

# ICAR NEWS

Volume 11

No. 2

July - September, 2006



INDIAN AGRICULTURAL STATISTICS RESEARCH INSTITUTE (ICAR), LIBRARY AVENUE, PUSA, NEW DELHI-110 012



## From Director's Desk . . . .

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

The methodology already developed for estimation of area under paddy crop in Meghalaya was tested and validated by repeating the survey in two districts Ri-Bhoi and Jantia Hills. Three different approaches involving remote sensing and grid sampling field data of current and previous years were compared.

For improved estimation of treatment effects in Repeated Measurements Designs (RMD) a database containing a catalogue of RMDs has been developed and parameters of RMDs catalogued from literature have been entered into it. User has the privilege to view the catalogue for particular number of input parameter(s) besides viewing all designs.

A training course on "Small Area Estimation Techniques" was organized for the senior and middle level officers of CSO, New Delhi.

A study visit for delegation from Department of Statistics, Malaysia was organised.

A summer school on "Sample Survey Techniques in Agricultural Research" was organized.

A workshop-cum-training programme on "Design and Analysis of Farmers Participatory Research Trials" for the research personnel involved in the conduct of farmers participatory research trials under the aegis of Rice Wheat Consortium, CIMMYT for Indo-Gangetic Plains was organized.

A two days Hindi Karyashala for scientific/technical/administrative personnel of the Institute was also organized at the Institute.

Staff Research Council (SRC) was organised to discuss the progress of ongoing and new research projects.

The Institute celebrated its Annual Day and also participated in number of meetings/conferences/symposia/workshops, etc. 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 would be highly appreciated.

(SD SHARMA)

### IN THIS ISSUE

- Research Achievements
- Human Resource Development
- Visit Abroad
- Panorama of Activities
- Participation in Conferences etc.
- Participation in Various Meetings
- Computing Facilities
- Seminars Delivered
- Consultancy/ Advisory Services
- Publications
- Personnel

### निदेशक की कलम से . . . .

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

मेघालय में धान की फसल के अन्तर्गत क्षेत्रफल के आकलन हेतु पहले से विकसित पद्धति का दो जिलों—रिबोई एवं जन्तिआ हिल्स में सर्वेक्षण को दोहराकर परीक्षण एवं वैधीकरण किया गया। वर्तमान एवं गत वर्षों के ग्रीड प्रतिचयन द्वारा एकत्रित फील्ड आँकड़ों एवं सुदूर संवेदित आँकड़ों के उपयोग से विकसित तीन विभिन्न अप्रोचों की तुलना की गई।

पुनरावृत्त मापन अभिकल्पनाओं (RMD) में उपचार प्रभावों के समुन्त आकलन के लिए RMDs के कैटलॉग का एक डाटाबेस विकसित किया गया और विभिन्न स्रोतों से प्राप्त RMDs के प्राचलों की उसमें प्रविष्टि की गई। इसमें प्रयोक्ता सभी अभिकल्पनाओं को देखने के साथ-साथ किसी भी विशिष्ट निविष्टि प्राचल (प्राचलों) के लिए कैटलॉग देख सकता है।

सी.एस.ओ., नई दिल्ली के वरिष्ठ एवं मध्यम स्तर के अधिकारियों के लिए “लघु क्षेत्र आकलन तकनीकें” विषय पर एक प्रशिक्षण कार्यक्रम आयोजित किया गया।

मलेशिया के सांख्यिकी विभाग के प्रतिनिधि-मंडल के लिए एक अध्ययन दौरा आयोजित किया गया।

“कृषि अनुसंधान में प्रतिदर्श सर्वेक्षण तकनीकें” विषय पर एक ग्रीष्म-कालीन स्कूल का आयोजन किया गया।

राइस-व्हीट कॉन्सॉर्टियम, सी.आई.एम.एम.वाई.टी. फॉर इण्डो-गैनेटिक के तत्वावधान में किसान सहभागी अनुसंधान परीक्षणों के संचालनरत शोधकर्ताओं के लिए किसान सहभागी अनुसंधान परीक्षणों की अभिकल्पना एवं विश्लेषण पर एक कार्यशाला एवं प्रशिक्षण कार्यक्रम का आयोजन किया गया।

संस्थान के वैज्ञानिक/तकनीकी/प्रशासनिक कार्मिकों के लिए संस्थान में एक द्वि-दिवसीय हिन्दी कार्यशाला का आयोजन किया गया।

संस्थान में चल रहीं अनुसंधान परियोजनाओं की प्रगति तथा नई परियोजनाओं पर चर्चा करने के लिए कर्मचारी अनुसंधान परिषद् (SRC) की बैठक आयोजित की गई।

संस्थान में वार्षिक दिवस मनाया गया और संस्थान द्वारा अनेक बैठकों/सम्मेलनों/संगोष्ठियों/कार्यशालाओं इत्यादि में सहभागिता की गई। आशा है कि इस अंक की विषयवस्तु नार्स (NARS) के वैज्ञानिकों के लिए सूचनाप्रद एवं उपयोगी होगी। समाचार पत्र की विषयवस्तु में सुधार लाने हेतु आपके सुझावों का स्वागत है।

( सुखदेव शर्मा )

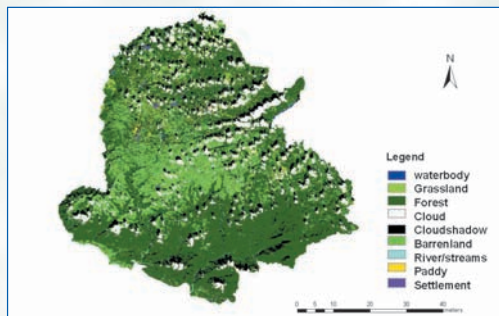
### RESEARCH ACHIEVEMENTS

- Under the project “Developing Remote Sensing based Methodology for Collection of Agricultural Statistics in Meghalaya” methodology already developed during pilot study for estimation of area under paddy crop was tested and validated. To test the methodology the survey was repeated in the same district Ri-Bhoi and another district Jantia Hills of Meghalaya.

The satellite data was rectified and classified using Maximum Likelihood supervised classification technique in ERDAS Imagine software. The total area under paddy was estimated using their classified images.

Suitable estimators for areas under paddy crop, for both the districts, were developed based on estimates obtained by road survey and classified image. The major portion of the satellite data for both the districts was covered by clouds/cloud shadow. Estimators developed in pilot study were further rectified to take into account the area under cloud.

In the first approach ratio estimator was applied to find the paddy area under cloud based on the pixel value of current year image and previous year image. The paddy area was estimated as 8075 ha. In the second case the paddy area was estimated using grid sampling based on previous year data. The total area under paddy came out to be 8143 ha.



In another approach, estimate was obtained only on the basis of current year data.

- In the study on “Statistical and Algorithmic Approach for Improved Estimation of Treatment Effects in Repeated Measurements Designs” database containing a catalogue of RMDs has been developed and parameters (number of treatments (v), number of periods (p), number of experimental units (n), total number of observations (N) and source/type of the design) of RMDs catalogued from literature have been entered into it. This catalogue contains total 206 RMDs falling under different classes for  $v \leq 20$ ,  $p \leq 20$  and  $n \leq 100$ . User has the privilege to view the catalogue for particular number of input parameter(s) (for fixed number of treatment or period or units or total number of observations or combination of treatment, period and unit) besides viewing all designs option. Further, the database has been linked to corresponding user interface to view the particular design as well as randomized layout of that design.

## HUMAN RESOURCE DEVELOPMENT

- A training course on “Small Area Estimation Techniques” was organized for the senior and middle level officers of CSO, Ministry of Statistics and Programme Implementation, New Delhi during 10–15 July 2006. Eight participants attended this course.



- A study visit for three member delegation from Department of Statistics, Malaysia was organised during 01–05 August 2006. They were taken to different offices such as DES & Agricultural Census at Krishi Bhawan, Registrar General Office, CSO so as to apprise them about their functions and activities.



- A workshop-cum-training programme on “Design and Analysis of Farmers Participatory Research Trials” for the research personnel involved in the conduct of farmers participatory research trials under the aegis of Rice Wheat Consortium, CIMMYT for Indo-Gangetic Plains was organized during 10–12 August 2006. This workshop-cum-training programme aimed at the theme of statistical principles involved in the conduct of farmers participatory research trials. 20 participants



attended this workshop. The main emphasis was laid on case studies. Several real data sets were analyzed by the participants. The workshop-cum-training programme was conducted in participatory mode.

- One day study tour for a batch of Statistical Personnel of Central/State/UT Governments/ PSSUs was organised on 31 August 2006.
- A summer school on “Sample Survey Techniques in Agricultural Research” was organized during 05–25 September 2006 at the Institute for Asstt./ Associate Professors from SAUs and Scientists from ICAR Institutes.



## VISIT ABROAD

- Dr. (Smt.) Sushila Kaul, Sr. Scientist has been deputed to attend International Cooperative Alliance Regional Conference at Colombo, Sri Lanka organised by International Cooperative Alliance during 15–16 August 2006.

## PANORAMA OF ACTIVITIES

- **Annual Day Celebrations**

The Annual Day of the Institute was celebrated on 03 July 2006. On 03 July 2006, the main Annual Day Function was celebrated in which Dr. M. Mahadevappa, Ex Chairman, ASRB was the Chief Guest. Dr. Nawab Ali, DDG (Engg.), ICAR delivered the Nehru Memorial Lecture entitled “Production and Utilization Pattern of the Major Agricultural Commodities in India: Role of Statistics in its Rationalization”.

Nehru Memorial Gold Medal for the year 2003–05 was awarded to Km. Chhawi Saurabh, M.Sc. (C.A.) student.

- The meeting of Staff Research Council (SRC) was held during 22–23 August 2006 to review the progress of ongoing research projects.



## ● हिन्दी चेतनामास

संस्थान में सितम्बर, 2006 के दौरान हिन्दी चेतनामास का आयोजन किया गया। इस दौरान अनेक कार्यक्रम एवं प्रतियोगिताएँ आयोजित की गईं जैसे—काव्य-पाठ, शिक्षक दिवस, डॉ. दरेगा सिंह स्मृति व्याख्यान, शोध-पत्र-पोस्टर-प्रदर्शन प्रतियोगिता (हिन्दी में), प्रश्न-मंच, अंताक्षरी, वाद-विवाद, वर्तनी, हिन्दी आशुलिपि, प्रभागीय चल-शील्ड इत्यादि।

हिन्दी एकक एवं प्रशिक्षण एवं प्रशासन प्रकोष्ठ के संयुक्त तत्वावधान में दिनांक 05 सितम्बर, 2006 को “शिक्षक दिवस” का आयोजन किया गया। इस अवसर पर मुख्य अतिथि एवं संस्थान के पूर्व निदेशक प्रो. एम. एन. दास को सम्मानित किया गया।



14 सितम्बर, 2006 को हिन्दी दिवस के अवसर पर “डॉ. दरेगा सिंह स्मृति व्याख्यान” का आयोजन किया गया। यह वैज्ञानिक व्याख्यान राष्ट्रीय कृषक आयोग के सदस्य एवं कृषि वैज्ञानिक चयन मंडल के पूर्व अध्यक्ष, प्रो. राम बदन सिंह द्वारा “लघु कृषक अनुकूल कृषि अनुसंधान एवं किसान नीति” विषय पर दिया गया। इस कार्यक्रम की अध्यक्षता कृषि वैज्ञानिक चयन मंडल के पूर्व अध्यक्ष, प्रो. कीर्ति सिंह ने की।

हिन्दी चेतनामास के दौरान आयोजित शोध-पत्र-पोस्टर-प्रदर्शन प्रतियोगिता में वैज्ञानिकों द्वारा 15 शोध-पत्र प्रस्तुत किए गए तथा निर्णायकों द्वारा तीन श्रेष्ठ शोध-पत्रों का चयन किया गया।

हिन्दी चेतनामास के समापन समारोह के अवसर पर संस्थान में हो रहे हिन्दी कार्यों तथा चेतनामास के दौरान आयोजित विभिन्न कार्यक्रमों/प्रतियोगिताओं की झलकियाँ प्रस्तुत की गईं। समारोह के मुख्य अतिथि, संस्थान के निदेशक, डॉ. सुखदेव शर्मा द्वारा सफल प्रतियोगियों को पुरस्कृत किया गया। इसके अतिरिक्त, सरकारी काम-काज मूल रूप से हिन्दी में करने के लिए प्रोत्साहन योजना के अन्तर्गत संस्थान के तीन कर्मियों को नकद पुरस्कार प्रदान किए गए।

## ● हिन्दी कार्यशाला

दिनांक 16 तथा 18 सितम्बर, 2006 को संस्थान के कर्मियों के लिए “हिन्दी वर्तनी एवं व्याकरण” विषय पर एक हिन्दी कार्यशाला का आयोजन किया गया। कार्यशाला में 43 प्रतिभागियों ने सहभागिता की। कार्यशाला का उद्घाटन दिनांक 16 सितम्बर, 2006 को भा.कृ.अ.प. के सहायक निदेशक (राजभाषा), श्री सुरेन्द्र उनियाल द्वारा किया गया, तत्पश्चात् उन्होंने “हिन्दी वर्तनी” विषय पर व्याख्यान दिया। दिनांक 18 सितम्बर, 2006 को प्रख्यात साहित्यकार एवं पूर्व वरिष्ठ अध्यापक (हिन्दी),

पं. मधुर शास्त्री द्वारा “हिन्दी व्याकरण” विषय पर व्याख्यान दिया गया। कार्यशाला के समापन के अवसर पर पं. मधुर शास्त्री द्वारा प्रतिभागियों को प्रमाण-पत्र वितरित किए गए। प्रतिभागियों से प्राप्त प्रतिक्रियाओं में उक्त व्याख्यानों की अत्यंत सराहना की गई।

- दिनांक 14 जुलाई, 2006 को निदेशक महोदय की अध्यक्षता में संस्थान राजभाषा कार्यान्वयन समिति की बैठक हुई जिसमें अनेक महत्वपूर्ण निर्णय लिए गए।
- Three meetings of the Grievance Committee of the Institute were held on 28 July, 26 August and 26 September 2006 under the Chairmanship of Prof. S.D. Sharma, Director, IASRI.

## PARTICIPATION IN CONFERENCES/ WORKSHOPS/ SEMINARS/ SYMPOSIA/ TRAININGS Etc.

The Institute participated in the following Conferences/ Workshops/ Trainings:

- Workshop on “Improvement of Agricultural Statistics” organized by the Directorate of Economics and Statistics, Govt. of India, New Delhi during 07–08 July 2006.
- Brain storming session on “Expectations of Different Divisions of ICAR from IASRI” under the Chairmanship of Director General, ICAR and Secretary, DARE on 11 July 2006.
- Launch workshop of NAIP held at NASC Complex on 26 July 2006.
- Panel discussion to guide the University teachers regarding teaching of Basic Statistics course to the students held on 28 July 2006.
- A training programme on Sensitizations of Database entitled “Assessment Survey Capabilities of Private Sector” for the officials of Central Statistical Organisation and IASRI on 06 July 2006.
- Workshop on PERMISNET and Intelligent Reporting System (IRS) organised by IASRI during 21–22 July 2006 at NASC Complex. More than 110 Nodal Officers along with their associates attended the workshop.
- A refreshing course on “Online Library Information System” organized by Library Information System, IASRI, New Delhi on 29 July 2006.

## PARTICIPATION OF INSTITUTE IN VARIOUS MEETINGS ETC.

The Institute participated in the following:

- Meeting at Krishi Bhawan, New Delhi to discuss and finalise the methodology and procedural issues with a view to start collection of cost data in Tamil Nadu, Karnataka and Andhra Pradesh under the Chairmanship of Principal Adviser, Ministry of Agriculture on 05 July 2006 and 20 July 2006.
- Meeting regarding “Cost of cultivation of coconut in Kerala” organized by DES, Krishi Bhawan, New Delhi on 05 July 2006.
- Meeting with state officials, Commissionerate of Agriculture, Pune on 06 July 2006 at IASRI to review the progress of field work.

- 7<sup>th</sup> Meeting of the task force for study of assessment of survey capability of private sector in CSO, New Delhi under the Chairmanship of Secretary, Ministry of Statistics and Programme Implementation, New Delhi on 18 July 2006.
- A joint Meeting of Board of Studies in Agricultural Statistics and Board of Studies in Computer Applications on 24 July 2006.
- Meeting of conveners of different symposia for the International Conference held in December 2006 on 24 July 2006.
- Meeting with Adviser, Horticulture Statistics under the Chairmanship of Director, IASRI regarding streamlining horticulture database at the Institute on 31 July and 11 August 2006.
- Member of the writing team for the development of textbook on Science & Technology at Upper Primary Stage (Class VII) workshops organised during 03–07 July and 8–14 August 2006 at NCERT, New Delhi.
- XIII Annual Group Meeting of AICRP on Rapeseed and Mustard held at CCS HAU Hisar during 02–04 August 2006.
- Meeting at University of Kashmir, Srinagar on 07 August 2006.
- Second, third and fourth meetings of the sub-group on Animal Husbandry and Dairying for XI Five Year Plan at Yojna Bhawan, New Delhi on 03, 10 and 17 August 2006.
- Meeting of the sub-group on Agricultural Statistics in connection with the XI Five Year Plan under the Chairmanship of Principal Adviser, Ministry of Agriculture at Krishi Bhawan, New Delhi on 19 August 2006.
- Organised and participated in the meeting of Core Group for Validating Existing Horticulture Data and Suggesting Methodology for Reliable Baseline Data” constituted by the Planning Commission in connection with the Horticulture Statistics at IASRI, New Delhi on 21 August 2006.
- Meeting at DOAC regarding National Agricultural Insurance Scheme under the Chairmanship of Special Secretary at Krishi Bhawan, New Delhi on 21 August 2006.
- Screening committee meeting for updating the rates and ratios used for compilation of the estimates of domestic products capital formation and other aggregates on 25 August 2006 at CSO, New Delhi.
- Meeting under the Chairmanship of DG, CSO at New Delhi regarding the proposed training programme to be organized for the participants from Somalia on 25 August 2006.
- High level coordination committee meeting at Department of Agriculture, Lucknow on 29 August 2006.
- High level coordination committee meeting at Department of Agriculture, Karnataka at Bangalore on 31 August 2006.
- Sensitization workshop at NAARM, Hyderabad on Knowledge Management, e-learning etc. under NAIP during 04–05 September 2006.

- Presentation of Vision-2025 document at Krishi Anusandhan Bhawan-II on 07 September 2006 .
- National Seminar on “Surveys on land & livestock holdings, debt & investment and morbidity & health care” of NSS 59<sup>th</sup> & 60<sup>th</sup> rounds organized by the NSSO at Arumbakkam, Chennai during 27–28 September 2006.

## 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 245,670 times since 05 September 2003.

## SEMINARS DELIVERED

- 25 seminars on different areas of agricultural statistics and computer application were conducted. Seminars were delivered for presenting the salient findings of the completed research projects. In addition to these seminars, students Outline of Research Work (ORW) seminars, thesis seminars and course seminars were also delivered for their requirement of M.Sc. and Ph.D. (Agricultural Statistics) and M.Sc. (Computer Application) degrees.

## CONSULTANCY/ ADVISORY SERVICES

- Sh. M. Ashraf Bhat, Ph.D. student from Department of Plant Breeding and Genetics, Punjab Agricultural University, Ludhiana was advised on the analysis of data pertaining to 37 inbred lines (Maize), all at advanced stage of development, selected for estimating the genetic diversity using molecular markers (SSR).
- Dr. Arun Kumar Joshi, Professor, Department of Genetics and Plant Breeding, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi, presently Visiting Scientist at CIMMYT, Mexico was advised on analysis of data pertaining to the experiment conducted for detecting the variation in 963 diverse lines of wheat for stay green trait.
- Sh. A.K. Singh from NBPGR, New Delhi was advised on the combined analysis of data pertaining to an experiment on 50 lines of Mucuna Pruriens conducted using a randomized complete block design with three replications. The experiment was conducted for two years on each of the two locations Ishapur and Baraut.
- Dr. M.L. Bansal, Professor of Statistics at Punjab Agricultural University, Ludhiana was advised upon Markov chain modeling and regression modeling for the project “Yield forecasting of wheat based cropping sequences using multiple regression and Markov chain approach” during 27–28 July 2006 at IASRI, New Delhi.
- A Ph.D. student of plant pathology from SKUA&T, Udheywalla Campus, Jammu was advised on the statistical analysis of data to study the effect of fungicides (F), plant extracts

(P) and bio-control (B) agents on the foliar blights of onion. The experiment was laid out in ( $3^3$ ,  $3^2$ ) factorial in two replications totally confounding the highest order interaction FPB. The experiment was done over different time periods and over two years. The analysis was done period wise and the pooled analysis over years was also performed.

- Dr. U.K. Behera, Senior Scientist from Division of Agronomy, Indian Agricultural Research Institute, New Delhi was advised on the contrast analysis for comparison between durum, timely sown aestivum and late sown aestivum cultivars of wheat for the characters grain yield, thousand grain weight, harvest index, water use efficiency, etc.

## PUBLICATIONS

### Research Papers Published

- Choudhary, Gunanand, Kumar, Jitendra; Walia, Suresh, Parsad, Rajender and Parmar, Balraj S (2006). Development of controlled release formulations of carbofuran and evaluation of their efficacy against *Meloidogyne incognita*. *J. Agril. Food Chemistry*, **54**, 4727-4733.
- Choudhary, Gunanand, Kumar, Jitendra Walia, Suresh, Parsad, Rajender and Parmar, Balraj Singh (2006). Controlled release of carbofuran into water from polymeric matrices. *Pesticide Res. J.*, **18**, 65-69.
- Dey, Amitava, Sharma, VK and Ghosh, Himadri (2005). Prediction in two-equation linear regression models. *Cal. Stat. Assoc. Bull.*, **57**, 227-228.
- Narang, MS., Sud, UC and Gupta, AK (2006). Regression method & estimation for sampling from finite population in the presence & measurement errors. *Ind. J. Appl. Statist., Bareilly, UP*, **8**, 15-24.
- Ghosh, Himadri, Iquebal, MA and Prajneshu (2006). Mixture non-linear time series modelling and forecasting for ARCH effects. *Sankhya*, **68(1)**, 111-129.
- Ghosh, Himadri, Das, Ashish and Midha, CK(2006). On some efficient partial diallel cross designs. *Statist. Prabab. Lett.*, **76(2)**, 1768-1774.
- Kadam, DM, Samuel, DVK and Parsad, Rajender (2006). Optimisation of pre-treatments of solar dehydrated cauliflower. *J. Food Engg.*, **77**, 659-664.
- Iquebal, MA, Paul, Amrit Kumar and Bhatia, VK (2004). Empirical comparison of different estimates of heritability of herd life using unrelated auxiliary traits under non-normal situations. *Ind. J. Appl. Statist.*, **8**, 59-72.
- Iquebal, MA, Paul, Amrit Kumar (2006). Effect of more than one related auxiliary trait on estimation of heritability of herd life. *Ind. J. Anim. Sci.*, **76(8)**: 625-632.
- Wahi, SD Bhatia, VK and Rao, AR (2006). Study of statistical properties of genetic correlation using bootstrap techniques. *Ind. J. Anim. Sci.* **76(9)**, 755-758.

## Forthcoming International Conference on

*Statistics and Informatics in Agricultural Research*

Diamond Jubilee Celebrations of  
Indian Society of Agricultural Statistics

(27-30 December 2006)

The Conference will be focussed on Six Major Themes

- Theme 1:** Statistical Applications in Agricultural Research
- Theme 2:** Emerging Issues in Areas of Basic Statistical Research
- Theme 3:** Agricultural Informatics
- Theme 4:** Statistical and Computational Biology in Agriculture
- Theme 5:** Statistical and Economic Issues for Prosperity of Rural Community
- Theme 6:** Human Resource Development for Agricultural Statistics and Informatics

### Conference website

<http://www.iasri.res.in/icsi2006>

## 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)



Lightening of Candle  
on the Annual Day Function of the Institute

- गुप्ता, ए.के., नारंग, एम.एस., जैन, वी.के., सूद, यू.सी. एवं त्यागी, के.के. (2006)। बाजार में आगमन के आधार पर मुख्य फूलों का दिल्ली में उत्पादन। *भारतीय कृषि अनुसंधान पत्रिका*, ग्वालियर, **21**, 34-46।
- पाल, सत्या, गुप्ता, ए.के. एवं नारंग, एम.एस. (2006)। भैंसों के दूध की मात्रा में अन्तर का पथ गुणांक विश्लेषण विधि द्वारा अध्ययन। *भारतीय कृषि अनुसंधान पत्रिका*, ग्वालियर, **21(1)**, 16-21।
- Satpati, Subrata Kumar, Parsad, Rajender, and Gupta, VK. Efficient block designs for dependent observations: A computer aided search. *Comm. Statist. Theory Methods*, **36(6)**.
- Srivastava, R, Parsad Rajender, Dey Amitva and Gupta VK. A efficient block designs for asymmetrical slope ratio assays. *J. Stat. Appl.*
- Sud, UC and Mishra, D. Estimation of population mean using two stage ranked set sampling design. *J. Ind. Soc. Agric. Statist.*

#### Research Papers Accepted for Publication

- Ghosh, Himadri, Sunil Kumar, G and Prajneshu. Self exciting threshold auto-regressive models for describing cyclical data. *Cal. Statist. Assoc. Bull.*, **28**.
- Jaggi, Seema, Varghese, Cini and Gupta, VK. Optimal circular block designs for neighbouring competition effects. *J. Appl. Statist.*
- Rama, Singh, Krishna, Srivastava, R and Parsad, Rajender. Robustness of standard reinforced balanced incomplete block designs against exchange of a test treatment. *J. Ind. Soc. Agric. Statist.*
- Prajneshu and Chandran, KP. Computation of compound growth rates using non-linear growth model – An illustration with SPSS. *The SPSS Analyst.*
- Satpati, Subrata Kumar, Parsad, Rajender, Gupta, VK and Nigam, AK. Computer aided search of efficient nested incomplete block designs for correlated observations. *J. Combinatorics Information System Sciences*.

#### PERSONNEL

##### Transfer

- Dr. A.K. Vasisht, Principal Scientist, ICAR joined as Head, Division of Econometrics w.e.f. 27-07-2006.

##### Wish you happy retired life

- Sh. J.P. Goyal, Scientist(SG), w.e.f. 31-07-2006
- Sh. Raje Singh, Driver(T-1-3), w.e.f. 31-07-2006
- Smt. Motia Rani Suri, KPO(T-5), w.e.f. 31-08-2006

##### Congratulations on your promotion

- Sh. Ranvir Singh, Jr. Clerk, w.e.f. 01-09-2006
- Sh. Anish Wadhwa, Jr. Clerk, Sh. Raj Kumar Verma, Jr. Clerk, and Sh. Trilok Saini, Jr. Clerk under ACP scheme.

फार्म संबंधी सभी समस्याओं पर विशेषज्ञ की सलाह के लिये प्रातः 6.00 बजे से रात 10.00 बजे तक सभी सातों दिन टोल फ्री नम्बर 1551 पर डायल करें।

**For expert's advise on all farm related problems, dial toll free number 1551 from 6 am to 10 pm on all seven days**

*Published by RCMU on behalf of :*

**Prof. S.D. Sharma**

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

**E-mail:** director@iasri.res.in

**Website:** www.iasri.res.in

**Phone:** 011-25841479

**Fax:** 011-25841564