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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.

Designs for factorial experiments are very popular in agricultural sciences because of the fact that agriculture being a complex phenomena, a very large number of factors influence the system. Generally the interest of the experimenter is to estimate orthogonally all the main effects and lower order interaction effects. In the presence of trend, it may, however, become difficult to estimate orthogonally all the main effects and preferably few lower order interactions. A general method of construction of multilevel factorial experiments that are linear trend-free for main effects and few lower order interaction effects has been developed.

Breed descriptor has been developed to identify breed that cover only "pure breed" or true to the breed type animals excluding undefined or admixture population. Moreover, in case of semen, ova, embryo and breed product, the breed cannot be identified due to lack of visible phenotypic descriptors. Advent of molecular markers like microsatellite and SNP have revolutionized breed identification from even small biological tissue or germplasm. Microsatellite DNA marker based breed assignments has been reported in various domestic animals. Such methods have limitations viz. non availability of allele data in public domain, thus each time all reference breed has to be genotyped which is neither logical nor economical. Even if such data is available, computational methods need expertise of data analysis and interpretation. The first goat breed identification server has been developed using microsatellite DNA markers and is available at <http://cabin.iasri.res.in/gomi/>.

A user friendly software has been developed for estimating the compound growth rate (WebECGR) and the same has been uploaded at <http://iasri.res.in/cgr>

The impact of introduction of poplar tree based agroforestry in Vaishali district of Bihar State has been assessed. For this, the total number of survived poplar trees in the district was estimated, followed by the estimation of average income per household for poplar growing and non poplar growing farmers of the district. The number of poplar trees and total number of agroforestry trees estimated were 18,43,848 and 25,39,007 with percentage standard errors 0.18 and 0.15 respectively. The average family income per household per year of poplar farmers of adopted villages was much higher in comparison to the non poplar farmers of adopted and non adopted villages. It was concluded that agroforestry had a great impact on the socio-economic condition of the farmers of Vaishali district and it is recommended that the poplar based agroforestry model may be implemented in all the districts of Bihar in particular and all the states of the country in general for overall socio-economic development of farmers of the country.

XVII National Conference of Agricultural Research Statisticians was organized jointly with National Dairy Research Institute (NDRI) at NDRI, Karnal, Haryana during November 27-28, 2013.

Three training programmes, one each on Advances in Statistical Methods for Animal Experiments and Advances in Experimental Designs for Development of Technologies in Agriculture under CAFT; one Winter School on Development of Web Application for Agricultural Information Management sponsored by Education Division of ICAR were organised. One Advanced User training of CLC Bio Software under Establishment of NABG project; one on Data Analysis Using SAS under SSC-NARS were also organised.

Scientists of the institute have received various awards & recognitions. Scientists have visited various countries on different assignments.

During the period one new project was initiated. Scientists of the Institute have published 25 research papers, 01 project report, 02 popular articles, 01 book chapter, 02 technical bulletins and 01 reference manual. Besides this, 63 research papers were presented in different conferences/ symposia/ workshops, etc.

It is hoped that the contents of this document would be informative and useful to scientists in NARS. Any suggestions for improving the contents of the newsletter further would be highly appreciated.


(UC Sud)

RESEARCH ACHIEVEMENTS

Trend free multi-level factorial experiments. In several designed experiments, the experimental units exhibit a smooth trend over time or space. The trend may occur in greenhouse experiments where the source of heat is located on sides of the house and the experimental units (pots) are kept in lines; in poultry experiments where the source of heat is at the centre of the shed and chicks of early age are in the cages; in orchard and vineyard experiments on undulating topography, where response variable is affected by slowly migrating insects entering the area from one side; in laboratory experiments where the responses to the experimental units may be affected over time by instrument drift or analyst fatigue, etc. The presence of trend among the experimental units affects the analysis of data. One approach of analysis of data is to use the trend variable as a covariate and perform the analysis of covariance. It is, however, desirable to have trend free designs as in these designs the trend effects are orthogonal to the treatment effects. In other words, the treatment sum of squares adjusted for all other effects in the presence of trend is the same as the treatment sum of squares adjusted for all other effects in the absence of trend variable.

Designs for factorial experiments are very popular in agricultural sciences because of the fact that agriculture being a complex phenomena, a very large number of factors influence the system. Generally the interest of the experimenter is to estimate orthogonally all the main effects and lower order interaction effects. In the presence of trend, it may, however, become difficult to estimate orthogonally all the main effects and preferably few lower order interactions. A general method of construction of multilevel factorial experiments that are linear trend-free for main effects and few lower order interaction effects has been developed. Using this method, a series of 3^n and 5^n designs for complete factorial experiments that are linear trend-free for all the main effects have been developed. Further, a series of multilevel fractional factorial plans for 3^{5-2} , 3^{6-3} , 3^{7-4} , 3^{8-5} , etc. in 27 runs and 5^{5-2} , 5^{6-3} , 5^{7-4} , 5^{8-5} , etc. in 125 runs have been developed in which all the

main effects are linear trend-free. Here, s^{k-p} fractional factorial experiment means a $\frac{1}{s^p}$ th fraction of s^k full factorial experiment in s^{k-p} runs.

Webserver for goat breed identification using molecular data. Identification of true to breed type animal for conservation purpose is imperative. Breed dilution is one of the major problems in sustainability except cases of commercial crossbreeding under controlled condition. Breed descriptor has been developed to identify breed but such descriptors cover only "pure breed" or true to the breed type animals excluding undefined or admixture population. Moreover, in case of semen, ova, embryo and breed product, the breed cannot be identified due to lack of visible phenotypic descriptors. Advent of molecular markers like microsatellite and SNP have revolutionized breed identification from even small biological tissue or germplasm. Microsatellite DNA marker based breed assignments has been reported in various domestic animals. Such methods have limitations viz. non availability of allele data in public domain, thus each time all reference breed has to be genotyped which is neither logical nor economical. Even if such data is available but computational methods needs expertise of data analysis and interpretation. The first goat breed identification server developed using microsatellite DNA markers has been developed and made available at <http://cabin.iasri.res.in/gomi/>.

The data considered in the study was genomic DNA, isolated from blood samples using SDS-Proteinase-K method from 1037 unrelated animals belonging to twenty two different Indian goat breeds, selected from diverse geographical regions and climatic conditions with varying utilities and body sizes. 51850 allelic data was generated on 25 microsatellite loci based DNA fingerprinting on these goat breeds. Various statistical classifiers were applied and the best performing classifier selected after model evaluation criteria (viz., sensitivity, specificity, precision or positive predictive value (PPV), negative predictive value (NPV), accuracy, false discovery rate (FDR) and Mathew's correlation coefficient (MCC)) and implemented on the

web with the aid of CGI-Perl scripts, Hyper Text Markup Language (HTML), Java Scripts and launched using Apache.

Bayesian Networks was found to be the best classifier with highest accuracy of 98.7% using 51850 reference allele data generated by 25 microsatellite loci on 22 goat breed population of India. The F_{ST} values in the study were seen to be low ranging from 0.051 to 0.297 and overall genetic differentiation of 13.8%, suggesting more number of loci needed for higher accuracy. Higher number of loci is required due to less differentiable population and large number of breeds taken in this study. This server will reduce the cost with computational ease. This methodology can be a model for various other domestic animal species as a valuable tool for conservation and breed improvement programmes.

Breed	Location	Address	Latitude	Longitude
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9
10	10	10	10	10
11	11	11	11	11
12	12	12	12	12
13	13	13	13	13
14	14	14	14	14
15	15	15	15	15
16	16	16	16	16
17	17	17	17	17
18	18	18	18	18
19	19	19	19	19
20	20	20	20	20
21	21	21	21	21
22	22	22	22	22

Methodology for Estimation of Compound Growth Rate and its Web-Based Solution. Compound growth rate is generally estimated by assuming that the path of response variable can be described by monotonically non-decreasing nonlinear growth models, like Monomolecular, logistic and Gompertz models. The compound growth rate was estimated using Richards Model.

Study for estimating the unknown time varying trend of annual growth was carried out by *Time domain smoothing* approach. To this end, three methods viz. moving average, kernel smoothing and local linear smoothing were considered. Optimal bandwidth of kernel was obtained by developing iterative estimation procedure. Also compound growth rate was estimated by *State domain smoothing* approach. India's total food grain production was considered and by using fitted growth rate, estimated values of total foodgrain production time-series data was obtained. The average compound growth rate under state domain smoothing was calculated as 2.26% whereas MSE was calculated as 132.17 million tonnes. A user friendly software has been developed for estimating the compound growth rate (WebECGR) and the same has been uploaded at <http://iasri.res.in/cgr>. The compound growth rate was estimated for adoption of Bt cotton in India during the period 2002-03 to 2011-12 through Richards model using the WebECGR package developed.

Web Solution for Estimation of Compound Growth Rate (WebECGR)

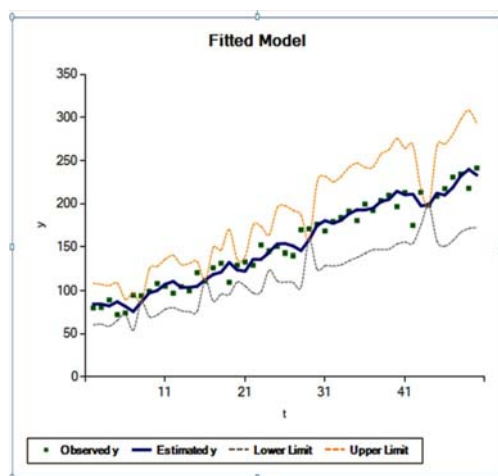
Home | About WebECGR | Analyze | Help | Sample Data | Contact Us

Select an excel file No file chosen (See Help for Data File Preparation)

Data with labels in first row

y	t
5.5	0
6.08	1
7.36	2
8.08	3
9.2	4

Uploading of data into WebECGR package



Fitted values of State domain smoothing of lag 1 model along with data points
Estimated Compound Growth Rate: 2.26%, MSE: 132.17 MAE: 8.79

Impact assessment of agroforestry model in Vaishali district of Bihar State

Under the part of a project entitled “Integrated Community Based Forest Management Project in Bihar” funded by Institute of Forest Productivity (IFP), Ranchi of Indian Council of Forestry Research and Education (ICFRE), Dehradun, in order to assess the impact of introduction of poplar tree based agroforestry in Vaishali district, the total number of survived poplar trees in the district was estimated first, followed by the estimation of average income per household for poplar growing and non poplar growing farmers of the district. The impact was also assessed with respect to current socio-economic condition of farmers of the district belonging to three different categories viz. (i) poplar households of adopted villages, (ii) non poplar households of adopted villages and (iii) households of non adopted villages. The sampling design proposed for estimation of total number of poplar trees in the district was stratified cluster sampling treating blocks as strata and villages within each stratum as clusters. In order to estimate average income per household, the sampling design adopted for the survey was stratified two stage sampling treating blocks as strata, villages within each stratum as first stage units and households or farmers within each selected village as second stage units. Estimation procedures for obtaining district level estimates of number of agroforestry trees and average income per household per year were proposed as per the sampling designs.

The number of poplar trees and total number of agroforestry trees estimated in the district were 18,43,848 and 25,39,007 with percentage standard errors 0.18 and 0.15 respectively. The estimates of average income per household per year for different income variables, average expected income per household per year from poplar trees, agriculture plus poplar trees, reduced income from agriculture plus poplar trees, poplar trees per hectare, agriculture plus poplar trees per hectare, reduced income from agriculture with poplar trees per hectare and agriculture with poplar trees plus poplar trees per hectare along with their standard error were obtained using the proposed estimation procedure. These estimates were obtained with less than 10% standard error in most of the cases and hence the obtained estimates were reliable.

It was found that average family income per household per year of the three different categories viz. (i) poplar farmers of adopted villages, (ii) non poplar farmers of adopted villages and (iii) farmers of non adopted villages, was found to be Rs. 3,73,379/-, Rs. 1,68,099/- and Rs. 1,14,279/- respectively. This showed that the average family income per household per year of poplar farmers of adopted villages was much higher in comparison to the non poplar farmers of adopted and non adopted villages which in turn showed the impact

of agroforestry on farmers' income. The socio economic condition of the farmers in the district was assessed based on the data analysis of the primary data collected during the survey from a sample of 330 poplar farmers and 132 non poplar farmers of selected adopter villages and 140 farmers of non adopter villages of the district. It was found that agroforestry has a great impact on socio-economic condition of the farmers of Vaishali district of Bihar

HUMAN RESOURCE DEVELOPMENT

Training Programmes/ Workshop Organised

S.No.	Title	Venue	Date	Sponsored by	No. of Participants
Trainings					
1.	Advances in Statistical Methods for Animal Experiments, under CAFT Course Director: Dr. Susheel Kumar Sarkar Course Co-Director: Dr. Anil Kumar Dr. Krishan Lal	IASRI, New Delhi	01-21 October 2013	Education Division, ICAR	25
2.	Advances in Experimental Designs for Development of Technologies in Agriculture under CAFT Course Director: Dr. Eldho Varghese Course Co-Director: Dr. Sukanta Dash Dr. Arpan Bhowmik	IASRI, New Delhi	23 October to 12 November 2013	Education Division, ICAR	25
3.	Advanced User training of CLC Bio software with expert Faculty from Sweden Dr Igor Kardailsky and Dr Holger Karas, Senior Field Application Scientist Training Coordinator: Dr. Dinesh Kumar	IASRI, New Delhi	29 October to 01 November 2013	NAIP Consortium Establishment of National Agricultural Bioinformatics Grid	30
4.	Winter school on Development of Web Application for Agricultural Information Management Course Director: Dr. Alka Arora Course Co-Director: Dr. Sudeep marwah Ms. Shashi Dahiya	IASRI, New Delhi	19 November to 09 December 2013	Education Division, ICAR	20
5.	One Day Training Programme (Study Visit) on Functions and Activities of IASRI	IASRI, New Delhi	06 December 2013	NASA	24
6.	Data Analysis Using SAS	IISS, Bhopal	09-13 December 2013	NAIP Consortium Strengthening Statistical Computing for NARS	31
Workshops under MIS/FMS					
7.	Data Sensitization workshop	IILR, Ranchi	30 October 2013		47
8.	User Training Workshops Project MIS – 15 Batches Purchase and Stores HRMS and Self Service HR Payroll and Pension Workshop of MIS/FMS	IASRI, New Delhi	01-19 October and 23-24 and 28-29 October, 2013 30-31 October 2013 25-26 October 2013 11-12 Nov 2013	NAIP	47 20 42 360
9.	User Training Workshops HRMS and Self Service HR Payroll and Pension Financials Procurements and Stores Project MIS – 3 Batches	NAARM, Hyderabad	11-12 November 2013 13-14 November 2013 18-21 November 2013 22-23 November 2013 25-30 November 2013	NAIP	13 17 20 17 83

S.No.	Title	Venue	Date	Sponsored by	No. of Participants
10.	User Training Workshops	IASRI, New Delhi	06-09 November and 11-14 November 2013	NAIP	41
	Financials				
	HRMS and Self Service HR				
	Payroll and Pension				
	Project MIS – 8 Batches				
	Purchase and Stores	CIFE, Mumbai	25-30 November and 02-12 December 2013	NAIP	145 14
11.	User Training Workshops	CIFE, Mumbai	29-30 November 2013	NAIP	27
	HRMS and Self Service HR				
	Financials				
	Payroll and Pension				
	Purchase and Stores				
	Project MIS – 3 Batches		04-05 December 2013		28
			6-12 December 2013		75

AWARDS AND RECOGNITIONS

Scientists of the Institute received the following Awards and Recognitions:

- 67th Annual Conference of the Indian Society of Agricultural Statistics held during December 18-20, 2013 at Department of Farm Engineering, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi - 221 005 (UP).
 - Dr. Rajender Parsad, Head, Division of Design of Experiments, IASRI, New Delhi was awarded ISAS Fellow.



- Dr. Bishal Gurung, Scientist, IASRI, New Delhi, received Dr. GR Seth Memorial Young Scientist Award (2013) for the following paper:
Gurung, Bishal, Paul, Ranjit Kumar and Ghosh, Himadri. Fitting Smooth Transition Autoregressive Nonlinear Time-series Model using Particle Swarm Optimization Technique.

VISIT ABROAD

- Dr Prachi Misra Sahoo visited Oman to provide Consultancy to Ministry of Agriculture and Fisheries, Sultanate of Oman during September 15 – October 10, 2013.
- Dr. UC Sud visited Rio-de-Janeiro, Brazil to present a Paper entitled “District level crop yield estimation under spatial small area model” in the Sixth International Conference on Agricultural Statistics (ICAS-VI) held during October 23-25, 2013.
- Dr. MA Iquebal and Dr. Sarika visited USA for undergoing NAIP funded International training in “Bioinformatics” for three months during September 15 to December 15, 2013 at Iowa State University, Ames, Iowa, USA.
- Dr. Sanjeev Panwar visited Nairobi, Kenya during November 06-09, 2013 as a resource person for taking sessions on Genotype x Environment Analysis in the training on “Application of Biometrics and Bioinformatics Tools in Crop Improvement Research”.

NEW PROJECT INITIATED

- Development of innovative approaches for small area estimation of crop yield, socio-economic and food insecurity parameters. (Under ICAR Lal Bahadur Shastri Young Scientist Award-2012).

PANORAMA OF ACTIVITIES

Conference Organized

- XVII National Conference of Agricultural Research Statisticians was organized jointly with NDRI at NDRI, Karnal, Haryana during November 27-28, 2013. Dr. Seema Jaggi from IASRI, New Delhi and Dr. Ravinder Malhotra from NDRI, Karnal were the Organizing Secretaries of the Conference. Inaugural Address was delivered by Padam Shri Professor RS Paroda, Chairman, TAAS and Former Director General, ICAR. The Inaugural Function was presided by Dr. AK Srivastava, Director and Vice Chancellor, NDRI, Karnal. Introductory Remarks was given by Dr. VK Gupta, National Professor, ICAR. Conference Remarks were given by Dr. SD Sharma, Vice Chancellor, Dev Sanskriti Vishwavidyalaya, Haridwar. A Keynote Address on “Small Area Estimation - Some Applications in India” was delivered by Dr. UC Sud, Director of the Institute. A special lecture entitled “Role and Challenges of Agricultural Statisticians - A perspective” was also delivered by Dr. AK Srivastava, Former Joint Director of the Institute. Following six technical Sessions and one plenary Session, were organized during the conference.

Technical Session I



Action taken on the Recommendations of the XVI National Conference of Agricultural Research Statisticians

Chairman: Dr. UC Sud, Director IASRI

Presenter: Dr. Seema Jaggi

Rapporteur: Dr. Prawin Arya

Technical Session II

Priorities for Research in Agricultural Statistics: Current Status and Future Challenges

Chairman: Dr. VK Gupta, ICAR National Professor

Conveners: Dr. Rajender Parsad/ Dr. Ajit

Rapporteurs: Dr. Himadri Ghosh/ Dr. Ranjit Kumar Paul

Technical Session III

Priorities for Human Resource Development in Agricultural Statistics and Informatics

Chairman: Dr. SD Sharma, Vice Chancellor, DSV Haridwar

Co-Chairman: Dr. GR Patil, Joint Director (Academic) NDRI

Conveners: Dr. PK Malhotra/ Dr. Seema Jaggi

Rapporteurs: Dr. Eldho Varghese

Technical Session IV

Priorities for Research in Informatics: Current Status and Future Challenges

Chairman: Dr. RC Agrawal, Registrar General, Protection of Plant Varieties and Farmers' Rights Authority, New Delhi

Conveners: Dr. Anil Rai/ Dr. AK Sharma

Rapporteurs: Smt. Shashi Dahiya/ Sh. Sanjeev Kumar

Technical Session V

Statistics and Informatics Interface with Animal Sciences

Chairman: Dr. Arjava Sharma, Director NBAGR Karnal

Conveners: Dr. KK Tyagi/ Dr. Ravinder Malhotra

Rapporteurs: Dr. Med Ram Verma/ Dr. Anil Kumar

Technical Session VI

Statistics and Informatics Interface with Agricultural Engineering

Chairman: Dr. Pitam Chandra, Director CIAE Bhopal

Conveners: Dr. KK Tyagi/ Sh. SD Wahi

Rapporteurs: Dr. Susheel Kumar Sarkar/ Dr. Kaustav Aditya

Plenary Session

Presentation of Reports by Conveners and Summary of Recommendations

Chief Guest: Dr. AK Srivastava, Director NDRI

Chairman: Dr. UC Sud, Director IASRI

Conveners: Dr. Seema Jaggi/ Dr. Ravinder Malhotra

Rapporteur: Dr. AK Gupta

Meeting Organized

- Institute Joint Staff Council Meeting was held on December 09, 2013 under the Chairmanship of Dr. UC Sud, Director(A) IASRI.

Seminars Delivered

Seminars on different areas of Agricultural Statistics, Computer Application and Bioinformatics 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), M.Sc. (Computer Application) and M.Sc. (Bioinformatics) and Guest seminars.

The Details of Seminars Delivered

Category	Type of seminar	Number
Scientist	Project Completed	02
	New Proposal	01
Foreign Training		02
Student	Course	09
	ORW	13
	Thesis	07
Total		34

PUBLICATIONS

Research Papers

- Bhowmik, Arpan, Jaggi, Seema, Varghese, Cini and Varghese, Eldho (2013). Universally optimal second order neighbour designs. *Model Assisted Statistics and Application*. **8**, 309–314.
- Biswas, Sreekumar, Marwaha, Sudeep, Malhotra, PK, Wahi, SD, Dhar, DW and Singh, Richa (2013). Building and querying microbial ontology. *Procedia Technology, J. Elsevier*, **10**, 13-19.
- Chauhan, JS, Singh, KH, Mishra, DC (2013). AMMI and bi-plot analyses to identify stable genotypes of Indian Mustard (*Brassica juncea* L.) for oil and seed meal quality characters. *SABRAO J. Breeding and Genetics*, **45(2)**, 195-202.
- Dahiya, Shashi, Chaturvedi, KK, Jaggi, Seema, Bharadwaj, Anshu and Varghese, Cini (2012). A digital education initiative in agriculture. *J. Farming Systems Res. Dev.*, **18(2)**, 175-179.
- Gharde,,Yogita, Rai, Anil and Jaggi, Seema (2013). Bayesian prediction in spatial small area models. *J. Ind. Soc. Agril. Statist.* **67(3)**, 355-362.
- Iqebal, MA, Ghosh, H and Prajneshu (2013). Fitting of SETAR three-regime nonlinear time series model to Indian lac production data through genetic algorithm. *Ind. J. Agril. Sci.*, **83 (12)**, 130-132.
- Iqebal, MA, Sarika, Dhanda, SK, Arora, V, Dixit, SP, Raghava, GPS, Rai, A and Kumar, D (2013). Development of a model webserver for breed identification using microsatellite DNA marker. *BMC Genetics*, (<http://www.biomedcentral.com/1471-2156/14/118/abstract>).
- Iqebal, MA, Sarika, Arora, Vasu, Verma, Nidhi, Rai, Anil and Kumar, Dinesh (2013). First whole genome based microsatellite DNA marker database of tomato for mapping and variety identification. *BMC Plant Biology*, (<http://www.biomedcentral.com/1471-2229/13/197/abstract>).
- Islam, SN, Dhar, Shiva and Sharma, Kirti (2013). Appropriate cultural practices for growing wheat using expert system. *Annals of Agril. Rev.*, **34(4)**, 380-389.
- Jambhulkar, Nitiprasad N. and Lal, Krishan (2013). Construction of two-level irregular minimum aberration fractional factorial plans. *Model Assisted Statist. Appln.*, **8**, 301–307.
- Kaur, Charanjit, Nagal, Shweta, Nishad, Jyoti, Kumar, Ravinder and Sarika (2013). Evaluating eggplant (*Solanum melongena* L) genotypes for bioactive properties: A chemometric approach. *Food Res. International* (<http://authors.elsevier.com/sd/article/S096399691300536X>)

- Malik, Jitender Kumar, Singh, Ravinder, Thenua, OVS and Kumar, Anil (2013). Response of Pigeonpea (*Cajanus Cajan*) + Mungbean (*Phaseolus Radiatus*) intercropping system to phosphorus and biofertilizers. *Legume Res.*, **36(4)**, 326-330.
- Paul, Amrit Kumar, Paul, Ranjit Kumar and Alam, Wasi (2013). Effect of non-normality and inadmissible estimates on estimation of heritability. *Ind. J. Anim. Sci.*, **83 (12)**, 1355–1357.
- Priyamedha, Singh, VV, Chauhan, JS, Meena, ML, Mishra, DC (2013). Correlation and path coefficient analysis for yield and yield components in early generation lines of Indian Mustard (*Brassica juncea L.*). *Current Advances in Agril. Sci.*, **5(1)**, 37-40.
- Sarika, Jaggi, Seema and Sharma, VK (2013). First order rotatable designs incorporating neighbour effects. *ARS Combinatoria*, **112**, 145-159.
- Sarkar, Kallol, Varghese, Cini, Jaggi, Seema and Varghese, Eldho (2013). Balanced treatment-control row-column designs. *Int. J. Theo. & Applied Sci.*, **5(2)**, 60-64.
- Shachi, Gahoi, Arya, L, Rai, Anil and Marla, SS (2013). DPPrimer – A degenerate PCR Primer design tool. *Bioinformation*, **9(18)**, 937-940.
- Sharma, Anu, Lal, SB, Mishra, DC, Srivastava, Sudhir and Rai, Anil (2013). A web based software for synonymous codon usage indices. *Int. J. Info. and Computation Technology*, **3 (3)**, 147-152
- Sharma, Anu, Varghese, Cini and Jaggi, Seema (2013). WS-PBIBD - A web solution for partially balanced incomplete block experimental designs. *Computer and Electronics in Agril.*, **99**, 132 – 134.
- Singh, Ravindran, Katiyar, Vijay Kumar, Islam, Shahnawazul (2013). Selecting barley variety through expert system. *Int. J. Engg. and Innovative Technology* (online). **3(4)**, 437-441.
- Sud, UC, Chandra, H and Gupta, VK (2014). On calibration approach based product estimator. *J. Statist. Theo. and Pract.*, **8**, 1-14.

Technical Bulletins

- Ghosh, Himadri and Prajneshu (2012). Fuzzy linear regression models and their applications.
- Ghosh, Himadri and Prajneshu (2012). Nonlinear statistical models and their applications.

Project Report

- Varghese, Eldho and Varghese, Cini (2013). Mating-environmental designs under two-way blocking setup. *I.A.S.R.I./P.R.-16/2013. IASRI Publication.*

Popular Article

- लाल, एस.बी., शर्मा, अनु, चतुर्वेदी, के.के. एवं राय, अनिल (2013). व्यापक जैव वैज्ञानिक डाटा के लिए सुपर कम्प्यूटिंग प्लेट फार्म की स्थापना । नई उम्मीद, अक्टूबर, 2013, 18 ।

Reference Manual

- Varghese, Eldho, Dash, Sukanta and Bhowmik, Arpan. Advances in experimental designs for development of technologies in agriculture (2013).

E-Manual

- Varghese, Eldho, Dash, Sukanta and Bhowmik, Arpan. Advances in experimental designs for development of technologies in agriculture (2013).

INVITED LECTURES DELIVERED

- Training Programme on “Teaching of Post graduate Courses in Horticulture” for five teachers from Afghanistan, organized at IARI, New Delhi during August 01, 2013 to January 31, 2014
 - Parsad, Rajender- SAS: An Overview (2 lectures).

- Training Programme on Advances in Methodologies Paradigm and Tools in Extension Research organized at Division of Agricultural Extension, IARI, New Delhi under the aegis of CAFT scheme during September 17-October 07, 2013:
 - Chandra, Hukum- R Software-An Overview. (2 lectures)
 - Paul, Ranjit Kumar- Linear times series Analysis.
- Postgraduate Course on Biotechnology and Bioinformatics at Ambala College of Engineering & Applied Research, Ambala, Haryana on October 03, 2013
 - Kumar, Dinesh- Application of bioinformatics in germplasm identification and improvement.
- International Training Programme on Teaching of Post Graduate Courses in Horticulture at Horticulture Division, IARI, New Delhi on October 04, 2013.
 - Paul, Amrit Kumar- SPAR, MS EXCEL and SAS Macro (3 lectures)
- Training programme on Market Intelligence held at NCAP, New Delhi during October 17-18, 2013.
 - Paul, RK- ARCH and GARCH Models and ARIMA Models.(2 lectures)
- Training of Officers of Indian Economic Services, Department of Economic Affairs, Ministry of Finance, Government of India at NCAP New Delhi during October 28-November 01, 2013
 - Rai, Anil- Remote Sensing and GIS Applications in Agriculture
- International faculty Training for Afgan Nationals on “Teaching of Post Graduate Courses in Agronomy” organized by the Division of Agronomy, IARI, New Delhi during July 01-December 31, 2013.
 - Parsad, Rajender- (i) Functions and Activities of IASRI; (ii) MS-EXCEL; (iii) Statistics: Introduction and Concepts; (iv) SAS: An Overview; (v) Principles of Design of Experiments; (vi) Design Resources Server and (vii) Indian NARS Statistical Computing Portal. 07 lectures)
- Subject-Matter training on “Bioinformatics Approaches in Genomics, Transcriptomics and Proteomics” from November 12-22, 2013 under the NAIP funded project ‘Establishment of National Agricultural Bioinformatics Grid (NABG) in ICAR’ At NBFGR, Lucknow.
 - Grover, Monendra - Quantum computation in biological networks.
- CAFT training program on “Techniques for Improvements in Plants and Human Health” from November 15 - December 05, 2013 in Biochemistry Department of IARI New Delhi.
 - Rai, Anil - Introduction to Agricultural Bioinformatics.
- Management Development Programme on PME at NAARM Hyderabad during November 18-23, 2013)
 - Sudeep - PIMS-ICAR and HYPM
- Bioinformatics: Invitro to Insilico approaches in Entomology at NBAII, Bangalore from November 18-30, 2013.
 - Grover, Monendra- Quantum computation in biological networks.
- National Training on “Computational Tools for Microbial Research” under “National Agricultural Bioinformatics Grid (NABG)” project during November 19-30, 2013 at National Bureau of Agriculturally important Microorganisms, Mau Nath Bhanjan, UP.
 - Grover, Monendra - Quantum computation in biological networks with special reference to abiotic stress networks.
 - Kumar, Dinesh - Bioinformatics tool for microbial identification along with hands on of bioinformatics tools for microbial species signature.

- NAIP Training Programme on Strengthening Statistical Computing for NARS at MPUAT Udaipur during November 25-30, 2013.
 - Krishan Lal - (i) Basic Statistics, (ii) Testing of Hypothesis, (iii) ANOVA & ANCOVA, (iv) Basic Designs, (v) Split and Strip Plot designs, (vi) MANOVA, (vii) PCA and (viii) Design Resources Server) (8 lectures)
- Subject Matter training programme on “Computational Tools for Animal Genome Resource Data Analysis” held during 2-13 December 2013 at NAIP-NABG project: Animal Domain Centre, NBAGR, Karnal.
 - Dinesh Kumar- lecture and hands on Computational Approach for classification and identification of animal breeds.
- Training Programme on Data Analysis using SAS under NAIP Consortium Strengthening Statistical Computing for NARS at Indian Institute of Soil Science (IISS), Bhopal during December 09-13, 2013.
 - Parsad, Rajender - (i) Statistics: Introduction and Concepts, (ii) Fundamentals of Design of Experiments, (iii) SAS for Statistical Procedures, (iv) Tests of Significance, (v) Correlation and Regression, (vi) Analysis of Experimental Data, (vii) Design Resources Server, (viii) Indian NARS Statistical Computing Portal, and (ix) Principal Component Analysis. (09 lectures)
 - Lal, Krishan - (i) Analysis of Repeated Measurement Data, (ii) Principal Component Analysis, (iii) Factor Analysis and (iv) Soil Quality Index. (04 lectures)
 - Bhar, LM- (i) Regression diagnostics, (ii) Non-linear Models, (iii) Probit Analysis and (iv) Logistic Regression. (04 lectures)
- National Symposium on “Emerging Trends in Agri-Bioinformatics” (ETAB) under Agri-Bioinformatics Promotion Programme at DWR, Karnal during December 16-17, 2013
 - Grover, M. Quantum computation in biological networks with special reference to biotic stress.
- One day sensitization Workshop of Data Analysis using SAS under NAIP Consortium Strengthening Statistical Computing for NARS on December 20, 2013 at IIVR, Izatnagar.
 - Lal, Krishan - (i) Design Resources Server, and (ii) and Basic Designs using SAS (02 lectures)
- Training program for Officers-Trainees of Indian Economic Services, Department of Economic Affairs, Ministry of Finance, during December 23-27 at NCAP New Delhi.
 - Anil Rai -GIS and Remote Sensing.

PAPERS PRESENTED

- International Conference on Advancements in Computing Sciences, Information Techniques and Emerging E-Learning Technologies (ACSITEET-2013), held during October’ 05-06, 2013 at Jawaharlal Nehru University (J.N.U.), New Delhi.
 - Alam, Wasi* and Paul, AK. An alternative statistical approach for evaluating the efficiency of an insecticide.
 - Dahiya, Shashi*, Bharadwaj, Anshu and Chaturvedi, KK. eLearning to Support Agricultural Community.
 - Paul, Amrit Kumar*, Wahi, SD, Paul, Ranjeet Kumar and Alam Wasi. Effect of non-normality and inadmissible estimates on estimation of heritability.
- National Workshop on Bioinformatics Approaches in Agriculture under Agri-Bioinformatics Project of Ministry of Information Technology, New Delhi, held at Directorate of Wheat Research, Karnal during October 10-12, 2013
 - Kumar Dinesh- Handling Next Gen Seq vis-a-vis Bioinformatics (Invited talk)

- National Conference on Agro-biodiversity Management for Sustainable Rural Development held at NAARM, Hyderabad during October 14-15, 2013.
 - Bharadwaj, Anshu* and Dahiya, Shashi. Managing sustainable agro-biodiversity : ICT Intervention.
- Workshop cum training programme on Application of Bioinformatics Tools and Techniques in Fisheries, Aquaculture and Life Sciences held at Bioinformatics Centre, College of Fisheries Sciences, Central Agricultural University, Lembucherra, Agartala, Tripura during October 21-23, 2013
 - Kumar, Dinesh- Global status of Agricultural Bioinformatics: Challenges for India. (Invited talk)
- 7th International Rice Genetics Symposium (RG7) organized at Manila, Philippines during November 05-08, 2013.
 - Balakrishnan, D*, Biswas, A, Robin, S, Rabindran, R and Joel, AJ (2013). Generation mean analysis of yield and blast resistance related traits in rice (*Oryza sativa L.*). (A poster presentation)
- XVII National Conference of Agricultural Research Statisticians organized by IASRI, New Delhi at NDRI, Karnal during November 27-28, 2013.
 - Ajit*, Dhyani, SK and Parsad, Rajender – Current status and future strategies in agroforestry research in the country: Statistical perspectives.
 - Angadi, UB*, Chaturvedi, KK, Lal, SB and Rai, Anil – Thrust areas, present status and new approaches in agricultural informatics.
 - Arora, Alka* - Priorities for research in informatics: Current status and future challenges.
 - Chaturvedi, KK*, Rai, Anil, Lal, SB, Angadi, UB and Sharma, Anu – High performance computing and agricultural computing portal.
 - Choubey, AK* - Priorities for research in informatics: Current status and future Challenges.
 - Iquebal, Mir Asif, Sarika, Mukhopadhyay, CS, Rai, Anil and Kumar, Dinesh* - Global status of agricultural bioinformatics and genomics in India: Issues and challenges.
 - Kumar, Dinesh* and Rai, Anil – Human resource development in agri-bioinformatics in India: Issues & challenges.
 - Lal, SB*, Rai, Anil, Chaturvedi, KK, Angadi, UB and Sharma, Anu – Genome submission portal: Issues and challenges.
 - Parsad, Rajender* and Gupta, VK – HRD in agricultural statistics and informatics: Some policy issues.
 - Prajneshu* and Ghosh, Himadri - Some priorities for research in statistical modelling: Current status and future challenges.
 - Rao, AR* - Handling big-data of Indian agriculture.
 - Rao, AR* - Post-graduate teaching and training in bioinformatics: Current status and future challenges in NARS.
 - Rao, AR*, Meher, PK and Wahi, SD - Statistical genetics - Current scenario and future challenges.
 - Sahoo, Prachi Misra*, Rai, Anil and Ahmad, Tauqueer - Geoinformatics for agricultural research: Current status and future challenges.
 - Sud, UC* - Small area estimation - some applications in India. (Keynote Address)
 - Sudeep* - Priorities for human resource development in agricultural statistics and informatics.
 - Varghese, Cini* - Designs for veterinary trials.

- International Conference on Global IPR system and WTO issues (GIPRS-2013), at CCS University, Meerut.
 - Kumar, Shiv, Kumar*, Anil, Singh, DR, Arya, Prawin, Chaudhary, Khyali Ram, Kanika and Kumar, Sandeep- Evaluation of performance of protection of plant varieties and farmers' right authority (PPV&FRAS): An empirical investigation.
- International Conference on Bimolecular Simulations and Dynamics: Recent Advances and Future Perspectives -2013 organized by Indian Institute of Technology Madras (IITM), Chennai, India.
 - Gupta, Saurabh* and Rao, AR. Molecular modeling and dynamics simulations for identification of inter-domain communication of HSP70 in Indian camel. (Poster Presentation)
- International Conference on Statistics 2013: Socio-economics and Sustainable Challenges & Solutions organized at CR Rao Advanced Institute of Mathematics, Statistics and Computer Sciences, Hyderabad during December 28-31, 2013.
 - Parsad, Rajender * and Gupta, VK. Innovative applications of designs for factorial experiments in national agricultural research system. (Invited talk)
- 67th Annual Conference of Indian Society of Agricultural Statistics organized at Institute of Agricultural Sciences, Banaras Hindu University (BHU), Varanasi during December 18-20, 2013.
 - Aditya, K*, Sud, UC and Chandra, H. Some calibration estimators under two stage sampling design.
 - Ahuja, Sangeeta. SPFE 2.0 (Statistical Package for Factorial Experiments Version 2.0 (Web version)
 - Alam, Md. Wasi*. Study on robustness of sequential testing procedures for size based negative binomial distribution.
 - Alam, Wasi*, Paul, Ranjit Kumar and Paul, Amrit Kumar. Prospects of livestock and dairy production in India under time series framework.
 - Arya, Prawin*, Singh, DR, Singh, KN and Kumar, Anil. Determinants of tube wells installation and buying of groundwater: A north-western Rajasthan experience.
 - Basak, P, Chandra, H* and Sud, UC. Prediction of finite population total under a log normal model.
 - Bhar, Lalmohan*. Forecasting in agricultural system-Status and challenges. (invited talk)
 - Bhowmik, Arpan*, Jaggi, Seema, Varghese, Eldho and Varghese, Cini. Optimal block designs under a non-additive mixed effects interference model. (In the Dr. G.R. Seth memorial young scientist award session).
 - Biswas, Ankur, Ahmad, Tauqueer and Rai, Anil. Rescaling bootstrap technique for variance estimation for ranked set samples in finite population.
 - Chandra, H* and Sud, UC. Geographical weighted regression approach for small area estimation—An application to crop yield estimation.
 - Choubey, AK. Data mining techniques and its applications in agriculture. (Invited Paper).
 - Das, Samarendra. A computational system biology approach to construct gene regulatory networks to salinity response in rice.
 - Dash, Sukanta*, Parsad, Rajender and Gupta, VK. Efficient row-column designs with two rows.
 - Gurung, Bishal*, Paul, Ranjit Kumar, and Ghosh, Himadri. Fitting smooth transition autoregressive nonlinear time-series model using particle swarm optimization technique. (For Dr GR Seth Memorial Young Scientist Award).

- Gurung, Bishal. Stochastic volatility in mean (SVM) model for modelling and forecasting volatile spices export data.
- Islam, SN. Developing e-Platform for seed spice growers.
- Jaggi, Seema, Varghese, Eldho*, Varghese, Cini and Bhowmik, Arpan. Construction of neighbour balanced block designs using BIB and PBIB designs.
- Jambhulkar, Nitiprasad N, Lal, Krishan*, Parsad, Rajender and Gupta, VK. Construction of regular and irregular fractional factorial plans with minimum aberration. (Invited talk in the session on Advances in Design and Analysis of Experiments)
- Kumar, Anil* and Chaturvedi, Ajit. Bayesian estimation procedures for the reliability function and $P(X>Y)$ of inverse Weibull distribution under SELF and general entropy loss function (GELF)
- Kumar, Arvind, Varghese, Cini*, Varghese, Eldho and Jaggi, Seema. Experimental designs under three-way blocking structure.
- Kumar, Sanjeev*. Synergetic regulatory networks mediated by microRNAs and transcription factors during salinity and heat stress in contrasting genotypes of *Oryza* spp.”
- Mishra, DC. Trait associated genes prediction tool using non-linear penalized SVM”
- Mohd Harun*, Varghese, Cini, Varghese, Eldho and Jaggi, Seema. Experimental designs involving three-way crosses for breeding trials.
- Panwar, Sanjeev. Use of nonlinear regression analysis for forecasting crop yield.
- Parsad, Rajender* and Gupta, VK. Design resources server. (Invited Talk in the Session on Advances in Design and Analysis of Experiments).
- Paul, AK, Behera, Subrat Keshori, Iquebal, Asif and Wahi, SD*. Some aspect of estimation of heritability of mastitis disease.
- Paul, Ranjit Kumar*. An application of long memory time series for forecasting commodity prices.
- Paul, Ranjit Kumar*. Nonlinear time-series models and their applications in forecasting agriculture systems on sub-themes “Forecasting and forewarning techniques in agricultural research”.(Invited Talk)
- Sarkar, Susheel Kumar*, Lal, Krishan and Gupta, VK. Construction of linear trend-free multilevel fractional factorial experiments.
- Varghese, Cini*, Jaggi, Seema and Varghese, Eldho. On some developments in crossover designs. (Invited Paper in the Session Advances in design and analysis of experiments).
- Varghese, Eldho* and Varghese, Cini. Efficient MERC designs for diallel cross experiments with specific combining abilities.
- Wahi, SD* and Paul, AK. Application of growth curve parameters in early selection of pigs.
- Workshop on Valuation and Pricing of Technologies at National Agricultural Science Centre Complex, New Delhi on December 26, 2013.
 - Singh, KN. Market research and technology foresight for valuation and pricing.
- National Symposium on Mushrooms for Medicinal and Nutritional Security under changing Agro-climatic Conditions at Dr. YS Parmar UHF, Nauri (HP), during December 27-28, 2013
 - Gautam, Y*, Marwaha, S, Singh, Pal and Manikandan. IT based interactive advisory aystem for stakeholders of mushroom industry.

PARTICIPATION

Conferences / Workshops / Trainings/ Seminars / Symposia etc.

- One day workshop NDSAP on October 08, 2013. (Dr UC Sud)
- ICAR Vichar Manch “Spirituality in Management” at NASC Complex, New Delhi on October 15, 2013. (Dr. Sushila Kaul)
- 2nd NKN (National Knowledge Network) Annual Workshop on Enhancing Research Collaborations through NKN organised at IISC Bangalore during October 17-19, 2013. (Rakesh Kumar Saini)
- Brain Storming Workshop on Land Use Planning for Multifunctional Agriculture and Land Use Policy on October 18, 2013 at NASC Complex, New Delhi. (Dr UC Sud)
- From Agriculture to Agribusiness : The pathway of Chile” at New Delhi on October 22, 2013. (Dr. Sushila Kaul)
- Workshop on Climate Change Statistics Organized by Global Change Programme, Jadavpur University, Kolkata during October 24-25, 2013. (Dr. RK Paul)
- Global Agri Connect 2013 at IARI, New Delhi on October 25, 2013. (Dr. Sushila Kaul)
- Workshop on “Integration and mainstreaming of the activities under three mega projects of the Council: BAM, NABG and Phenomics (NFBSFARA) on November 09, 2013, Chaired by Hon’ble Secretary DARE & DG ICAR & Co-Chaired by Dr Mangala Rai, Adviser to CM, Govt of Bihar & Former Secretary DARE & DG ICAR. (Dr. Anil Rai and Dr Dinesh Kumar)
- Training Programme on “Quantitative Methods for Policy Analysis Using GAMS” held at NCAP, New Delhi during November 18-22, 2013. (Dr. RK Paul)
- Workshop on Mapping the Cultural Authority of Science across Europe and India (MACAS-EU & India 2012-14) on November 23, 2013. (Dr. KN Singh and Md. Wasi Alam)
- 2nd Aryabhatta Memorial Lecture entitled Technologies for Countering Terrorism—DRDO’s Initiatives by Dr. B. Kumar, Project Director, DRDO organized by Swadeshi Science Movement at NPL, New Delhi on November 29, 2013. (Dr. Sushila Kaul)
- National Symposium on Mushrooms for Medicinal and Nutritional Security under changing Agro-climatic Conditions during 27-28 December, 2013 at Dr. YS Parmar UHF, Nauni (HP). (Dr. Yogesh Gautam)
- 2 days Manthan awards Programme at India Habitat Centre during December 05-06, 2014. An IASRI stall was also put up at the venue for demonstrating the Expert System on Seed Spices. (Sh. SN Islam, Ms. Shashi Dahiya and Sh. R.K Saini)
- Winter School on “Development of web application for agricultural information management” which was held from November 19 to December 09, 2013 at IASRI, New Delhi. (Sh. PK Meher and Sh. Arpan Bhowmik)
- Regional training workshop on GIS and Climate Analogue Tools for the PGR Management and Enhanced Use at National Bureau of Plant Genetic Resources (NBPGR), New Delhi in collaboration with Bioversity International during December 02-06, 2013. (Sh Ankur Biswas)
- NAIP cross cutting workshop held at ISI, Kolkata during December 03-04, 2013. (Dr. Rajender Parsad)
- NAIP Workshop on Cross Cutting Experiences in ICT sub-Projects during December 06-07, 2013. (Dr. Rajender Parsad)

Meetings

- Meeting with Officials from Revenue Board, Horticulture Board, NSSO and DES Rajasthan, at IASRI on October 04, 2013. (Dr. UC Sud, Dr. Tauqueer Ahmad and Dr Hukum Chandra)
- Empowered Committee meeting for Implementation of the Scheme “Awards & Fellowships and Outstanding and Meritorious Research Studies in Statistics’ on October 10, 2013 at Sardar Patel Bhavan, New Delhi. (Dr UC Sud)
- Meeting with Professor L. Dandona, Public Health Foundation of India, New Delhi to discuss the data related to nutritional data aspect for Small area estimation on October 25, 2013. (Dr Hukum Chandra)
- Meeting on Recruitment of Consultants (Statistics) on Contractual Basis on October 28, 2013 at Ministry of Agriculture, Department of Animal Husbandry, Dairying and Fisheries, New Delhi. (Dr UC Sud)
- Meeting of Constitution of Technical Committee to examine the method of sampling of imported fertilizer on October 29, 2013 at Krishi Bhawan, New Delhi. (Dr UC Sud)
- Mid-term Review meeting organized by the SMD for reviewing the progress of achievements against the set targets of success indicators for RFD 2013-2014 of RCs and RSCs, at IASRI, New Delhi on November 06, 2013. (Dr UC Sud, Dr KK Tyagi, Dr AK Mogha and Sh KPS Gautam)
- Brain Storming Session on “Bioresources and Sustainable Development in North East” during November 11-12, 2013 at Institute of Bioresources & Sustainable Development (DBT, Govt of India), Imphal, Manipur.(Dr Dinesh Kumar)
- Third meeting of the committee to examine methodological issues in the fixing minimum support prices on November 12, 2013 at Krishi Bhawan, New Delhi. (Dr UC Sud)
- Meeting with Senior Scientist of a Consulting firm of Washington D.C., USA regarding the study relating to harvest and post harvest losses of crops/commodities funded by Bill Gates Foundation held at IASRI, New Delhi on November 12, 2013. (Dr Tauqueer Ahmad)
- Meeting with Advisor (Hort.) and Director (Hort.), Department of Agriculture and Cooperation (DAC), Ministry of Agriculture, Govt. of India regarding funding of the submitted project proposal entitled “Study to test the developed alternative methodology for estimation of area and production of horticultural crops” held at IASRI, new Delhi on November 13, 2013. (Dr Tauqueer Ahmad, Dr. Prachi Misra Sahoo, Dr. KK Tyagi, Dr. AK Gupta, Kaustav Aditya and Man Singh).
- Meeting with Sh KK Dhingra, Director, Central Fertiliser Quality Control & training Institute, Faridabad on November 14, 2013. (Dr KK Tyagi and Dr Tauqueer Ahmad).
- Meeting under the Chairmanship of Principal Advisor, DES, Ministry of Agriculture, Govt. of India held at Krishi Bhawan, New Delhi on November 14, 2013 in which a presentation on the developed alternative sampling methodology for estimation of average yield of cotton was made by IASRI, New Delhi. (Dr Tauqueer Ahmad)
- First Meeting of the Technical Sub-committee on Sampling held at IASRI, New Delhi on November 29, 2013 under the chairmanship of Dr UC Sud, Director, IASRI (constituted during First Meeting of Technical Committee to examine the methods of sampling of imported fertilizers and methods of analysis held on October 29, 2013 under the Chairmanship of DDG (NRM), ICAR in Krishi Bhawan) with Sh KK Dhingra, Director, CFQCTI; Sh TK Dutta, Adviser, DES; Dr RK Tewatia, FAI; Sh M.P. Adarana Kumar, Asstt

Director of Agri, Kakinada; Sh B. Vijaya Prasad, Asstt Director of Agri (R), Vishakhapattanam; Sh M Arun, Asstt Director, CFQCTI. (Dr KK Tyagi and Dr Tauqueer Ahmad).

- Meeting with DDG, Ministry of Tribal Affairs, Govt. of India, at New Delhi on December 05, 2013. (Dr. UC Sud and Dr. Hukum Chandra)
- Meeting of the Committee for examining the proposals of Type Studies on December 06, 2013 at Sardar Patel Bhawan, New Delhi. (Dr UC Sud)
- Meeting with Nodal Officers of Central Government Ministries/ Departments on December 12, 2013 at Sanchar Bhawan, New Delhi. (Dr UC Sud)
- 32th Meeting of the Central Joint Staff Council (CJSC) meeting on December 16, 2013 at NASC, New Delhi. (Dr UC Sud)

CONSULTANCY /ADVISORY SERVICES PROVIDED

- Dr Prachi Misra Sahoo provided Consultancy to Ministry of Agriculture and Fisheries, Sultanate of Oman during Sept 15. – 10 Oct, 2013. During the consultancy, following work was done:
 - Conducted training on 'Geographic Information System (GIS) & Remote Sensing applications in Agriculture'
 - Evaluated the existing resources, methodology and database available in the Department of Rangeland Resources
 - Assessed the human resources, materials (satellite images), software, and technical capacity in place for the potential use of GIS and remote sensing for application in the agriculture.
 - Visited various ministries and had meetings with the officials working in the field of GIS regarding satellite data, toposheets, control points availability.
- Dr Hukum Chandra advised Professor RM Pandey, Head, Department of Biostatistics, All India Institute of Medical Sciences, New Delhi on Small Area Estimation Issues in health and nutritional data
- Sh Ankur Biswas Advised Biswajit Mondal, Ph.D. student at Division of Genetics, IARI regarding use of Radar Chart for appropriate visualization of differences in two varieties through a multivariate data of several traits using Matlab software. Also provided advisory services to Dr. D. Balakrishnan, Scientist, DRR, Hyderabad on Path analyses for yield and blast resistance traits in Rice.
- Dr. Amrit Kumar Paul provided advisory services to Dr. Yasvir Singh Shivay, Principal Scientist, Division of Agronomy, IARI on Path analyses for the two data sets one for rice and another for wheat.
- Dr. Arpan Bhowmik and Dr. Eldho Varghese advised Mr. Dibakar Ghosh, a scientist from Directorate of Weed Science Research, Jabalpur, Madhya Pradesh on the use of factorial experiments with extra treatment for studying the response of 6 different varieties of Mustard crop based on two factors viz. Time of Application and Doses of glyphosate. There were four levels of time of applications as 20, 30, 40 and 50 DAS. The factor doses of glyphosate had 5 levels as 40, 50, 60, 80 and 100 g/ha. Each treatment combinations have three replications. The experiment also consisted of one control.
- Dr. Arpan Bhowmik advised Dr. J. Auxilia, Assistant Professor from Department of Fruit Crops, Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore on the use of stepwise regression for identifying the most significant explanatory variables and studying their effects on yield of different varieties of Banana. Different explanatory variables involved in this study were Plant height, Stem girth, Leaf area, No. of leaves, Days to shoot, Days to harvest, Crop duration, No. of hands, Fingers per hand, Finger weight, Finger length, Finger girth etc. The stepwise regression analyses were performed separately for 47 different varieties of Banana.

- Dr. A.K.Choubey, being Chairman of monitoring committee of Security Audit carried out by M/s KPMG for ASRB Online Examination project, has guided on various issues and designing the format of progress reporting.
- Dr. Krishan Lal provided consultancy to the Associate Professor of Veterinary College and Research Institute, Tirunelveli (TN) for the analysis of the experiment of feeding trial data of Japanese quail to find out the effect of various feeds on its body weight in meat type birds. The data were analyzed using the technique of repeated measurements. The feeds, time points and interaction of feeds and time points were found to be significant.
- Dr Tauqueer Ahmad provided guidance to Ms. Nimisha Agrawal, Ph.D. scholar of National Institute of Advanced Studies, Indian Institute of Science Campus, Bangalore on her research proposal specifically, sampling design, survey procedures and method of analysis.

PERSONNEL

Congratulations on your Promotion

Name	Designation	Effective Date
Sh. DPS Mann	AAO	19.11.2013
Smt. Rajni Gupta	Assistant	02.11.2013
Smt. Neelam Sethi	Assistant	02.11.2013
Smt. Harsh Kapoor	Assistant	02.11.2013
Smt. Manju Gulati	Assistant	02.11.2013
Smt. Anita Malik	Assistant	02.11.2013
Sh. Rambhool	Assistant	02.11.2013

Wish you Happy Retired Life

Name	Designation	Effective Date
Sh. VK Jain	Scientist	31.10.2013
Sh. BP Maurya	Technical Officer	30.11.2013
Sh. DPS Mann	AAO	30.11.2013
Sh. Anand Prakash Verma	Assistant	31.12.2013

Financial Upgradation

Name	Designation	Effective Date
Sh. KK Hans	Assistant	08.10.2013
Sh. Pradeep Kumar	Assistant	01.11.2013
Smt. Meenu Kohli	PA	12.11.2013

Transfer

Name	From	Effective Date
Sh. Mayank Singh Pundeer, Assistant	Sugarcane Breeding Institute (ICAR), Coimbatore 641007	02.12.2013

OBITUARY

The Director, Staff and Students of IASRI deeply condole the death of Sh. Ghasi Ram, Assistant Chief Technical Officer who expired on 25.10.2013



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