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**65th Annual Conference of Indian Society of Agricultural Statistics
Recommendations of the Conference
Theme : Statistics and Informatics in Agricultural Research**

The 65th Annual Conference of the Indian Society of Agricultural Statistics was organized by the Division of Dairy Economics, Statistics and Management, National Dairy Research Institute, Karnal – 132 001 (Haryana) during December 03-05, 2011. The Theme of the Conference was **Statistics and Informatics in Agricultural Research**.

Inaugural Session

The Conference was inaugurated by Dr. K. Kasturirangan, Member (Science), Planning Commission, Government of India, New Delhi on December 03, 2011. Dr. Gurbachan Singh, Chairman, Agricultural Scientists Recruitment Board, ICAR, New Delhi was the Guest of Honour. Dr. AK Srivastava, Vice Chancellor and Director, National Dairy Research Institute, Karnal presided over the Inaugural Function of the Conference. Prof. Prem Narain, Executive President of the Society welcomed the participants and other invitees of the Conference and apprised them with various activities of the Society.

Review of the activities of the Society for the year 2011 was presented by Dr. V.K. Bhatia, Secretary, Indian Society of Agricultural Statistics. Dr. D.K. Jain, Organizing Secretary delivered the Welcome Address. Dr. Ravinder Malhotra, Co-organizing Secretary proposed a Vote of Thanks.

Technical Address

Dr. Prajneshu, Principal Scientist & Head, Division of Biometrics & Statistical Modelling, IASRI, New Delhi was the Sessional President of the Conference and delivered the Technical Address on **Some Nonlinear Time-Series Models and their Applications**.

Dr. Rajendra Prasad Memorial Lecture

Dr. Rajendra Prasad Memorial Lecture was delivered by Dr. K. Kasturirangan, Member (Science), Planning Commission, Government of India, New Delhi on December 03, 2011. The topic of his lecture was **India's Space Research Programme in Relation to Indian Agriculture**.

Dr. V.G. Panse Memorial Lecture

Dr. V.G. Panse Memorial Lecture was delivered by Prof. Alope Dey, INSA Senior Scientist, Indian Statistical Institute, Delhi Centre, New Delhi. The topic of his lecture was **Recent Developments in Fractional Factorial Designs**.

Presentation of Awards

The Society honoured Dr. V.K. Bhatia, Director, IASRI, New Delhi with the title of **Sankhyiki Bhushan Award** for his outstanding contributions in the field of Agricultural Statistics.

Dr. Prajneshu, Head, Division of Biometrics & Statistical Modelling, IASRI, New Delhi was honoured with the title of **Prof. PV Sukhatme Gold Medal Award** for his significant contributions in the field of Agricultural Statistics.

Dr. Yogita Gharde, Scientist, IASRI, New Delhi was awarded **Dr. GR Seth Memorial Young Scientist Award**. The topic of her research paper was **Hierarchical Bayes Small Area Estimation Approach for Spatial Data**.

Workshop Organised

A workshop on **Linear Estimation** was organized by Dr. R.B. Bapat, Indian Statistical Institute, Delhi Centre, New Delhi during the Conference.

A Panel Discussion on **Higher Education in Agricultural Statistics: Current Status and Challenges** was organized during the Conference. The session was chaired by Prof. Prem Narain, Executive President of the Society. Dr. S.D. Sharma, Vice Chancellor, Dev Sanskriti Vishwavidyalaya, Haridwar and Dr. V.K. Gupta, ICAR National Professor, IASRI, New Delhi were the panelists in the session.

Invited Paper Sessions

Sub-Theme 1

Advances in Statistical Techniques in Dairy Sciences

Chairman : Dr. V.K. Bhatia, IASRI, New Delhi

Conveners : Dr. D.K. Jain, NDRI, Karnal
Dr. P.K. Malhotra, IASRI, New Delhi

Five papers covering various aspects related with the theme of the symposium were presented by the following speakers:

1. B. Singh, IVRI, Izatnagar. Applications of Advanced Statistical Techniques in Veterinary and Animal Sciences.
2. A.K. Chakravarty, NDRI, Karnal. Application of Statistical Techniques in Research on Dairy Production.
3. T.N. Datta and M. Jayakrishna, NDD, Anand. Dairy Information System in India - Present Status and Future Path.
4. Indrenil Ray, Nestle India Ltd., Samalkha. Use of Statistics in Incoming Materials, Sampling, Ensuring Compliance & Process Control and Credible Lab Results.
5. A.R. Rao, IASRI, New Delhi. Statistical Applications in Bioinformatics for Animal Science.

Sub-Theme 2

Designs for Multi-factor Experiments

Chairman : Dr. V.K. Gupta, ICAR, New Delhi

Conveners : Dr. Rajender Parsad, IASRI, New Delhi
Dr. Ravinder Malhotra, NDRI, Karnal

Five papers covering various aspects related with the theme of the symposium were presented by the following speakers:

1. Anupma Singh, IARI, New Delhi. Applications of Fractional Factorials in Preparation of Super Absorbent Composites.
2. L.M. Bhar, IASRI, New Delhi. Block Designs for Multifactor Bioassays.

3. Cini Varghese, IASRI, New Delhi. Factorial Cross Over Designs.
4. Basudev Kole, ISI, Delhi Centre, New Delhi. Problems in Construction of Supersaturated Designs.
5. Rajender Parsad, IASRI, New Delhi. Some Applications of Design for Factorial Experiments in NARS.

Sub-Theme 3

Emerging Paradigms of Knowledge Management in Agricultural Sciences

Chairman : Dr. S.D. Sharma, Dev Sanskriti Vishwavidyalaya, Haridwar

Conveners : Dr. Sudeep Marwaha, IASRI, New Delhi
Dr. A.K. Sharma, NDRI, Karnal

Six papers covering various aspects related with the theme of the symposium were presented by the following speakers:

1. Subrat Kar, IIT, Delhi, New Delhi. Enhancing Precision Animal Management through Pervasive Communication Networks.
2. R.K. Sharma, Thapar University, Patiala. Intelligent Techniques for Knowledge Management in Agricultural Sciences.
3. Avnish K. Bhatia, NBAGR, Karnal. Genetic Algorithms for Knowledge Management.
4. R.C. Agrawal, PPVFRA, New Delhi. Indian Efforts for ICT for Knowledge Generation, Refinement and Dissemination.
5. Sudeep Marwaha, IASRI, New Delhi. KM Tool for Development of Online Expert Systems for Crops.
6. A.K. Sharma, NDRI, Karnal. Predicting Milk Yield in Dairy Animals using Connectionist Models.

After detailed discussions in the above themes, the following recommendations emerged out:

Recommendations

1. Refinement of statistical methodologies and definitions for reconciliation of estimates obtained by various agencies.
2. There is need to identify eco years/eco months/eco period by utilizing the data of IMD and yield data for various crops.
3. The space technologies need to be utilized to their full potential or in depth studies on natural resources.
4. There is urgent need to incorporate genome information into selection procedures for economic trait prediction as well as for disease risk prediction. A close collaboration between NDRI and IASRI is urgently required in this new area of statistical issues in dairy research.
5. Commodity flow analysis needs to be carried out for various livestock products. This will help investors in agro processing for decision support at appropriate levels.
6. A database for dairy sector needs to be built for integrating information from different sources for supporting dairy production, processing, quality and marketing activities. This endeavour would require public-private partnership.
7. Efficient designs for multi-factor experiments are being adopted in NARS. More concerted efforts should be made to enhance the status of agricultural experiments in NARS by making scientists adopt efficient designs.
8. Design Resources Server should be further strengthened by uploading designs for multi-factor experiments.
9. Institutions of higher learning and research like IIT/IIM/Technical Universities have played an

important role in bringing state-of-the-art electronic and computing technologies to the agriculture sector. The partnership between these institutions and ICAR institutions should be further strengthened by taking collaborative research projects.

10. AgriDaksh is a promising KM tool that has potential to transfer knowledge generated in labs to land in the form of expert systems. A collaborative effort is required in network mode to develop expert system for all the mandated crops using this tool. The tool should be made multilingual and mobile enabled.
11. Under NAIP, several initiatives have been undertaken, e.g., KVK-net, Virtual KVK, e-Granth, Agropedia, Cera, Krishiprabha etc. These initiatives require collaborative efforts to sustain their activities.
12. Applications of soft computing techniques like Support Vector Machines (SVM), Connectionist Models, Genetical Algorithms, etc. have been used successfully for prediction and classification tasks in many fields of knowledge related to dairy and agricultural sciences. These techniques need more attention in knowledge management and should be popularized.
13. The scientific fraternity should contribute to enrich the information and knowledge content in collaborative manner in all the above KM initiatives for harnessing their full potential leading to enhanced efficiency/profit to farmers and stakeholders.
14. B.Sc. with Statistics/Mathematics as one of subjects should be included in educational qualifications for M.Sc. in Agricultural Statistics/Biostatistics/Computer Application.
15. The students of Master's degree programme in Agricultural Statistics/Biostatistics possessing B.Sc. in Statistics/Mathematics may be given the option to offer remedial courses as extra credit hours in each trimester/semester so that they can complete their degree requirements without spending one extra year. Even offering summer courses can be thought of.
16. To popularize the potential scope of M.Sc. in Agricultural Statistics/Computer Application, lectures may be organized for graduate students of B.Sc. in Statistics.
17. To attract talent from outside, the score card of ASRB needs to be revised so that competent scientific personnel outside the system could qualify.
18. Deficiency courses for agricultural/non-agricultural graduates may be organized as summer courses.