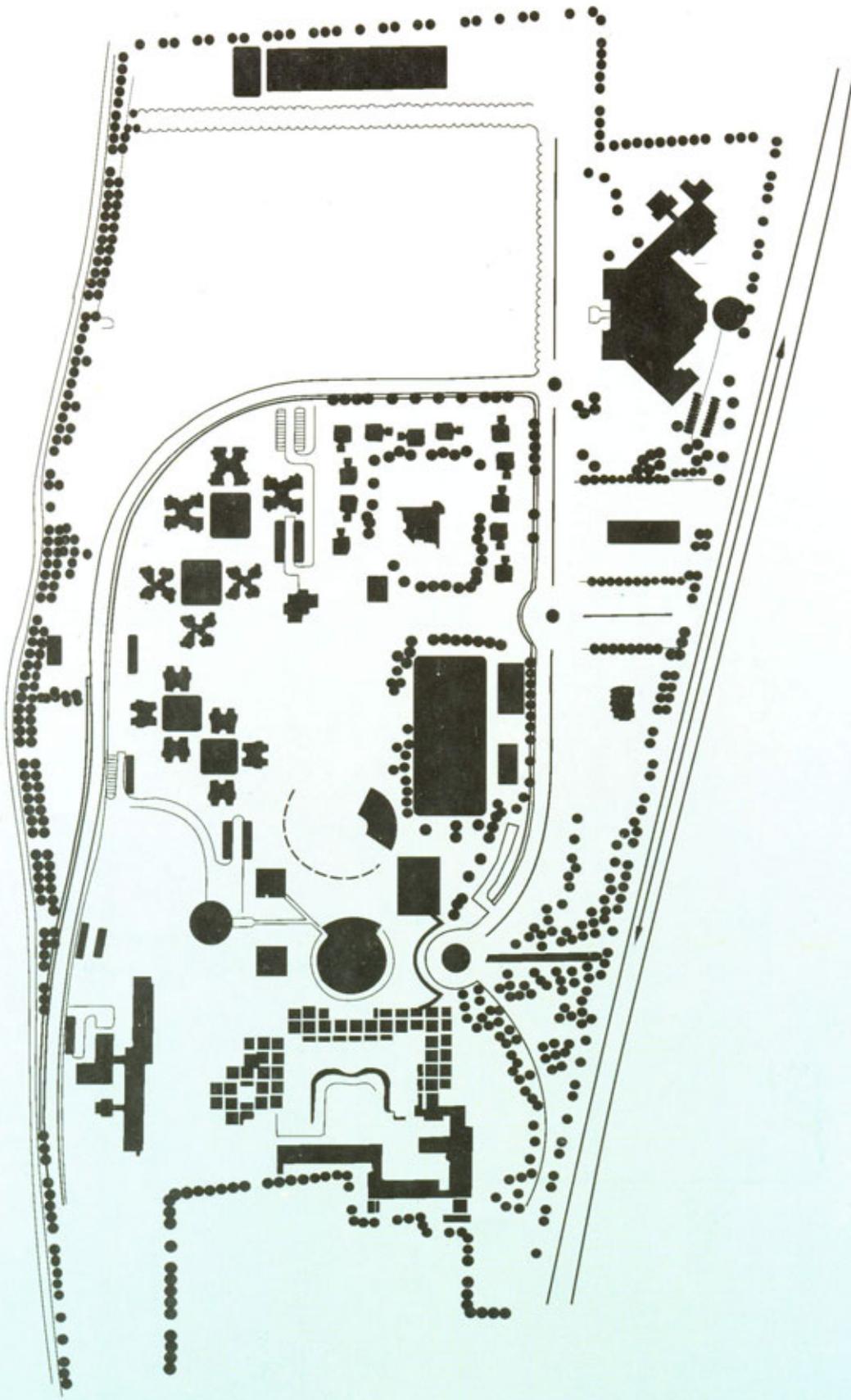
YEAR 2003: AN INTERNATIONAL FRESHWATER YEAR JAL YATRA CELEBRATIONS AT SKUAST OF JAMMU

The year 2003 was declared as year of the Fresh Water by Govt. of India in keeping with the United Nations Resolution declaring 2003 as International Fresh Water Year. The Ministry of Water Resources (MOWR), Govt. of India launched a nation-wide campaign to create mass awareness on judicious use of fresh water resources in all walks of our lives, as a part of celebration of the Year of Freshwater- 2003.

In order to highlight importance of water and participate in the campaign “Jal Yatra Celebrations” were organised by the University.

The main activities of Jal Yatra celebrations organized by Water Management Research Centre, SKUAST of Jammu and co-sponsored by Indian National Committee on Hydrology (INCOH) and Directorate of Command Area Development, Jammu Division (Govt. of Jammu & Kashmir) were:-

- (i) An essay- writing competition for high-school students of Jammu region on the subject – “Water, the Elixir of Life” held at WMRC-SKUAST-Chatha Campus on 13 December, 2003.
- (ii) One-Day Interaction Seminar on “ Efficient Water Use in Command Areas of Jammu Division”, on 24 December, 2003 at SKUAST New Campus Chatha. His Excellency, the Governor of J&K State, Lt. Gen. (Retd.) S.K.Sinha, PVSM was the Chief Guest at the Inaugural session of Interaction Seminar at the New Campus of SKUAST at Chatha, Jammu, on 24 December 2003. The Minister of State for Irrigation and Public Health Engineering, Govt. of J&K, Shri Jugal Kishore presided over the function.
In Technical session of Interaction Seminar more than 300 farmers representing the entire cross-section of irrigation commands of both the major irrigation projects of J&K took part in an open discussion of practical problems of water management at farm-level and feasible solutions through Participatory Irrigation Management (PIM) with 40 scientists, engineers, water managers at macro and micro level drawn from SKUAST, WHRC-NIH, Central Water Commission and officers of State Govt. departments of Agriculture, Horticulture, Command Area Development, Irrigation and Flood Control, Public Health Engineering, etc.



MASTER PLAN
SCALE=1:25

CAMPUS OF VET. SCIENCES & ANIMAL HUSBANDARY
AT R.S. PURA JAMMU

TERRITORIAL JURISDICTION OF SKUAST-JAMMU (JAMMU DIVISION)



Head Quarter :

Rail Head Complex,
Railway Road, Jammu
Tel. No. : 0191-2473417, 2471745
Fax No. : 0191-2475149
e-mail :

Faculties :

Agriculture : Chatha/Udheywala
Vety. Sciences & AH : R.S. Pura
P.G. Studies

Research Stations :

- Pulses Research Station, Samba
- Water Management Research Centre, Ponichack
- Regional Agricultural Research Station, Rajouri

Research Sub-stations :

- Dry land Research Sub-station, Dhiansar, Jammu.
- Rainfed Research Sub-station for sub-tropical fruits-Raya.
- Regional horticulture Research Sub-station, Bhaderwah.
- Maize breeding Research Sub-station, Poonch