

- Research Achievements
- Honours/ Awards/ Recognitions
- Visit Abroad
- New Projects Initiated
- Human Resource Development
- Conferences/Workshops etc. Organised
- Panorama of Activities
- Publications
- Invited Lectures Delivered
- Participation
- Computing Facilities
- Consultancy/Advisory Services

### निदेशक की कलम से . . .

समाचार पत्र के इस अंक में प्रतिवेदनाधीन अवधि के दौरान प्रमुख अनुसंधानिक एवं प्रशिक्षण सम्बन्धी उपलब्धियों और संस्थान की अन्य महत्वपूर्ण गतिविधियों पर प्रकाश डाला गया है।

डिजाइन्स रिसोर्सेज सर्वर पर मिश्रित लाम्बिक अरेज ऑनलाइन संरचित करने की सुविधा प्रदान की गई है।

कृषि शिक्षा के क्षेत्र में ऑनलाइन इंटरएक्टिव पाठ्यक्रमों की बढ़ती हुई मांग को देखते हुए, एक ईलर्निंग प्लेटफार्म तैयार कर कृषि विज्ञान में स्नातकोत्तर पाठ्यक्रमों के लिए लागू किया।

मेंथा तेल पर वैश्विक विशोध के प्रभाव की जाँच की गयी। अध्ययन ने दर्शाया कि मेंथा तेल का उत्पादन लगातार बढ़ रहा है तथा निर्यात के लिए अधिशेष भी उपलब्ध है।

संस्थान में 20 अक्टूबर, 2010 को प्रथम विश्व सांख्यिकी दिवस मनाया गया। 09 नवम्बर, 2010 को राष्ट्रीय कृषि विज्ञान संग्रहालय का वार्षिक दिवस भी मनाया गया।

XVIवें राष्ट्रीय कृषि अनुसंधान सांख्यिकीविदों के सम्मेलन का आयोजन इस अवधि की एक महत्वपूर्ण गतिविधि है।

कृषि अनुसंधान एवं शिक्षा विभाग के सचिव एवं भा.कृ.अनु.प. के महानिदेशक, डॉ. एस. अय्यप्पन तथा भा.कृ.अनु.प. के उप-महानिदेशक (अभियां.), डॉ. एम.एम. पाण्डेय की अध्यक्षता में क्रमशः “भा.कृ.अ.प. में सूचना एवं संचार प्रौद्योगिकी” पर तथा “एन.ए.आर.एस. की प्रभावोत्पादकता में वृद्धि करने में भा.कृ.सां.अ.सं. की भूमिका” पर दो इन्टरेक्टिव कार्यशालाएँ हुईं।

PIMS-ICAR पर चार जोनल कार्यशालाएँ तथा नोडल अधिकारियों के सॉसिटयिजेशन एवं प्रशिक्षण के लिए NISAGENET पर एक कार्यशाला आयोजित की गयी। संस्थान में विभिन्न प्रशिक्षण कार्यक्रम आयोजित किये गये।

भा.कृ.अनु.प. के राष्ट्रीय प्राध्यापक, डॉ. वी.के. गुप्ता को “सांख्यिकी भूषण” के प्रतिष्ठित पुरस्कार से सम्मानित किया गया। डॉ. राजेन्द्र प्रसाद को “प्रो. पी.वी. सुखात्मे स्वर्ण पदक” पुरस्कार प्रदान किया गया तथा डॉ. वी.के. भाटिया, डॉ. हुकुम चन्द्र, डॉ. हिमाद्री घोष, डॉ. प्रज्ञेय, डॉ. रामानुजमनियन, वी. एवं डॉ. एस.पी. भारद्वाज ने “श्रेष्ठ शोध-पत्र पुरस्कार” प्राप्त किया।

संस्थान के वैज्ञानिकों द्वारा अनेक शोध-पत्र प्रकाशित किये गये।

आशा है कि इस अंक की विषय-वस्तु एन.ए.आर.एस. (NARS) के वैज्ञानिकों के लिए सूचनाप्रद एवं उपयोगी होगी। समाचार पत्र की विषय-वस्तु में सुधार लाने हेतु आपके सुझावों का स्वागत है।



### From Director's Desk . . .

This newsletter highlights some of the salient research and training achievements made and other significant activities performed during the period under report.

The facility of online generation of Mixed Orthogonal array have been added on Design Resources Server.

To fulfill the increasing demand of online interactive PG courses in this sector, an eLearning platform

“eLearnAgriculture” has been designed and developed and implemented for the post graduate courses in Agriculture Sciences

Study of impact of global disturbances (Meltdown) on Mentha oil has showed that production of Mentha oil is constantly on the rise and large surplus available for exports.

Institute celebrated the first World Statistics Day on 20 October 2010. Annual Day of National Agricultural Science Museum was also celebrated on 09 November 2010.

A very important event during the period is organisation of XVI National Conference of Agricultural Research Statisticians.

Two Interactive meets on Information and Communication Technology in ICAR and the other on the Role of IASRI in enhancing R&D efficacy of NARS were organised under the Chairmanship of Dr. S. Ayyappan, Secretary, DARE and DG, ICAR and Dr. MM Pandey, DDG(Engg.), ICAR respectively.

Four zonal Workshops on PIMS-ICAR and one on NISAGENET for Sensitization cum Training of Nodal Officers were organised. Various training programmes were also organised at the Institute.

Dr. VK Gupta, ICAR National Professor received the prestigious title of Sankhyiki Bhushan, Dr. Rajender Parsad, received Prof. P.V. Sukhatme Gold Medal Award, Dr. VK Bhatia, Dr. Hukum Chandra, Dr. Himadri Ghosh, Dr. Prajneshu Dr. V Ramasubramanian and Dr. SP Bharadwaj received Best Paper Awards.

The scientists of the Institute published many research papers. It is hoped that the contents of this document would be informative and useful for scientists in NARS. Any suggestions for improving the contents of the newsletter further would be highly appreciated.

आप सभी को नव वर्ष 2011  
की  
हार्दिक शुभ कामनाएँ

*(विजय कुमार भाटिया)*  
(विजय कुमार भाटिया)

*(VK Bhatia)*  
(VK Bhatia)

## RESEARCH ACHIEVEMENTS

### • **Mixed Orthogonal Arrays and their Usefulness**

Orthogonal Arrays (OAs) are useful in agricultural, biological, industrial research and also in quality control. OAs and Mixed Orthogonal arrays (MOAs) have been used extensively in planning experiments, particularly generating fractional factorial plans for symmetric and asymmetric factorials. The rows of the array represent the experiments or tests to be performed or runs or treatment combinations in factorial experiments. The columns of the orthogonal array correspond to the different variables (factors) whose effects are being analyzed. The entries in the array specify the levels at which the variables are to be applied. Since the rows of an orthogonal array represent runs (or tests or samples) - which require money, time, and other resources - there are always practical constraints on the number of rows that can be used in an experiment. Finding the smallest possible number of rows is a problem of eminent importance. On the other hand, for a given number of runs we may want to know the largest number of columns that can be used in an orthogonal array, since this will tell us how many variables can be studied. We also want the strength to be large, though in many real-life applications this is set at 2, 3 or 4. Another interesting application of MOAs is in variance estimation of a non-linear statistic from a large scale complex survey data. Special forms of OAs have found applications in computer experiments, computer science and cryptography.

A new link on "Orthogonal Arrays" has been initiated on Design Resources Server and is available at <http://www.iasri.res.in/design/Oarray/oa/default.htm>. The link contains definitions of OAs, MOAs, Resolvable OA,  $\alpha$ -resolvable OA, resolvable MOA, method of construction of orthogonal arrays, procedure of orthogonal blocking in orthogonal arrays and bibliography on orthogonal arrays. One can generate orthogonal arrays of strength two, resolvable orthogonal arrays of strength two and the orthogonal blocking of resolvable orthogonal arrays for  $4 \leq n(\# \text{ Runs}) \leq 144$  from this link.

- **Internet-enabled learning or eLearning** is the education methodology that takes advantage of modern information and communication technologies (ICT) to address the continuing educational needs of students. Being online, this methodology provides an opportunity to learn independently, comfortably and at the desired pace from any part of the world at anytime. It has been fostered with the development in the ICT sector.

In many sectors of education and training, eLearning has found its place. In agricultural education also its need has been felt with the development of

Agricultural Science and Technology all over the world. To fulfill the increasing demand of online interactive PG courses in this sector, an eLearning platform "eLearnAgriculture" has been designed, developed and implemented for the post graduate courses in Agriculture Sciences and is available at (<http://www.elearnagri.iasri.res.in/home>). The system has been developed in a way that the teaching, learning, evaluation and administration of the courses and users can be accomplished online. Presently it has been enriched with the fundamental courses under the disciplines of Agricultural Statistics and Computer Application. Each course has been distributed into well defined topics with each topic having the online features of glossary, interactive lessons, multimedia enabled presentations, quiz and assignments.

The open source Learning Management System, MOODLE has been used for creating the eLearning documents, management of contents and users. The modular nature of MOODLE has been used in this system to add the new features such as an equation editor, frequently required mathematical symbols and a new user interface.



The system provides an opportunity to the agricultural educationists to create and link their course contents online. In near future the system will be enriched with more courses and will be useful to the students, teachers, researchers and other learners of these courses.

- **Impact of Global Meltdown on Indian Agriculture**

Indian economy has been affected by global recession mainly through the external sector. Agriculture is however not perfectly integrated with the external sector so far. But still it has made inroads into the external market especially in some selected commodities. International prices for agricultural commodities are known for their high volatility, a feature which has been, and continues to be a cause for concern among governments, traders, producers and consumers. In a prolonged volatile environment, the problem of extracting the true price signal from the noise may arise, a situation that can lead to an inefficient allocation of resources. The volatility can attract significant speculative activity, which in turn can initiate a vicious cycle of destabilizing cash prices. Impact of global disturbances (Meltdown) on Mentha oil, which is mainly export oriented commodity and industrial raw material has been examined. The study showed that production of Mentha oil is constantly on the rise and large surplus available for exports. This statement supports the presumption that rises in price volatility of Mentha oil in the recent years may be attributed to the economic and financial disturbances in the global economy. The cultivation of Mentha in India is very successful as the scenario of net importing country up to 1966 has changed to large exporting one. This is Rabi season crop and mostly grown in selected parts of Uttar Pradesh (90%) followed by Punjab and parts of Rajasthan. The secondary data used in the study pertains to Future Trade in Mentha oil at Multi Commodity Exchange (MCX), National Commodity & Derivatives exchange (NCDEX) and Spot Market namely Chandausi. Analysis was carried out for the period of January, 2006 to December, 2009. The global economic & financial disturbances are covered in the period of study. The study showed that the two price series i.e future and spot, of Mentha oil became stationary at first difference. The volatility clusters of high and low variance were more prominent in the year 2008 in case of both future as well as spot price series. This gave an indication that ill effect of economic turmoil was reflected through higher volatility in the year 2008 & 2009 as compared to the previous years. The spot price series showed higher level of persistent volatility as compared to future price series. A special mention can be made regarding Future trading, which provides an opportunity to lower down the extent of volatility. The volatility clusters of high and low variance were more prominent in the year 2008 in case of both future as well as spot price series.

- **Market Efficiency in Commodity Futures**

Theoretically, trading in commodity futures helps the market to discover prices based on fundamentals (i.e. strength of the supply and demand forces) while allowing the physical market participants to hedge (or lock in) their returns. The price discovered in future trading are transparent and serve the economic interest of all the stakeholders. With this hypothesis, the present study has been undertaken to investigate the bivariate relationship between spot and future market and also to study the comparative performance of different future contracts in achieving market efficiency through price discovery mechanism. The study showed that in most of the mentha oil future contracts secured at MCX platform, better price were discovered mostly in the future market. The price discovery in both spot as well as future market occurred only once in eleven contracts. Regarding market dominance in terms of lead-lag relationship, strong dominance of future market was observed. With respect to Granger causality the market relationship was mostly uni-directional i.e. from future to spot market. However the desirable bi-directional relation between spot and future market was observed in three contracts.

## **HONOURS / AWARDS / RECOGNITIONS**

Various Scientists received following Awards by the Indian Society of Agricultural Statistics during the 64<sup>th</sup> Annual Conference of the Society jointly organized by the Department of Agricultural Statistics, Bidhan Chandra Krishi Viswavidyalaya and Department of Statistics, University of Kalyani at Farmers' Training Centre (Lake Hall), Bidhan Chandra Krishi Viswavidyalaya, Kalyani during December 03-05, 2010.

- **Sankhyiki Bhusan Conferred upon Dr. VK Gupta**

Indian Society of Agricultural Statistics conferred the prestigious title of Sankhyiki Bhusan on Dr. Vinod Kumar Gupta, ICAR National Professor, a distinguished researcher and a visionary scholar for his insightful and outstanding theoretically creative and methodologically innovative contributions in the development of the subject of Statistics and its applications in agricultural research system.



- **Prof. P.V. Sukhatme Gold Medal Award**

Dr. Rajender Parsad, Head, Division of Design of Experiments was awarded Prof. P.V. Sukhatme Gold Medal Award for the year 2010 for his important and useful research contributions to both theoretical and applied aspects of Agricultural Statistics in general and Design of Experiments in particular. His efforts have led to the use of modern efficient designs and sophisticated analytical procedures by the researchers in the National Agricultural Research System, which is important for improving the quality of agricultural research.



- **Best Paper Awards:**

- Raju, BMK, **Bhatia, VK** and **Bhar, LM** (2010). Assessing Stability of crop varieties with incomplete data. *J. Ind. Soc. Agril. Statist.*, **63(2)**, 139-149 in the field of **Statistical Genetics and Genomics**.
- **Chandra, Hukum** (2010). Estimation of small area proportions under unit level spatial models. *J. Ind. Soc. Agril. Statist.*, **63(3)**, 267-276 in the field of **Surveys**.
- Singh, Rama Krishna, **Ghosh, Himadri** and **Prajneshu** (2010). Possibility and necessity measures for fuzzy linear regression analysis: An application, *J. Ind. Soc. Agril. Statist.*, **63(1)**, 19-25 in the field of **Applied Statistics**.
- Jain, Rajni, Minz, Sonajharia and **Ramasubramanian V** (2010). Machine learning for forewarning crop disease. *J. Ind. Soc. Agril. Statist.*, **63(1)**, 97-107 in the field of **Informatics**.
- Research paper entitled Market efficiency in commodity futures - A case study by **Bhardwaj, SP** and Vasishtha, AK received Best Paper Award of Rs. 5000/- at International Conference on Financial Derivatives held during December 17-19, 2010 at Department of Commerce, Pondicherry University, Pondicherry.

## RECOGNITIONS

- Dr. VK Bhatia was invited to deliver PV Sukhatme memorial lecture during International Conference on Development and Applications of Statistics in Emerging Areas of Science & Technology during 08-10 December 2010 at Department of Statistics, University of Jammu, Jammu.
- Dr. Anil Kumar acted as the member of judging panel in the 9th Kisan Mela evam Pashu Vigyan Pradarshani held at IVRI, Izatnagar, Bareilly during 01-03 November 2010.

## VISIT ABROAD

- Dr. VK Bhatia and Dr. UC Sud were deputed to attend the V International Conference on Agricultural Statistics held at Kampala, Uganda during 13-15 October, 2010. They presented the following two Research Papers during the conference:
  - Bhatia, VK - Teaching and Training in Agricultural Statistics.
  - Chandra, Hukum, Sud, UC and Salvati, Nicola - Estimation of district level poor households in the state of UP in India by combining NSSO survey and census data.
- Smt. Anshu Bhardwaj was deputed to participate in the training programme during 23 September to 17 December under NAIP to International Institute for Geoinformation Science and Earth Observation, Enchede, Netherlands.

## NEW PROJECT

- A new project on 'Experimental designs in the presence of indirect effects of treatments' has received approval from DST.

## HUMAN RESOURCE DEVELOPMENT

### Training Programmes:

- A trainers training programme on **SAS: A Comprehensive Overview (Part II)** was organized during 13 September – 01 October 2010 under NAIP Consortium Strengthening Statistical Computing for NARS. The training is being given by SAS Resource Persons. It was attended by 26 Scientific/ technical personnel from NRC Agro-forestry, Jhansi; IGFR, Jhansi; NBFGR, Lucknow; CIAE, Bhopal; Directorate of Soybean Research, Indore; IARI, New Delhi and IASRI, New Delhi.

- **Training Programme on SAS Genetics/ JMP Genomics Organized**

Access to improved plants is a critical tipping point between healthy and hungry families. By using advances in molecular biology and harnessing the rich global stocks of crop genetic resources, this gap can be bridged. Statistical Genomics has an important role to play in drawing information from complex and high dimensional datasets being generated. To develop a trained human resource in Statistical Genomics, a training programme on SAS Genetics/ JMP Genomics was organized at IASRI, New Delhi during 04 - 08 October 2010 under NAIP Consortium Strengthening Statistical Computing for NARS. 29 participants from 16 different NARS organizations NBPGR, New Delhi; NBAGR, Karnal; NBFGR, Lucknow; NRCPB, New Delhi; NDRI, Karnal; IVRI, Izatnagar; NRC Agro-forestry, Jhansi; Directorate of soybean Research, Indore; DWM, Bhubaneswar; ICAR RC NEHR, Barapani; NAARM, Hyderabad; CIFE, Mumbai; Institute of Biotechnology, ANGRAU, Hyderabad, DRMR, Bharatpur; CTCRI, Thuruvananthapuram; CIFA, Bhubaneswar; CIRB, Hisar and IASRI, New Delhi were trained in this training programme. In this training programme microarray analysis for gene expression, basic marker association genetics,



estimates of allele, genotype, and haplotype frequencies; tests for Hardy-Weinberg equilibrium (HWE) and measures of linkage disequilibrium (LD) between pairs of markers. Exploring Marker-Trait Relationships, stability analysis, QTL Analysis; Whole Genome SNP analysis; Genetic Diversity Analysis were covered. JSL script was also covered as part of the training programme. Professor David Burnham, UK and Professor Dough Robinson from USA were the resource persons in this training programme. Dr. TR Sharma, NRCPB, New Delhi was the guest of honour during the inaugural function of the training programme and Dr NK Singh, ICAR National Professor, NRC PB, New Delhi delivered the valedictory address.

- Trainers training programme on **Data Analysis using SAS** was organized at IASRI, New Delhi during 09 - 15

October 2010 under NAIP Consortium Strengthening Statistical Computing for NARS. It was attended by 17 participants from NDRI, Karnal; ICAR RC NEHR, Barapani; NAARM, Hyderabad; CSWCRTI, Deharadun; SKUAST-Jammu; SV Agricultural College, Tirupati; Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli; IVRI, Izatnagar; DWM, Bhubaneshwar; DRMR, Bharatpur; MPUA&T, Udaipur and IASRI, New Delhi. In this training programme various topics covered were SAS EBI Server, SAS Macro Development, SAS IML Studio, R-integration, Webex on SAS Enterprise Guide, Analysis of Repeated Measures Data, SAS Enterprise Guide, JMP Statistical Discovery Software, Diagnostics and Remedial Measures, ANN Using JMP, running of SAS Macros and Design Resources Server were covered. Dr Rajender Parsad was the Course Director and Dr AK Paul and Dr. N Sivaramane were the Course Co-ordinators.



- A one day visit was organized on October 22, 2010 at IASRI on functions and activities of IASRI for the participants of six weeks training programme on Official Statistics and Related Methodology of International Statistical Education Centre (ISEC) Kolkata conducted by National Academy of Statistical Administration (NASA) from 04 October to 12 November 2010. The participants were from seven countries.

- A researchers training programme on **Data Analysis using SAS** was organized at IASRI, New Delhi during

25-30 October 2010 under NAIP Consortium Strengthening Statistical Computing for NARS with Dr. Rajender Parsad as Course Director. The inaugural function was presided over by Dr. VK Gupta, ICAR National Professor. This training programme was attended by 19 participants from NBPGR, New Delhi; DRMR, New Delhi; NCIPM, New Delhi; NCAP, New Delhi; PDC, Meerut; IISR, Lucknow; CISH, Lucknow; Institute of Agricultural Sciences, BHU, Varanasi; ICAR RCER, Patna and IASRI, New Delhi. The training was aimed at acquainting the participants with the Capabilities of SAS and JMP Statistical Discovery Softwares and to provide hands on experience on the usage of SAS. The reference manual was provided to



the participants during the beginning of the training programme. The lectures on SAS: An Overview; SAS Data Sets; Learning Simple SAS Macros; Regression Diagnostics and Remedial Measures; Time-series Analysis Modelling and Forecasting using SAS Software; Fitting of Nonlinear Statistical Models Using SAS; Analysis of Repeated Measures Data Using SAS; SAS Enterprise Guide: An Overview; E-Miner: An Overview; JMP Statistical Discovery Software: An Overview; JMP Genomics; Statistical Genetics Using SAS, Running of SAS Macros and Design Resources Server were delivered. The valedictory function of the training programme was organized on 30 October 2010.

- An international training program on **Application of Remote Sensing and GIS in Agricultural Surveys** was organized from 13 October - 02 November 2010 for the participants from Afro-Asian Rural Development Organization (AARDO) member countries. Total five participants one each from Syria, Jordan, Egypt, Taiwan, and Bangladesh attended this program. Dr. Anil Rai and Dr. Prachi Mishra Sahoo have acted as Course Director and Course Co-Director respectively. The course aimed at i) familiarizing the participants with the basic concepts of remote sensing and GIS, ii) acquainting the participants with use of GIS and Remote Sensing Software Packages and iii) exposure to application of remote sensing and GIS in agricultural surveys.
- A researchers training programme on **Data Analysis using SAS** was organized at IASRI, New Delhi during 22-27 November 2010 under NAIP Consortium Strengthening Statistical Computing for NARS with Dr. Rajender Parsad as Course Director. The training programme was inaugurated by Dr. K.C. Bansal, Director, National Bureau of Plant Genetics Resources, New Delhi. This training programme was attended by 22 participants from NBFGR, Lucknow; PDFSR, Modipuram; NRCPB, New Delhi; NCAP, New Delhi; NRC Citrus, Nagpur; NDUAT, Faizabad; RVSKVV, Gwalior; IAS, BHU, Varansi; IARI, New Delhi; NCAP, New Delhi and NBPGR, New Delhi. The training was aimed at acquainting the participants with the Capabilities of SAS and JMP Statistical Discovery Softwares and to provide hands on experience on the usage of SAS. The reference manual was provided to the participants during the beginning of the training programme. The lectures on SAS for Statistical Procedures; SAS Data Sets; Learning Simple SAS Macros; Regression Diagnostics and Remedial Measures; Time-series Analysis Modeling and Forecasting using SAS; Fitting of Nonlinear Statistical Models Using SAS; Analysis of Repeated Measures Data Using SAS; Statistical Genetics Using SAS; SAS Macros for Genetics Analysis; Design Resources Server; SAS Enterprise Guide: An Overview; JMP Statistical Discovery Software: An Overview; E-Miner: An Overview; Webex on Cluster Analysis were delivered. The valedictory function of the training programme was organized on 27 November 2010 and the valedictory address was delivered by Dr. H.S. Gaur, Dean and Joint Director Education, IARI, New Delhi.



## PANORAMA OF ACTIVITIES

### Conferences

- XVI National Conference of Agricultural Research Statisticians was organised during December 23-24, 2010. During the conference following technical sessions were organized:
  - Action Taken on the Recommendations made during the last Conference
  - Priorities for Research in Agricultural Statistics: Current Status and Future Challenges
  - Priorities for ICT in Agriculture
  - Priorities for Human Resource Development in Agricultural Statistics and Computer Applications

Presentation of Reports by Conveners of different Sessions and Summary of Recommendations  
The conference was attended by participants from 10 different States. The inaugural address was delivered by Dr. CD Mayee, Chairman, ASRB; Keynote address was delivered by Dr. VK Gupta, ICAR National Professor and Valedictory Address was delivered by Professor TCA Anant, Chief Statistician of India and Secretary, Ministry of Statistics and Programme Implementation. The different technical sessions were chaired by Dr. NPS Sirohi, ADG(Engg); Dr. Alope Dey, INSA Senior Scientist, ISI, Delhi; Dr. SK Raheja and Dr. Bal BPS Goel, Former Directors, IASRI, New Delhi. Dr. Rajender Parsad was the organizing secretary of the Conference.



## Workshops:

- **World Statistics Day:**

The United Nations Statistical Commission (UNSC) decided during its 41<sup>st</sup> Session in February 2010 to celebrate 20 October 2010 as World Statistics Day under general theme 'Celebrating the Many Achievements of Statistics: Service, Professionalism and Integrity' and UN General Assembly has resolved to designate 20 October 2010 as World Statistics Day. Institute celebrated the first World Statistics Day on 20 October 2010. During these celebrations a Symposium on "Statistics in Agricultural Development" was organized. In this symposium two guest speakers Dr RPS Malik, IWMI-India, New Delhi and Dr. Seema Bathla, Associate Professor, Centre for the Study of Regional Development, School of Social Sciences, Jawaharlal Nehru University, New Delhi delivered the invited talks on Irrigation Subsidies: Some Methodological Considerations and Understanding and Quantifying Linkages between Agriculture and the Macro economy respectively. Dr. Rajender Parsad was the convener for this Symposium.



- **Project Information & Management System of ICAR**

An on-line system namely "Project Information & Management System of ICAR" (PIMS-ICAR) has been designed and developed at IASRI, New Delhi to help in taking decisions to check duplication in research projects both at divisional as well as inter divisional level of ICAR. The system is being strengthened for modules on Data Management; Detection to check duplication in research projects; Projects On-line Monitoring; Reports & Queries; and User Management & Administration. The system has been hosted at <http://pimsicar.iasri.res.in/> on the server of IASRI, New Delhi. The module for projects data management has user interfaces for on-line data entry, data updating, and modification with respect to ongoing projects data as per RPF-I and as well as for the completed

projects where in facility has also been provided to upload RPF-III document in Doc/PDF/Scanned file format into the system. To take action on the decision taken in the meeting on “Integration of IT efforts in ICAR” held on 25 August 2010 at IASRI, New Delhi under the chairmanship of Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR, 4 Zonal Workshops for Sensitization cum Training on PIMS-ICAR for the Nodal Officers of ICAR Institutes were organized by IASRI, New Delhi at 4 locations in collaboration with NAARM, Hyderabad; DWM, Bhubaneswar; and CIAE, Bhopal during October – November 2010. The Nodal Officers from 77 ICAR institutes attended the zonal workshops organized by the team members of PIMS-ICAR at the above locations.

In the zonal workshops a brief introduction on PIMS-ICAR along with the objectives and the role and responsibilities of Nodal Officers at their respective Institute were discussed. The procedural flows as well as the working of the system including access rights of the Nodal Officer were demonstrated. Live demonstration cum practical session on the data management module for Ongoing Projects Data Entry as per RPF-I & for Completed Projects Data Entry Process including the process for upload of digital copy (Scanned/PDF/Doc file) of RPF-III into PIMS-ICAR were presented. Reference guides for data management has been prepared and made accessible on PIMS-ICAR site for the Nodal Officers/ PIs of the projects. The problems faced by the Nodal Officers in initiating data entry task from their respective institutes and their suggestions for achieving the targets & improvement in the system were deliberated.

As an outcome of the zonal workshops, the Nodal Officers have been sensitized and trained to initiate the research projects data entry process. They have initiated the data entry process for ongoing as well as completed projects of their respective institutes. As per the data entry status available in PIMS-ICAR, so far 77 institutes have initiated project data entry process for more than 2400 ongoing and 800 completed projects into PIMS-ICAR from their respective institutes. For completeness of project data entry as per RPF-I and quality of data in the database, the Nodal Officers are being requested to do the needful by 31 December 2010.



### • Sensitization cum Training Workshops for Nodal Officers of NISAGENET

The NISAGENET is accessible at <http://www.iasri.res.in/Nisagenet/> to provide Country/State/University/College level reporting on agricultural education in India. Under NISAGENET broadly the information on Academic, Infrastructural facilities, Budget provision, Manpower and Research & Development activities of all the AU's and Deemed universities of ICAR along with their constituent/affiliated colleges is being collected and compiled. Keeping in view the necessity and importance of NISAGENET, ICAR has approved it as a regular ongoing activity of the council and made mandatory for all the Agricultural Universities and their Constituent/Affiliated Colleges to participate and provide data as per requirements from time to time.

To provide realistic and up-to-date reporting and to expedite the data entry process, updating, validation of the existing data from all the Agricultural



Universities along with their constituent/affiliated colleges a Sensitization cum Training Workshops for Nodal Officers of NISAGENET was organized at IASRI, New Delhi during 27-28 December 2010.

The Nodal Officers/Representatives from 26 Universities participated in the workshop. Dr. Kusmakar Sharma, ADG(HRD), Education Division of ICAR, New Delhi inaugurated the workshop. Dr. R.C.Goyal with NISAGENET team sensitized the participants through demonstration and practical hands on training. In practical hands on sessions the participants made attempt to modify and/or update the existing data of their respective universities/ colleges. To emphasize the utility and importance a demonstration on the Online Query/Reporting System of NISAGENET was also given to the participants.

The Valedictory Programme was chaired by Dr. Arvind Kumar, DDG(Education), ICAR, New Delhi. In his valedictory address he expressed the strong need of strengthening NISAGENET with up to date data. He assured to provide necessary support from the council for providing quality and quantity data for NISAGENET. Dr. V.K.Bhatia, Director, IASRI and Dr. P.K.Malhotra, Head(CA) expressed their views on strengthening and enriching NISAGENET with quantity and quality data and concluded with vote of thanks to all the concerned authorities.

### Interactive Meetings:

- Special meeting on the **Role of IASRI in enhancing R & D efficacy of NARS** with Animal Science Division of ICAR was held on 27 October 2010 at the Institute. The meeting was Chaired by Dr. MM Pandey, DDG (Engg.), ICAR, New Delhi. The meeting was attended by Dr. VK Bhatia, Director, IASRI, Dr. VK Gupta, ICAR National Professor, Dr. CS. Prasad, ADG (AS), ICAR, Dr. RK Sethi, Director, CIRB, Hisar, Dr. Devendra Swaroop, Director, CIRG, Mathura, Dr. BK Joshi, Director, NBAGR, Karnal, Dr. KT Sampat, Director, NIANP, Karnataka, Dr. Prabhu Das, Project Director, PDNDMS, Karnataka, Prof. AK Mishra, Project Director, PDC, UP and scientists from IVRI, Izatnagar, NDRI, Karnal and IASRI, New Delhi.



- Organized Interactive meet on **Information and Communication Technology in ICAR** during 03-04 November 2010 at NASC Complex, New Delhi under the Chairmanship of Dr. S. Ayyappan, Secretary, DARE and DG, ICAR, New Delhi. Dr. PK Malhotra made a presentation on “Applications of IT/ICT technologies in agricultural research and development”. Meeting was attended by all the Scientists of IASRI, Scientists of Computer Application discipline of different ICAR institutes and all the Incharge of ARIS Cells of ICAR institutes.
- A meeting of a select group of scientists and information management specialist was organized at NASC Complex, New Delhi on 29 November 2010 to find out the ways for providing greater impetus to research in ICT, Information Communication Management (ICM) for improving agricultural research and development in India and to draw a road map IT/ICT for ICAR. The meeting was chaired by Dr S. Ayyappan, Secretary, DARE and DG, ICAR and co-chaired by Dr. Ajit Maru, Senior Knowledge Officer, GFAR, FAO. The meeting was attended by 37 participants

including Shri Rikin Gandhi, CEO, Digital Green, Dr. TV Prabhakar, Prof. (IIT), Kanpur, Dr. Pier Paolo Ficarrelli, ILRI, Dr. Sanjay Chaudhary, Prof.(DA-IICT), Gandhinagar, Dr. Krishna Alluri, British Columbia, Canada, Dr. MM Pandey, DDG(Engg.), ICAR, Dr. AK Singh, DDG(NRM), ICAR, Dr. KML Pathak, DDG(Animal Science), ICAR, Dr. Arvind Kumar, DDG(Education), ICAR, Dr. HP Singh, DDG(Horticulture), Dr. RB Singh, Former Chairman, ASRB, Dr. Mruthyunjaya, Former, ND, NAIP, Dr. S Mauria, ADG (IP&TM), ICAR, Dr. V Venkatasubramanian, ADG (Ag. Extn.), ICAR, Dr. CS Prasad, ADG (Animal Science), Dr. TP Trivedi, Project Director, DIPA, ICAR, Dr. VK Gupta, ICAR National Professor, Dr. VK Bhatia, Director, IASRI and Head of Divisions and Scientists from IASRI, NBPGR and ICAR.



• **Annual Day of National Agricultural Science Museum Celebrated:**

Contributions of the Indian Agriculture are enormous and the museum is an important medium to convey its progress to the world. With more awareness and publicity, it will become a center of attraction for every section of the society', said Dr. Panjab Singh, Advisor, Agriculture Plantation, ETA Star and Former Secretary, DARE and Director General, Indian Council of Agricultural Research at Annual Day programme of National Agricultural Science Museum (NASM), New Delhi. Newly inaugurated virtual tour of NASM, regular updating and new literature will be a value-addition for visitors. Chief guest also suggested that 'Honorable Parliamentarians may also be invited to visit the museum'.

Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR motivated brilliant students to pursue agriculture sciences as their main subjects for career. Quiz competitions, interactive sessions, visits and other mass awareness activities may be taken up to popularize and publicize the museum. Four mobile agricultural museums for Kolkata, Mumbai, Chennai and North-East region will be introduced soon for disseminating agricultural related knowledge, said Dr. Ayyappan.

Winners of the Essay and Quiz competitions were awarded certificate and memento. A virtual tour of NASM through ICAR website ([www.icar.org.in](http://www.icar.org.in)) was also launched on the occasion. A film on NASM and booklet 'The Saga of Indian Agriculture' was also released by the guests.

Dr. C.D. Mayee, Chairman, Agricultural Scientists Recruitment Board suggested that current topic panel like climate change may also be included at NASM. Dr. M.M. Pandey, Deputy Director General (Engineering) lauded the role of NASM as center of learning.

Situated in the premises of National Agricultural Science Centre Complex of ICAR, this is unique and only museum on agriculture in the country, preserving agricultural history and various dimensions of its journey of development, a visit to which is a thrilling experience in itself.



• **Seminar Delivered**

Seminars in different areas of Agricultural Statistics and Computer Application were delivered. These seminars include presentation of salient findings of the completed research projects by the scientists, thesis/ORW/course seminars of students of M.Sc. and Ph.D. (Agricultural Statistics) and M.Sc. (Computer Application) and Guest Seminars.

Guest seminar during the period was delivered by Dr. Mary Crowe, Director of the office of Undergraduate Research and Dr. Jan Rychtar, Associate Professor, Dept. of Mathematics & Statistics. University of North Carolina at Greensboro, Greensboro, North Carolina, U.S.A

**The Details of Seminars Delivered**

Category	Type of seminar	Number
Student	Course	16
	Thesis	02
Guest		01
<b>Total</b>		<b>19</b>

• **Other Meetings**

- One Meeting of Grievance Committee of the Institute was held on 08-10-2010
- One Meeting of Institute Joint Staff council was held on 10-12-2010

**PUBLICATIONS**

**Research Papers:**

- Bhardwaj, SP (2010). Impact of global meltdown on agriculture – an exploratory study. *Ind. J. Agric. Eco.*, **65(3)**, 497-507.
- Chandra, Hukum (2010). Small area estimation with binary variables, *J. Ind. Soc. Agril. Statist*, **64(3)**, 367-374.
- Ghosh, H., Paul, R.K., and Prajneshu (2010). GARCH and EGARCH nonlinear time-series models for volatile data: An application. *J. Statist. Appl.*, **5**, 177-193.
- Iquebal, MA, Ghosh, H and Prajneshu (2010). Application of genetic algorithm for fitting self-exciitng threshold autoregressive nonlinear time-series model. *J. Ind. Soc. Agril. Statist.*, **64(3)**, 391-398
- Kundu, MG and Paul, AK (2010). Phenotypic and genetic variability of estimated growth curve parameters in Pigs. *J. Ind. Soc. Agril. Statist.*, **64(3)**, 349-358.
- Mandal, BN, Parsad, Rajender and Gupta, VK (2010). Linear Integer Programming Approach to Construct Distance Balanced Sampling Plans. *J. Ind. Soc. Agril. Statist.*, **64(2)**, 303-312.
- Parsad, Rajender, Rathore, Abhishek and Gupta, VK (2009). Computer aided construction of efficient designs for making treatment-treatment and treatment-control comparisons. *American J. Math. Manag. Sci.*, **29(1&2)**, 201-228. ( *Special Issue in memory of special volume on Bechhofer-Gupta-Sobel*).
- Paul, RK, Ghosh, H and Prajneshu (2010). Wavelet frequency domain approach for statistical modelling of Indian monsoon rainfall time-series data. *J. Statist. Th. Prac.*, **4**, 813-825.
- Sharma, VK, Gharde, Yogita and Varghese, Cini (2010). Minimal strongly balanced changeover designs with first residuals. *African J. Math. Comp. Sci. Res.*, **3(9)**, 195-198.
- Singh, S, Singh, S, Singh, OP, Adlakha, SK, Sikarwar, H and Ahmad, T (2008). Reclamation and management of alkali soils – A decision support system. *J. Soil & Water Conser.*, **7(1)**, 25-32.
- Srinath, K, Nair, RV, Unnithan, GR, Gopal, N. Bathla, HVL and Ahmad, T (2008). Post harvest losses in marine fisheries. *Fish. Tech.*, **45(1)**, 109-112.
- Sud, UC, Chandra, Hukum and Chhikara, Raj S (2010). Domain estimation in the presence of non-response, *J. Ind. Soc. Agril. Statist.*, **64(3)**, 343-348.
- Vasisht, AK and Singh, DR (2009). An analysis of capital formation in fisheries sector in India. *Asian Fisheries Science*, **22(2)**, 823-837.

**Other Publication**

- IASRI News, July-September, 2010. (Available at the website of the Institute at <http://www.iasri.res.in/NewsLetters/nl.htm>)

## Research Papers Presented in the Conference

- 20<sup>th</sup> Swadeshi Science Congress (SSC) held during November 06-08, 2010 at CMFRI, Kochi.
  - Srinivasan, K, Ashokan, PK, Varghese, Eldho and Ajayghosh, V. Influence of intercropping multipurpose trees and water harvesting structures on the performance of coconut trees in coconut based gardens, Kerala
- 4<sup>th</sup> Indian Horticultural Congress held during November 18-21, 2010 in New Delhi
  - Chakraborti, Kalyan, Paul, Amrit Kumar, Ray, Sujit Kumar and Samanta, Arunava. Evaluation of different planting systems in mango under gangetic alluvial zone of West Bengal.
- Technical Session III of the National Seminar on Interface between Statistics, Mathematics and Allied Sciences at Department of Statistics, Kumaun University, S.S.J. Campus, Almora during November 20-22, 2010.
  - Sud, UC. Calibration estimators
- Workshop on 'Geostatistics and Softcomputing Techniques for Spatial Data Management' held at Sri Venkateshwara University, Tirupati during November 22-24, 2010.
  - Sahoo, Prachi Misra. Spatial statistics in geoinformatics for agricultural research and development.
- 24<sup>th</sup> National Conference on Agricultural Marketing during November 23-25, 2010 at Navsari Agricultural University, Navsari (Gujarat).
  - Bhardwaj, S.P. and Kumar, Ashok - Econometric study of asymmetry in transmission of market information.
  - Kumar, Ashok and Bhardwaj, S.P.- A study of institutional linkages for enhancing rural credit flow.
- 64<sup>th</sup> Annual Conference of the Indian Society of Agricultural Statistics at Farmers' Training Centre(Lake Hall), Bidhan Chandra Krishi Viswavidyalaya, Kalyani during December 03-05, 2010.
  - Arora, Alka, Jain, Rajni and Upadhyaya, Shuchita. Blending Rough Sets and Clustering Methods for Discovery of Patterns (Invited Talk)
  - Agrawal, Ranjana and Chandrahas. Use of Data Reduction Techniques in Crop Yield Forecasts (Invited Talk)
  - Dash, Sukanta, Parsad, Rajender and Gupta VK. Efficient Designs for Single Factor Microarray Experiments
  - Dutta, Debasis, Mahajan, VK and Rai, Anil Design and Development of Data Mart for Consumption Expenditure Survey Data
  - Ghosh, Himadri and Prajneshu. Statistical Learning Theory for Fitting Multimodel Distribution to Rainfall Data : An Application
  - Gupta, VK, Kole, Basudev, Chatterjee, Kashinath and Parsad, Rajender. Construction of Optimal Multi-level Supersaturated Designs by Association Scheme
  - Kumar, Amrender and Lakshmi, Ratna Raj. Weather based forecasting model for crops yield using neural network approach(Invited Talk)
  - Laxmi, Ratna Raj and Kumar, Amrender. Weather Based Forecasting Model for Crops Yield using Neural Network Approach
  - Parsad, Rajender. Strengthening statistical computing for NARS (Invited Talk)
  - Varghese, Eldho and Jaggi, Seema. Response Surface Model with Neighbour Effects
- International Conference on Development and Applications of Statistics in Emerging Areas of Science & Technology (ICDASEAST)" held during December 8-10, 2010 hosted by Dept. of statistics, Jammu:
  - Varghese, Eldho and Jaggi, Seema. Response surface methodology with differential neighbour effects.
  - Srivastava, Sudhir, Varghese, Cini, Jaggi, Seema and Varghese, Eldho. Diallel cross designs for comparing test versus control line(s).
  - Alka, Sahu, TK, Kumar, CP, Bansal, D, Behera, BK and Rao, AR. In silico analysis of vitellogenin gene for abiotic stress tolerance – anoxia.
  - Sagar, P., Alka, Vashisht, S. and Rao, A.R. Characterization of 5' splice sites of bovine genome.
  - Sarkar, R, Rao, AR, Wahi, SD and Bhat, KV. Clustering of crop genotypes based on mixture of qualitative and quantitative data.
  - Chaturvedi, A and Alam, Wasi. Maximum likelihood and uniformly minimum variance unbiased estimators for reliability estimation of a family of lifetime distribution.
- International Conference on Financial Derivatives during December 17-19, 2010 at Department of Commerce, Pondicherry University, Pondicherry.
  - Bhardwaj, S.P. Market efficiency in commodity futures - A case study.

- 19<sup>th</sup> International Conference of the Forum for Interdisciplinary Mathematics (FIM) on Interdisciplinary Mathematical and Statistical Techniques organised by the Department of Statistics, Patna University, Patna, Bihar during December 18-20, 2010:
  - Ahmad, Tauqueer, Rai, Anil, Bathla, HVL and Sharma, SD. Methodological issues relating to horticulture surveys in India.
  - Biswas, Ankur; Ahmad, Tauqueer and Rai, Anil. Variance estimation using Jackknife method in ranked set sampling under finite population framework.
  - Sud, UC. Estimation of district level poor households in the state of Uttar Pradesh in India by combining NSSO survey and census data.

## INVITED LECTURES DELIVERED

- Dr. V.K. Bhatia delivered three lectures on
  - Descriptive Statistics and Exploratory Data Analysis during the training programme on Research Methodology for Socio-Economic Studies on 19 October 2010 during the training programme on Research Methodology for Socio-Economic Studies organized from 19 October to 04 November 2010 at National Council of Applied Economic Research (NCAER), New Delhi.
  - Function and Activities of IASRI during one day training programme organized by NASA on 20 October 2010 at IASRI, New Delhi
- Dr. V.K. Gupta delivered
  - A lecture on Resolvable Block Designs in a UGC Refresher Course in Statistics and Mathematics on 19 November 2010 held at Kumayun University, Almora
  - A Keynote address and during National Seminar on Interface Between Statistics, Mathematics and Applied Sciences held during 20-22 November 2010 at Kumayun University, Almora.
- Dr. Rajender Parsad delivered two lectures on:
  - Fundamentals of Design of Experiments on 12 October 2010 to the participants of the training programme on Maize training for Fresher organized at Directorate of Maize Research, New Delhi during 11-13 October 2010.
  - Design of experiments and analysis of data using statistical software on 29 October 2010 to the participants of the Winter School on Designing Nutraceutical and Food Coolant Rich Vegetable Crop Plants organized by Division of Vegetable Science, IARI, New Delhi during 15 October to 04 November 2010.
  - Two invited lectures on Fundamentals of Design of Experiments to the participants of the Winter School on Recent advances in chemical and non-chemical approaches of weed management in cropped and non-cropped areas” organized during November 15-December 06, 2010 at Division of Agronomy, IARI, New Delhi. The lectures were delivered on November 26, 2010.
- Dr. Sudeep Marwaha delivered a lecture entitled Expert System for Maize Crop in the Intensive Maize Training Program for Fresher at DMR New Delhi on 13 October 2010.
- Dr KK Tyagi delivered two lectures on Sampling strategies for data collection on 25 October 2010 during the training programme on Research Methodology for Socio-Economic Studies organized from 19 October to 04 November 2010 at National Council of Applied Economic Research (NCAER), under a consultancy project “Survey Methodologies, Data Analysis and Capacity Building” of NCAER, Delhi for the research personnel working at NCAER.
- Dr. Seema Jaggi delivered lectures on Correlation and regression analysis, and testing of hypothesis on 26 October 2010 in a Training Programme on Research Methodology for Socio-Economic Studies at National Council of Applied Economic Research Centre for Macro Consumer Research (NCAER\_CMCR).

- Dr. A.R.Rao delivered two lectures on
  - Application of bioinformatics tools in analysis of Genome structure of eucaryotes on October 21, 2010 to the participants in the National Training Programme organized by National Bureau of Plant Genetic Resources, New Delhi – 110 012 on “Bioinformatics in Crop Improvement during 19-25 October 2010.
  - Multivariate analytical techniques: data reduction techniques and data classificatory techniques on October 28, 2010 to the participants in the training programme on Research Methodology for Socio-Economic Studies organized by National Council of Applied Economic Research (NCAER) during October 19 to 04 November 2010.
- Dr UC Sud delivered a lecture on Small Area Estimation on 18 November 2010 in a refresher Course in Statistics and Mathematics for university/college teachers organized by the Academic Staff College, Kumaun University, Nainital at Nainital during 10-30 November 2010.
- Dr. Krishan Lal delivered lectures on Design resources server, descriptive statistics, test of significance, correlation and regression and design of experiments as a guest faculty to the participants of the training programme on Strengthening Statistical Computing for NARS using SAS (23-24 November 2010) held at MPUA&T, Udaipur during 22-27 November 2010.
- Sh. SN Islam delivered a lectures on
  - Importance of expert system for seed spices during a training programme Seed Spices Cultivation in the Dry land Area at Hyderabad organized during 14-15 November 2010.
  - Expert System at Holy Cross KVK, Hazaribagh (Jharkhand) on 26 November 2010

## PARTICIPATION

### Conferences / workshops / seminars / symposia etc

The scientists of the institute participated in the following:

- Hort-informatics Workshop at IISR Calicut from October 11-12, 2010 and a presentation was made related to National Agricultural Bioinformatics Grid.
- Trainers training programme on SAS: A Comprehensive Overview (Part II) under NAIP Consortium Strengthening Statistical Computing for NARS at IASRI, New Delhi during September 13 – October 01, 2010.
- Trainers training programme on SAS Genetics/ JMP Genomics under NAIP Consortium Strengthening Statistical Computing for NARS .at IASRI, New Delhi during October 04 – 08, 2010
- Training programme on Data Analysis Using SAS under NAIP Consortium on Strengthening Statistical Computing for NARS held at IASRI, New Delhi during October 09-15, 2010
- Intensive Maize Training Program for Freshers from October 11-13, 2010 at Directorate of Maize Research, New Delhi.
- A lecture on **The Role of Information Technology in Agriculture** delivered by Professor Robert A. Easter, The Chancellor and Provost (Interim) of the University of Illinois, held on October 15, 2010 at NASC, ICAR, New Delhi
- Training Workshop on Bioinformatics in Crop Improvement at NBPGR, New Delhi from October 19-25, 2010.
- Training programme on Basics of Remote Sensing, GIS and GPS offered by Indian Institute of Remote Sensing (IIRS) through satellite interactive terminal facility available in the Division of Agricultural Physics, IARI, New Delhi during October 11 - December 10, 2010.

### Meetings

- Coordination Committee Meeting of AICRP on ESA, organized at CIAE, Bhopal during October 13-14, 2010.
- Meeting of the sub-group of the TAC of DLHS-4 to discuss the issues relating to pooling of Annual Health Survey and DLHS-4 data at Nirman Bhawan, New Delhi on October 20, 2010.

## COMPUTING FACILITIES

### Wide Area Network

Internet services have been provided to the users and the website of IASRI is being updated regularly. This site has been visited **667674** times since 01 April 2008 and **1032210** times since 05 September 2003.

## PERSONNEL

### Congratulations on your Promotions

Name	Promoted to	Date
Sh. Om Prakash(Retired)	T-7-8	03-02-2005
Sh. Rajender Kumar	T-7-8	03-02-2005
Sh. Devender Kumar	T-7-8	01-01-2008
Sh. Devi Prasad Sharma	T-7-8	01-01-2008
Sh. C.P. Singh	T-7-8	01-01-2008
Sh. Sheoraj Singh	T-7-8	01-01-2008
Sh Naresh Chand	T-7-8	01-01-2009
Sh. Shri Pal Singh	T-7-8	01-01-2009
Sh. Gyan Singh	T-7-8	01-01-2009
Sh. Jai Bhagwan	T-5	27-08-2009
Sh. Virender Kumar	T-5	15-09-2009
Smt. Usha Rani	T-II-3	17-10-2009
Smt. Shakuntala Arora	Private Secretary	11-10-2010
Sh. Chander Vallabh	AAO	22-10-2010
Sh. Anil Kumar Bhalla	Assistant	02-11-2010
Sh. Krishan Baldev Sharma	Assistant	02-11-2010
Sh. Lokesh Kumar Sharma	Assistant	02-11-2010
Sh. Pradeep Kumar	Assistant	07-12-2010
Sh K.K. Hans	Assistant	07-12-2010
Smt. Kanta Bahl	Assistant	07-12-2010
Sh. Ishwar Dutt	Assistant	07-12-2010

### Wish you happy Retired Life

Name	Date
Sh. Satya Pal, Scientist	31-12-2010
Sh. Nika Ram Rana, AAO	31-12-2010

### Transfer

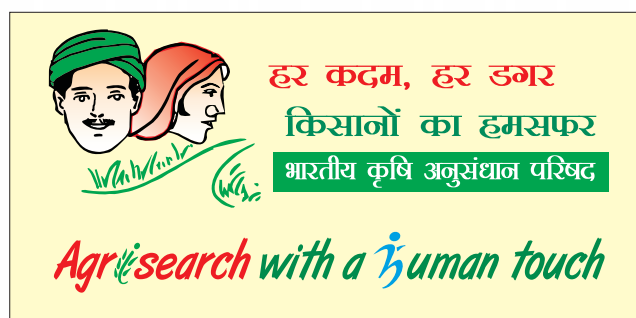
Name	To	Effective Date
Dr. Sanjeev Panwar, Scientist (SS)	IASRI, New Delhi	23-11-2010(FN)
Sh. Rajender Kumar, Scientist(SG)	IASRI, New Delhi	24-11-2010(AN)

### Deputation

Name	To	Effective Date
Sh. Raghuvar Dutt, Assistant	IASRI	01-10-2010

## Saleable Technologies

- Statistical Package for Factorial Experiments (SPFE 1.0)
- Statistical Package for Agricultural Research (SPAR 2.0)
- Statistical Package for Augmented Designs (SPAD)
- Statistical Package for Block Designs (SPBD 1.0)
- Statistical Package for Animal Breeding (SPAB 2.0)
- Software for Survey Data Analysis (SSDA 1.0)



*Published by RCMU on behalf of*

Director, IASRI (ICAR)

Library Avenue, Pusa, New Delhi - 110 012 (INDIA)

**E-mail:** [director@iasri.res.in](mailto:director@iasri.res.in)

**Website:** [www.iasri.res.in](http://www.iasri.res.in)

**Phone:** +91 11 25841479

**Fax:** +91 11 25841564