Agricultural Human Resource Development

Strengthening and development of agricultural education was attempted through Centres of Advanced Studies, Niche area of excellence, University level-textbook writing, National Fellows and Professional Chairs, infrastructure upgradation, faculty competence building, accreditation, incentives through best teacher award, scholarships to students and their practical training in laboratory and real life field situations. Entering into MoU with the IGNOU for cooperation in agricultural education in distance mode and cooperation with the ISRO, IGNOU and MHRD for utilization of EDUSAT by the ICAR and SAUs for agricultural education are the new initiatives which have immense potential for enriching agricultural education as well to reach the unreached.

State agricultural universities

Bidhan Chandra Krishi Viswa Vidyalaya, Mohanpur: During the period, 115 students successfully completed their respective undergraduate programme where the number of postgraduate and Ph.D degree recipients was 141 and 39 respectively. Construction of academic buildings for faculties of Horticulture and Agriculture Engineering has been completed and operationalized to ensure proper growth and desired development of respective faculties. Internet facilities have also been extended to remaining departments and college computer facilities augmented. Establishment of a Quality Control Laboratory for horticultural crops has been initiated, utilizing a substantial grant of 2.40 million received from the Department of Food Processing and Industries, GOI. Modern instruments/equipments viz. Super Speed Centrifuge, HPLC with photo–diode array, Gas Chromatograph, Research microscope, Digital CCD camera, Tractors, Power tiller, Dataloger, 6′ Lathe, Air compressor have been added. National Workshops/Seminars, International Symposium on Weed Science and a Winter School on advance extension strategies were successfully organized. The library has been updated. Access to global information has been enhanced through VAST and digitalization of existing stock. Students of the university performed well in ICAR–JRF examination, and secured 18 fellowships. They participated in two Interuniversity Youth Festivals, and one Sports and Games meet organized by Vinoba Bhave University, Marathwada Agriculture University and Kerala Agricultural University. Faculty members participated in various symposia abroad in different capacities.

Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishva Vidyalaya, Palampur: Intellectual Property Rights in College of Agriculture, for undergraduate students and Introduction to Environmental Sciences for undergraduate students in all colleges of the University have been added. The UGC framed module of this course as per the instructions of Supreme Court of India. The equipments like Geo-positioning system, Automatic Micro-weather Station, LAN-WAN Equipments, Portable photo-synthesis system, Universal fibroscope, Cryocans, Spectrophotometers and CO_2 Analyzer have been added out of the funds provided by the ICAR for the purpose. A national level symposium on Emerging Trends in Plant Disease Management was organized. Also, annual workshop of All India Coordinated Research on Cropping Systems and Biennial Group Meeting/Workshop of Net work Programme on White Grubs and other Soil Arthropods were organized. A state level Mela on Agricultural Mechanization was organized. Summer School on Diversification of Agriculture: need and implication for food security and quality of life was organized by the Department of Agriculture Economics.

Extension activities of CSKHPKV

Under extension activities, as many as 799 training programmes were organized on agriculture, livestock management and family welfare, in which about 24,938 farmers participated. Besides, University Scientists acted as resource personnel in 127 training programs organized by other developmental agencies.

Short and long duration courses were organized by the Directorate of Extension Education for scientific farming, dairy, poultry, fisheries, rabbitry, bee-keeping, home science, mushroom cultivation etc. Farmer-Scientists interaction sessions, were organized.

Agriculture Technology Information Centre (ATIC) through its Help Line facilities interacted on telephone with farmers on their problems. It also helped hill farmers in getting seeds of crops/vegetable and agriculture publications, and different products like pickles, eggs, mineral mixture, UMB bricks etc. *Kisan Melas*/Specific *Divas* (World Food Day, Women in Agriculture Day, Environment Day and Field Day/*Gosthi* etc.) were organized throughout the State.

Tree plantation, weed control, desilting of water bodies, blood donation, Pulse Polio Awareness Rally-cum-Trekking trip, lectures on topical subjects were taken up by NSS volunteers.

A National Integration Camp for NSS volunteers of State Agricultural Universities was organized under the auspices of Ministry of Youth Affairs and Sports, Government of India.

Kerala Agricultural University, Thrissur: It is the third consecutive year that the Kerala Agricultural University has been rated by the ICAR at number one position in the country. The university also received the Sardar Patel outstanding ICAR Institution Award 2003. Three New PG Programmes namely Veterinary Biochemistry at M. V. Sc. level, Veterinary Public Health for Ph. D and MBA in Agri-Business Management are added from 2006–07. Intake in B. Tech. (Agricultural Engineering) has been increased to 46 from academic session 2005. A new college campus at Pookotte, Wayanad District, has been inaugurated to conduct B.V.Sc. and Animal Husbandry Programme. The Governing Body at its 196th meeting granted accreditation to the Kerala Agricultural University and its 8 constituent colleges for 3 years.

Maharana Pratap University of Agriculture and Technology, Udaipur: The sixth year of the newly formed Maharana Pratap University of Agriculture and Technology (MPUAT), Udaipur has been a year of significant achievements and unique events. The threefold activities of teaching, research and extension education were carried out with vision and enthusiasm by the academic community, which facilitated to project the university as a performing one beyond threshold despite acute crunch in human and financial resources.

The academic programmes of UG and PG level in the faculties of Agriculture, Technology and Engineering, Home Science, Dairy and Food Science, Horticulture and Forestry and Fisheries were pursued with a set goal of academic excellence. As part of the quality improvement in education, the UG and PG laboratories have been modernized. Award of the ICAR has been bestowed upon three teachers. B.Tech programmes in Dairy Technology and Food Technology have been approved by the AICTE. On revision of Home Science curriculum, the common consensus was to make this more professional by having 2 years of professional skill oriented courses based on job and self-employment opportunities as part of the 4 year UG programme.

- The Academic Council of the Maharana Pratap University of Agriculture and Technology approved the establishment of department of Molecular Biology and Biotechnology during the current academic year.

Varieties of groundnut, chickpea, maize, cotton and kulthi developed by the university have been released by the Central Seed Committee in 2005.

Two training courses on Agri-clinic and Agri-Business for self-employment of graduates were also organized.

The University in collaboration with Department of Agriculture and Cooperation, Ministry of Agriculture, GoI organized a mammoth Western Region Krishi Vigyan Mela-2005 and Flower, Fruit and Vegetable Show at Rajasthan College of Agriculture campus, Udaipur. A model unit of water-harvesting structure has been developed at the KVK, Rajsamand, with financial assistance of Rs 12.12 lakh from the ICAR. The catchment area of the water pond is 90 ha and the capacity of the water-pond is 18,000 m^3. Based on this,the ICAR has approved 100 similar units in different KVKs of the country.

Pratap Mungphali -2 early maturing variety in 98–100 days, dry pod yield potential is 25 q/ha, 50% oil and having 69% shelling.

Pratap Chana-1 Bold seeded early maturing variety yields 12–14 q/ha.

Mother orchards of mango, *aonla*, pomegranate, custard apple, guava, lime and *ber* have been established at KVK farms. These orchards will prove instrumental in providing quality saplings to the tune of 15 lakhs in next three years, and will help in making Mewar and Hadoti region in the South-eastern part of the state into horti-bowl of the state.

Panjabrao Deshmukh Krishividyapeeth, Akola: A three day Agricultural Exhibition and *Charcha Satra* were organized at Wardha in collaboration with State Department of Agriculture, Zilla parishad Wardha and Bhaba Atomic Research Centre, Mumbai, on the eve of 106th Birth Anniversary of Dr Panjabrao Deshmukh Shetkari Melawa. At Akola, a *kharif shivar pheri* was organized. The Farmers Scientist's interaction (*Charcha Satra*) programme was also organized during *Shivar pheri*. Two-days workshop on Integrated Nutrient Management was organized. A two-days workshop on Prospects and Scope of Medicinal and Aromatic

Technologies developed at the Maharana Pratap University of Agriculture and Technology

- Pitcher technique for fruit plants for efficient water use.
- Sirohi bucks and model backyard poultry units developed are being adopted by large number of rural households.
- IPM modules cotton and chickpea have been validated.
- Using solar energy, the state-of-the-art, *aonla* processing units have been developed for removing seeds from *aonla* fruit through shedder stone extractor machine, drying *aonla* chips in solar tunnel dryer and preparation of jelly.

plants was organized at the main campus. Winter school on organic farming for sustainable crop production was organized by Department of Agronomy.

Sher-e-Kashmir University of Agricultural Sciences and Technology, Kashmir: Two new programmes at Master's level Agriculture Economics and Agriculture Extension and Communication and 6 at Ph.D. level-Sericulture, Post-harvest Technology, Environmental Sciences, Animal Reproduction and Gynaecology, Veterinary Microbiology and Immunology and Veterinary Surgery and Radiology have been instituted. The Central Library made good additions of scientific books, Research Journals, Scientific and Technical Reports, Bulletins, Proceedings of the Conferences, Symposia, CD ROM databases and other miscellaneous publications.

Two-month training programme on entrepreneurship development for unemployed agricultural graduates was organized for field officers and others. Short duration training courses and workshops were organized. Three Summer/Winter School one each on ecological vulnerability and strategies for sustainable agriculture in hilly regions; recent advances in post-harvest management of temperate fruits, vegetables, flowers and condiments; and recent advances in seed production of important vegetables were organized.

University of Agricultural Sciences, Bangalore: Krishi Vignana Kendra at Kandali, Hassan, has been awarded the best KVK National Award for the Biennium 2003–04. Two new KVKs have been started at Kankanady and Chamarajanagar and 5 KVKs upgraded totaling 9 KVKs. Summer/Winter Schools were held on Natural Resource Economics and Management of Water Resources in Agriculture, Teaching Methods in Agriculture and Pollution Ecology in Agro-Ecosystems. International workshop on Policy issues for Sustainable Shrimp Farming in Asia and a national symposium on Paradigms in Nematalogical Research on Bio-dynamic farming were organized. A short course on Globalization of Dairy Industry in India- Application of Forecasting Techniques, a training program on Molecular Marker Techniques for crop

- The Sher-e-Kashmir University organized the 28th Annual Convention of Vice-Chancellors of Indian Agricultural Universities Association. Its main theme was orientation of agricultural education towards future needs and opportunities

improvement and a national seminar on Extension Methodological Issues in Impact Assessment of Agricultural and Rural Development programs were held. A medium-duration rice variety, KMP-101 maturing in 130–135 days, with yield of 6.0–7.5 tonnes/ha has been released. The variety is recommended for cultivation in *kharif* and summer in southern Karnataka. A high-yielding ragi variety MR 6 with yield potential of 4.5–5.0 tonnes/ha under irrigated and 3.0–3.5 tonnes/ha in rainfed areas with 120 days duration has been released. A dual-purpose pigeonpea variety BRG 1 with 175–190 days duration and yield of 1.4 tonnes has been released for eastern dry zone.

- A total of 604 on campus and off campus training programmes were organized by Krishi Vignana Kendras which more than 20,000 participants attended

University of Agricultural Sciences, Dharwad: The University has introduced automation in University Library to provide online use Public Access Catalogue, Bar Coded Member ID Card, Automation of Circulation and Internet facilities.

A Winter School on Under Exploited Foods—An Advance Strategy for Management of Metabolic Disorders was sanctioned by the ICAR. Board of Regents has approved for starting Postgraduate Diploma in Care and Education of Children with Disabilities and a certificate course in Establishment and Management of Early Childhood Education Centres in the Department of Human Development, College of Rural Home Science, Dharwad. The University Seed Unit supplied hybrids and improved varieties of seeds of different crops valued at Rs 15 lakh. The Unit has produced/targeted to produce 7,400 quintals of Breeder, 2,860 quintals of Foundation and 10,672 quintals of Certified seeds of different crops. The University organized Biannual Workshop on Sugarcane. The Agricultural Research Station, Dharwad, has brought out several hybrids and improved cotton varieties.

Admission of Foreign Students

During the year 2005–06, 151 students from 25 countries were given admissions in ICAR Deemed-to-be Universities and State Agricultural Universities. To meet quality residential needs of foreign students support has been provided to ten agricultural universities for construction of International students hostels.

Summer/Winter Schools and Short Courses

Ninety-one summer and winter schools and short courses of 10 to 30 days duration were supported for organization by the ICAR Institutes and State Agricultural Universities.

Summer/winter schools and short courses

- Gender analysis and its application to agricultural research and extension
- Economics of dairy and dairy products
- Egg processing and quality assessment of poultry products
- Mechanization of production and post production operations in plantation crops
- Greenhouse technology for growing horticultural crops
- Interior planning and decoration: A professional perspective
- Coastal and marine environmental management
- Quantitative Development Policy Analysis Approaches and Applications
- GIS based decision support systems for sustainable agriculture
- Computer aided textile designing
- Food technologies and food business development in India.
- Technological empowerment of farm women
- Sustainable fruit production in fragile agro-ecosystem of arid regions
- Resource conservation for higher productivity and sustainability
- Mitigation of heavy metals and arsenic pollution in agricultural production systems

Centres of Advanced Studies

Centres of Advanced Studies (CAS), offer facilities for continuing capacity building of faculty engaged in teaching at the undergraduate and postgraduate levels. This year, all the Centres have initiated improved analysis of the trainings conducted by them.

Professional Excellence Recognition

University Level Textbook Writing

- Preventive Medicine Epidemiology of Dr R.D. Sharma, Dr Mahesh Kumar and Dr. M.C. Sharma;
- Food Hygiene and Public Health of Dr A.T. Sherikar, Dr V. Bachhil and Dr D.C. Thapliyal;
- Bovine Seminal Plazma Protein of Dr S.N. Kulkarni; and
- Oyster Biology and Agriculture of Dr Kanarimham, Dr (Mrs.) V. Kirpa

Best Teacher Award

Faculty members (27) of the SAUs and the ICAR Deemed-to-be Universities were awarded Best Teacher Award for 2005–06.

Training on Molecular Biology

Training on Plant Pathogens

Practical training in Poultry Meat Products

Niche Area of Excellence

A new initiative launched for bringing national and international

visibility of agricultural universities in their areas of attained capabilities.

All-India Competitive Examinations for agriculture and allied sciences

For admissions to 15% seats in under graduate programmes in agriculture and allied science subjects, the 10th All India Competitive Examination was conducted. These were conducted for award of National Talent Scholarships (NTS) for 38 Universities (35 SAUs, CAU, BHU and Viswa Bharati), and all seats at NDRI Karnal. In this examination, 12,650 candidates appeared and 1204 were finally admitted through Counseling held during July 2005.

Recommendation on NTS and reservation of seats

For the first time, all candidates who joined any University falling outside their state of domicile, were awarded National Talent Scholarship (NTS) of Rs 1,000 per month. Earlier, NTS was awarded only to 230 candidates on merit at Rs 800 per month. Also, for the first time, 2% of the total seats were reserved for the candidates from specified 11 underprivileged states, not having any Agricultural University.

For admissions to 25% seats in P G programmes at 38 SAUs and three CUs (BHU, Biswa Bharti, and AMU), and 100% seats at the IARI, NDRI, CIFE, and IVRI including award of Junior Research Fellowships, competitive examinations were held. These examinations were held at 26 locations in the country in 19 major subject groups (88 subjects). Based on the number of graduates awarded JRF, following Universities are rated best; (1) University of Agricultural Sciences, Bangalore (with 41 JRF), (2) University of Agricultural Sciences, Dharwad (with 40 JRF), and (3) Kerala Agricultural University (with 33 JRF).

EDUSAT for Agricultural Education

Detailed planning was done for utilization of EDUSAT by the ICAR and SAUs in agricultural education and human resource development in collaboration with the ISRO, IGNOU and MHRD. The approved plan includes establishment of 50 uplink and downlink stations all-over the country in SAUs, DUs, CAU, CUs, NAARM and ICAR Headquarters.

All-India Coordinated Research Project on Home Science

To reduce drudgery and alleviate health hazards, training programmes on use of improved tools, revolving *pihri*, improved sickles, maize sheller and weeders were organized. To improve nutritional status, ten nutritious recipes based on cereals, pulses, and nuts were developed and evaluated for their acceptability. Trainings were conducted for skill development and instilling confidence to start profitable enterprises in areas such as cooking, food preservation, handicrafts, soft toys, fabric paintings, garments, vermi-composting, herbal products and child nursery. For motivation of farmwomen to entrepreneurial activity, linkages with private, government and non-government organizations including banks were established to form self-help groups.

MoU with IGNOU for Cooperation in Agricultural Education in Distance Mode

For promotion of agricultural education in difficult-to-reach areas, for faculty improvement and vocational education, MoU has been signed for jointly working of the ICAR, SAUs and IGNOU on December 21, 2005. Certificate courses namely Agri Business Management, Organic Agriculture and Developmental Agriculture have been identified for developing work programme to be taken up in Phase I.

Scholarships and other Financial Assistance Schemes

Merit-cum-Means Scholarship (MCM): This is for students belonging to economically weaker sections to undertake U.G. studies in agriculture and allied sciences. Maximum 7% students from one University are awarded scholarship at Rs 170 per month.

Internship Assistance: It is awarded to all final year students of B.V.Sc and Animal Husbandry programme during their Internship at Rs 400 per month besides, Rs 400 for undertaking to-and-fro journey to place of internship.

Junior Research Fellowship (JRF): It is awarded to meritorious students subject-wise, based on their merit rank in the All-India Competitive Examinations conducted by the ICAR. There are in total 475 Fellowships valued Rs 5,760 per month for non-veterinary and Rs 8,000 per month for veterinary students to pursue P G degree programme. Besides, a contingency grant of Rs 6,000 per year is payable to all awardees.

ICAR Senior Research Fellowships (SRF): Based on the merit in the ICAR conducted All-India Competitive Examination for award of SRF, a total of 202 fellowships are being awarded to scholars for undertaking Ph.D. research in agriculture and allied sciences. The value is Rs 8,000 per month for non-veterinary and Rs 9,500 per month for veterinary scholars in the first and second year of Ph.D. and Rs 9,000 and Rs 10,000 month for the third year. Research contingency grant of Rs 10,000 per year is payable to all.

ICAR National Professors and National Fellows

There are ten positions of ICAR National Professors. These include one B.P. Pal Chair for Plant Breeding and Genetics at the IARI. Of these, two were in position.

A total of 25 positions of National Fellows exist in ICAR under the scheme for creation of Professorial Chairs. Of these, 14 completed their term. Based on the work performance, extension

to 10 of these has been granted for another term.

Dr A.V.N. Paul, (IARI New Delhi) National Fellow studied the synomonal effect of cotton-crop ecosystem on the foraging capacity of *Trichogramma* spp.

- Bioassays studies with the leaf extract of *Cassia* sp. from vegetative phase showed that irrespective of the concentrations of the extract, the mean per cent parasitism was the highest for *T. brasiliensis*. In flowering phase, the mean per cent parasitism was highest for *T. achaea*

Field studies were carried out in late vegetative and flowering phase. In late vegetative phase irrespective of the *Trichogramma* species, the cotton variety Pusa 8-6-68-29 showed highest response. Hexane extracts of leaves from vegetative and flowering phase of *Cassia* sp. were prepared and bioassayed with *Trichogramma brasiliensis* and *T. achaeae* to know synomonal interactions between plants and natural enemies.

Dr K. Alagusundaram, TNAU, Coimbatore, National Fellow, worked on identifying technologies for using modified atmosphere gases to extend shelf-life of selected tropical fruits and vegetables for export markets.

Dr B.P. Singh, (CARI, Izatnagar) National Fellow, performed specialized selection on two naked neck pure broiler strains having naked neck gene (NNWP and NNCP) over 10 generations. The study revealed that both ELISA and HI methods to evaluate response against New Castle Disease vaccination are equally effective.

Dr B.M. Prasanna (IARI, New Delhi) National Fellow, worked on Molecular characterization of Indian maize landraces and allele mining for agronomically important traits. Extensive survey in 40 villages in Sikkim, spanning East Sikkim, West Sikkim, North Sikkim and South Sikkim, led to the collection of 80 accessions.

Dr D.C. Uprety, (IARI, New Delhi) National Fellow, studied detailed physiological and biochemical analysis of *Brassica* to the interactive effect of moisture stress and elevated CO_2. *Brassica* cultivars have developed measures to combat stress induced oxidative damage on cell membrane, both by reducing accumulation of reactive oxy species (ROS) and increasing antioxidant enzyme activities. The sustenance of the stimulatory effect of elevated CO_2 was observed up to the seed formation stage.

Dr J.C. Tarafdar, (CAZRI, Jodhpur) National Fellow, worked for developing a simple method for determination of metabolically active soil bacteria, fungi and actinomycetes. The method is based on the hydrolysis of fluorescein diacetate (FDA) to fluorescent green colour fluorescein. Actinomycetes 95.4%, bacteria 91.9% and fungal 92%colonies in different soils were capable of using FDA and it was found much better indicator than dehydrogenase assay.

- The work done by Dr D C Uprety includes development of open top chambers and the first South Asian Free Air Co_2 enrichment (FACE) technologies. These facilities were used to study the responses of *Brassica* and rice cultivars to the elevated Co_2

Dr Kaushalya Ramachandran, (CRIDA, Hyderabad) National Fellow is working on the project Assessment of Sustainability of Treated/Developed watersheds in Rainfed Agro-eco region of Peninsular India using GIS and Remote Sensing (2005–2010). Analysis of core issues affecting sustainability of watersheds are being analyzed. FESLM framework has been used to assess sustainability of land management practices initiated in Pamana and Dontanpalli watersheds in Ranga Reddy district and Gollapalli in Nalgonda district.

Dr D.K. Sharma, (Assam Agricultural University, Khanapara) National Fellow is working on Development of ELISA based immunodiagnostics for classical swine fever. During the year 2005, 550 tissue samples of pigs from outbreaks and slaughtered places have been screened by Sandwich ELISA. ELISA has been standardized using polyclonal sera raised in rabbit and pigs against the lapinized strain of CSF virus. More than 100 samples were found positive for viral antigen. Isolation of CSF virus from the positive tissue samples was done in PK15 cell line. Out of the 25 positive samples processed, so far from 7 samples CSF virus could be isolated.

- The work by Dr D K Sharma involved developing immunodiagnostic reagent (antigen and antisera) and to standardize ELISA based immunodiagnostic assay for rapid and confirmatory diagnosis of classical swine fever, the most feared and devastating viral disease of pigs

Dr Madhuban Gopal, (IARI New Delhi) National Fellow has worked on Decontamination of pesticide residues from edible commodities. Addition of a non-toxic reagent followed by physical treatment could reduce Chlorpyrifos toxicant present at 0.04 ppm up to 70–90%. Development and validation of residue free IPM for cabbage, chili and tomato has been completed.

Dr Alka Goel, (GBPUA&T Pantnagar) National Fellow has carried out studies to assess present status of textile articles in Uttaranchal with special reference to designing through survey. All Bhotia (100%) community use Tibetian wool (medium-coarse-type wool). Only 20% of Bhotia use Merino wool or other local goat/sheep wool with Tibetian wool. They prepare articles to provide warmth, they don't care much for aesthetics. They use weaving (mainly plain, twill and pile weaves) and hand knitting technique of fabric/garment construction. In Uttaranchal 75% of the respondents use wool fibres mainly for woven articles (Dun,

Chutka, Thulma, Asan, Loi, Pankhi, Shawl, Stole, Pakhla) and knitted articles (Sweaters, Caps, Socks, Gloves, Muffler etc.), 15% use silk, 25% respondents used cotton fibres. Only 10% respondents use blends of cotton, wool, silk. They use blend at yarn stage mainly.

Dr K L Sharma (CRIDA, Hyderabad), National Fellow worked on the project entitled Restoration of soil quality through conservation agricultural management practices and its monitoring using Integrated Soil Quality Index (ISQI) approach in rainfed production system. Soil samples from different rainfed locations were collected from the on-station long-term field experiments and farmers' fields representing predominant management practices (tillage, INM, herbicide application, green manuring, residue and fertilizer applications, cropping systems/rotations etc.). After processing, the soil samples were analyzed for various physical, chemical and biological soil quality indicators. Data pertaining to some of the centres, viz. Agra, Dantiwada, Hyderabad is being analyzed, soil quality index is being computed. At Hyderabad Centre, two experiments focusing on soil quality restoration (comprising of reduced tillage, conventional tillage, residue application and N levels, low cost INM treatments) are in progress. Field data have collected. Apart from these, the study on the emission of carbonxide as influenced by tillage and residue application under semi-arid tropical condition is also in progress.

Emeritus Scientist Scheme

Dr N.B. Naravani, (UAS Dharwad): A two year study indicated that groundnut harvester with 37.50 cm harvesting blade is the most suited bullock-drawn harvesting implement. A saving of 28.53 man-hours per hectare was achieved with the harvester compared to manual harvesting. The harvester yielded a highest field efficiency of 84.37%. The implement offers better balancing and comfort for operation under thick vegetative growth conditions of the irrigated crop. Groundnut pod thresher indicated a threshing efficiency of 9.20%, cleaning efficiency of 73% and a threshing capacity of 87.57 kg pods per hour. Saving in cost was Rs 20 and on man-hours per quintal of pod threshing was 16.59.

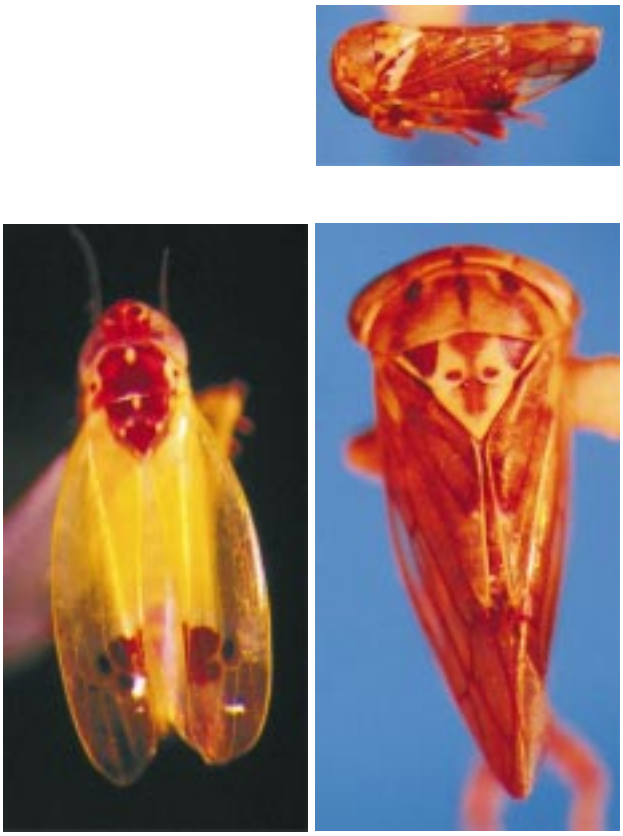
Dr D.N. Sharma, (HPKV Palampur): A two year study to record gross morphological, histological and histochemical changes in hypothalamus, hypophysis, thyroid and adrenal glands of Gaddi goats in relation to ovarian morphology during different seasons of the year was conducted at mid-hill zone of Himalayas at Palampur (315 m above mean sea level). Ovarian tissues collected over the year in different seasons revealed larger ovaries with maximum number of mature/ovulatory follicles/early corpora lutea on surface during autumn (oestrus) and smallest ovary with least number of follicles in the summer (anoestrus). Pituitary gland weighed heaviest (310–360 g) during autumn and lightest (246–278 g) in summer and measured on an average 14.4 × 10.2 × 9.8 mm^3 and 13.3 × 9.7 × 8.4 mm^3, respectively revealing all-round growth of pituitary gland in the autumn season. Microscopic examination of pituitary revealed increased population of hypertrophied basophils (gonadotrophs) in autumn in contrast to acidophils (LTH Ocytes) in the summer. Adrenal glands measured largest (Av 4.15 × 1.48 × 0.99 cm^3) and heaviest (Av 4.26 g) in summer and smallest (Av 1.82 × 1.27 × 0.99 cm^3) and lightest (Av 3.46 g) in the winter. Thyroid tissue exhibited a reversed trend of pituitary-gonadal relationship. Glands were largest (Av 4.27 × 2.16 × 0.82 cm^3) and heaviest (Av 8.36 g) in summer; and smallest (Av 2.38 × 1.03 × 0.80 cm^3) and lightest (Av 3.21 g) in autumn.

Dr J L Mangal, (CCS HAU, Hisar): Root dipping of tomato seedlings before transplanting in ascorbic acid (20ppm) solution was significantly beneficial for survival, growth, fruiting, yield and quality of fruits when plants were raised under 8.0 dS/m Ece as compared to plants raised under similar salinity levels but without any root dip treatment and root dip treatments with other chemicals. In case of onion and okra, root dipping and seed soaking for 4 hrs before planting/seedling induced significantly better plant growth, fruit yield and fruit quality under 8.0 dS/m Ece salinity.

Dr C.A. Viraktamath, (University of Agricultural Sciences): Extensive collections (10,000 specimens) of leafhoppers has been made from different parts of India. Five new species of *Krisna* have been recognized. It is showed that three new species that occur from India are distinct from the Ceylonese species *Dussana quaerenda*. This genus is endemic to peninsular India and Sri Lanka. *Vangama steneosaura* is very variable species as far as the head is concerned; this was discovered during the field trip conducted during July 2005 when breeding population of this species was collected from Subhimalayan regions of West Bengal and Sikkim. The genus *Varta* Distant that was earlier considered a synonym of the Palaearctic genus *Stymphalus* has been resurrected and a number of species from Europe, Asia and Australia, which were earlier misidentified, have been described and placed in *Varta*.

Dr M.S. Shakatawat (MPUAT, Udaipur): Two years field experiments conducted on tribal farmers field at Udaipur (Rajasthan) on maize-wheat cropping sequence has indicated that phosphorus at 60 kg P_2O_5/ha through PROM (Phosphate Rich Organic Manure) in maize and wheat gave highest grain yields (31.16 and 39.70 q/ha), stover and straw yield (54.52 and 55.44 q/ha), net returns (Rs 16,355 and 28,401/ha) and benefit/cost ratio of (1.84 and 2.61) of maize and wheat respectively.

Dr R. C. Tiwari (BHU Varanasi) Under a study on bioconversion, formulation and recycling of organic wastes and digested sludge



Leaf hopper pests of mango

revealed that digested sludge (DS), pressmud (PM), carpet waste (CW), poultry manure, cow dung, tree leaves and city garbage, organic wastes available locally in Varanasi region have high plant nutrient potential. Wheat grain yield data showed that application of full dose of NPK as chemical fertilizer yielded 5.37 tonnes/ha grain and 2 tonnes of each of PM + CW + DS yielded 5.75 tonnes/ha.

Dr A. Seetharam (UAS, Bangalore): A two years project on

Organic Farming of Wheat

study of core collection of fingermillet, *Eleusine coracana* for agronomic, physiological and grain quality parameters has helped in establishing a core germplasm set in fingermillet for the first time from the entire world collection of nearly 6,000 accessions at the National Active Germplasm Site (NAGS), Bangalore.

The results indicated that variability available in total core set was very large especially for productive tiller number, finger length, straw weight, ear weight, yield and total dry matter and showed high PCV value of more than 29%.

Dr. R. Manickam, (TNVASU, Namakkal): Epidemiological studies on the incidence of Leptospirosis was undertaken to assess level of its sero-prevalence in farm animals of Tamil Nadu. Out of a total 1,719 sera samples collected and analyzed, 401 sera samples were from cattle and buffaloes, 189 from sheep, 157 from goats, 247 from dogs and 725 from human beings. The percent sero positivity recorded in cattle and buffaloes was 11.72% 12.6% in sheep, 15.9% in goats, 22.7% in dogs and 54.06% in human beings. Predominant serovars found in farm animals and dogs were reported in man also strongly suggests the possible disease transmission from farm animals to man. High incidence of Leptospirosis was recorded during rainy season compared to summer, and more incidences were reported from north-eastern and Cauvery delta zones.