- **Research Achievements**
- **Human Resource Development**
- **Awards and Recognitions**
- **Panorama of Activities**
- **Publications**
- **Lectures Delivered**
- **Participation**
- **Consultancy/Advisory Services**
- **Personnel**

From Director's Desk . . .

This newsletter highlights salient research achievements, training programmes and workshops organized and other significant activities performed at the institute during the period under report.

In the study "Modelling and Forecasting of Time-Series with Long Memory Processes", it is found that both the returns as well as squared return spot price series data are stationary. By applying the GPH tests for testing long memory to the return and squared returns of the spot prices of gram, it was observed that for the return series, the test showed no evidence of LM patterns; as the null hypothesis of no persistence was not rejected. The result for squared return was different from that of the returns. Indeed, long memory property were found to be highly significant for the squared returns.

Under the study CerealESTDb: A searchable database for abiotic stress induced, annotated ESTs of cereals has been developed. This is a user-friendly, menu driven, interactive and web-based database named as CerealESTDb. This database contains assembled and annotated ESTs of of rice, wheat, sorghum and maize induced under cold, heat, drought, salinity stress as well as on application of ABA. This will also provide information about genes, ontology and corresponding pathways related to these ESTs.

An efficient methodology has been developed for comparing protein structure using elastic Elastic Shape Analysis (ESA) in which the sequence of 3D coordinates atoms of protein structures has been used as parameterised curve supplemented by addition of auxiliary information based on side-chain properties.

Five training programmes, one sponsored by Education Division of ICAR, one by Ministry of Agriculture Government of India and three sponsored by IASRI, New Delhi were organised. Besides, four national workshops have also been organized.

Scientists of the institute have received various awards and recognitions. It is a matter of pride for the institute that Dr. Hukum Chandra received National Award in Statistics 2014-15 from the Ministry of Statistics and Programme Implementation, Government of India. Scientists have visited various countries on different assignments. During the period, ten new projects were initiated. Scientists of the Institute have published 24 research papers, 09 project reports, 04 training manuals apart from this 04 databases and one e-learning portal were also developed which are available at Institute's web site. Besides, 04 invited lectures were delivered and scientists have participated in different conferences/ symposia/ workshops, etc.
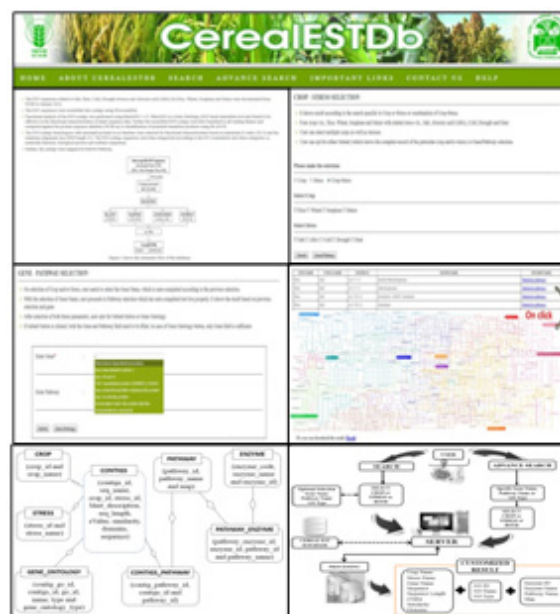
It is hoped that the contents of this document would be informative and useful to scientists in NARS. Any suggestions for improving the contents of the newsletter further would be highly appreciated.
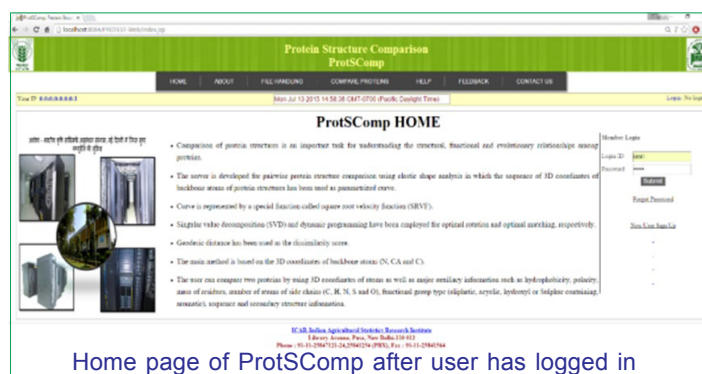
(UC Sud)

RESEARCH ACHIEVEMENTS

- **Modelling and Forecasting of Time-Series with Long Memory Processes.** High frequency financial time-series of returns are often characterised by having excess kurtosis and autocorrelated squared observations. Moreover, these autocorrelations tend to decay very slowly, suggesting that squared returns could be characterised as a long memory process. This property is best described in Long-Memory Stochastic Volatility (LMSV) model. Daily time series data for spot prices of gram in Delhi Market during 1 January, 2009 to 31 July, 2013 was taken for application of LMSV model. The return series were computed as differences in log prices. The data was collected form Ministry of Consumer's Affairs, Government of India. The data for the period January 1, 2009 to June 30, 2013 was used for model building and the remaining data was used for model validation. It was found that both the returns as well as squared return spot price series data are stationary. We applied the GPH tests for testing long memory to the return and squared returns of the spot prices of gram. For the return series, the test showed no evidence of LM patterns; as the null hypothesis of no persistence was not rejected. The result for squared return was different from that of the returns. Indeed, long memory property was found to be highly significant for the squared returns. Since squared returns are a good proxy for volatility, these findings thus suggest that the conditional volatility of return would tend to be range-dependent, persist and decay slowly. Intuitively, this volatility persistence can be appropriately modeled by a LMSV process because it allows for long memory behavior and slow decay of the impact of a volatility shock. It is, however, important to note that the estimate of the LM parameter d is less than 0.5 for squared return indicating the stationarity of the process.

- **CerealESTDb: A searchable database for abiotic stress induced, annotated ESTs of cereals.** Cereals are quite sensitive to different abiotic stresses, which causes drastic reduction in their productivity and quality. These abiotic stresses are prevalent, especially in the changing climatic conditions. In view of this, lot of data has been generated in recent times on the stress induced transcripts such as expressed sequenced tag (ESTs), microarray, RNAseq etc. Among these data, abundant amount of ESTs related to abiotic stress in various cereal crops are available. However, the data on stress induced ESTs of the cereals remains largely underutilized as they are scattered. Thus, it is inadequate to provide insight in to the biological process. Therefore, a user-friendly, searchable, interactive and web-based database named as CerealESTDb has been created. This database contains assembled and annotated ESTs of rice, wheat, sorghum and maize induced under cold, heat, drought, salinity stress as well as on application of ABA. This will also provide information about genes, ontology and corresponding pathways related to these ESTs. Some of the genes reported here are putative and novel in nature. This database is intended to present details of biological process at molecular level responsible for abiotic stress mitigation/process. The CerealESTDb contains unique entries with respect to genes, pathways and gene ontology terms and can be accessed at http://cabgrid.res.in/CerealESTDb.

Algorithm for Protein Structure Comparison

Protein structure comparison plays an important role in In-Silico functional prediction of a new protein. It is also used for understanding the evolutionary relationships among proteins, predicting protein structures and functions. In this study, an efficient methodology has been developed for comparing protein structure using Elastic Shape Analysis (ESA) in which the sequence of 3D coordinates atoms of protein structures has been used as parameterised curve which is supplemented by addition of auxiliary information based on side-chain properties. This curve is represented by a special function called Square Root Velocity Function (SRVF). Further, Singular Value Decomposition (SVD) and dynamic programming have been employed for optimal rotation and optimal matching of the proteins. Also, Geodesic distance has been calculated and used as the dissimilarity score. The performance of the developed methodology is tested and found to be more efficient when compared with the existing methods. Source codes for different functions have been developed in R. Also, user friendly web-based application called ProtSComp has been developed using above algorithm for comparing protein structures that can be accessed freely by the users.

Home page of ProtSComp after user has logged in

AWARDS AND RECOGNITIONS

* Dr. Hukum Chandra received National Award in Statistics 2014-15 from the Ministry of Statistics and Programme Implementation, Government of India, on June 29, 2015, at Vigyan Bhawan, New Delhi. The award was conferred by General (Dr.) VK Singh, Hon'ble Minister of State, Ministry of Statistics and Programme Implementation, Government of India.

- Dr. Rajender Parsad nominated as Executive President of Society of Statistics, Computer and Application, New Delhi.

- Dr. Tauqueer Ahmad has been nominated by Aligarh Muslim University (AMU), Aligarh as a Co-Opted Member of Board of Studies (BOS) of Department of Statistics and Operations Research, AMU, Aligarh.

- Dr. MA Iquebal received Appreciation Letter by Director, ICAR-CIFA, Bhubaneswar for conducting workshop on "Bioinformatics Tools for Fish Genomics" under CABin Network Scheme at ICAR-CIFA, Bhubaneswar.

- Dr. Sarika received Appreciation Letter by Director, ICAR-CIFA, Bhubaneswar for conducting workshop on "Bioinformatics Tools for Fish Genomics" under CABin Network Scheme at ICAR-CIFA, Bhubaneswar.

- Dr. Dinesh Kumar Received Appreciation letter by Director, ICAR-CIFA, Bhubaneswar through Director, ICAR-IASRI for contribution in workshop on "Bioinformatics Tools for Fish Genomics" under CABin Network Scheme at ICAR-CIFA, Bhubaneswar.

- Dr. Hukum Chandra chaired technical session on "Ag. Statistics, Ag. Economics, Extn. Education & Home Science in 2050" in Agri Search 2050 at New Delhi on May 18, 2015.

NEW PROJECTS INITIATED

- Developing a comprehensive web based system for agriculturally important microbes (Collaboration with NBAIM, Mau) AGENIASRICIP201500500042, w.e.f. 01.04.2015.

- Implementation of ICAR-ERP, unified communication and web hosting solution. AGENIASRISIL201500600043, w.e.f. 10.04.2015.

- A study on price efficiency in agricultural commodity market. AGENIASRISIL201500700044, w.e.f. 13.05.2015.

- Development of methodology for nonparametric modeling of time-series data and its application in agriculture. AGENIASRISIL201500800045, w.e.f. 06.06.2015.

- Computational identification and modeling of genetic variation in relation to performance traits in buffaloes. AGENIASRICOP201500900046 (Collaboration with CIRB, Hisar), w.e.f. 06.06.2015.

- Genomic data analysis for identication of economically important markers and viral diagnostics in pulses. AGENIASRICOP201501000047 (Collaboration with IIPR, Kanpur), w.e.f. 06.06.2015.

- Mining and validation of candidate gene markers and screening on antimicrobial peptides of black pepper and small cardamom. AGENIASRICOP201501100048 (Collaboration with IISR, Lucknow), w.e.f. 5.06.2015.

- Computational approach for harnessing genome information and its integration with wheat phenome for efficient varietal development. AGENIASRICOP20150120004 (Collaboration with IIWBR, Karnal), w.e.f. 15.06.2015.

- Bioinformatic analysis of sequence data of brinjal and bitter gourd for identification of functional and regulatory genes for traits of economic importance. AGENIASRICOP201501300050 (Collaboration with NBPGR, New Delhi), w.e.f. 16.06.2015.

- Molecular and computational approach to delineate metabolic pathways for better carbohydrate utilization in Labeo spp. AGENIASRICOP201501400051 (Collaboration with CIFA, Mumbai), w.e.f. 16.06.2015.

HUMAN RESOURCE DEVELOPMENT
Training Programmes/ Workshops Organised

S.No.	Title	Venue	Date	Sponsored by	No. of Participants
	Training Programmes				
1.	Designing and Analysis of Experiments for the technical personnel of ICAR Cordinators: Dr. Susheel Sarkar Dr. Sukanta Dash	IASRI, New Delhi	20- 25 April 2015	Education Division of ICAR	16
2.	Training programmes for the MIS-FMS project with main focus on payroll Cordinators: Dr. Sangeeta Ahuja Sh. SN Islam	IASRI, New Delhi	15- 18 April 2015 11-16 May 2015 28-30 May 2015	IASRI, New Delhi	20 24
3.	A refresher training programme on Integrated Sample Survey Methodology Cordinators: Dr. Hukum Chandra Dr. Kaustav Aditya	IASRI, New Delhi	08-12 June 2015	Ministry of Agriculture Government of India	22
4.	Training programme for Payroll and HR module under MIS/FMS project Cordinator: Sh. SN Islam	IASRI, New Delhi	22-24 June 2015	IASRI, New Delhi	18
5.	Training programme for graduate students on Statistical Analysis using Software Cordinators: Dr. Seema Jaggi Dr. Eldho Varghese	IASRI, New Delhi	01 June - 15 July 2015	IASRI, New Delhi	2
	Workshops				
6.	Workshop on Bioinformatics Tools for Fish Genomics jointly organized with ICAR-CIFA, Bhubaneswar Cordinator: Dr. MA Iquebal	ICAR-CIFA, Bhubaneswar	21-22 April 2015	CABin Scheme	18
7.	Four days' Workshop on "Payroll and HR module" specially conducted for IARI personnel Cordinator: Dr. Mukesh Kumar	IASRI, New Delhi	05- 08 May 2015	IASRI, New Delhi	41
8.	DBT Fish genome project Second Partner's Meet Cordinator: Dr. Dinesh Kumar	IASRI, New Delhi	07 May 2015	DBT, New Delhi	9
9.	Workshop on Accelerating data-intensive genome analysis in wheat Cordinator: Dr. Sarika	ICAR-IIWBR, Karnal	12-14 May 2015	CABin Scheme	12

VISIT ABROAD

- Dr. UC Sud, Director, IASRI visited FAO, Rome during 15-18 April and 23 June to 01 July, 2015 to attend Expert meeting on Improving methods for estimating area, yield and production under mixed and continuous cropping and Improving methods on estimating post harvest losses held at Food and Agriculture Organization (FAO) Headquarter, Rome, Italy.

- Dr. Tauqueer Ahmad, Principal Scientist visited FAO, Rome during 15-18 April, 2015 to attend Expert meeting on Improving methods for estimating area, yield and production under mixed and continuous cropping and Improving methods on estimating post harvest losses held at Food and Agriculture Organization (FAO) Headquarter, Rome, Italy.

- Dr. Hukum Chandra, National Fellow, ICAR visited Sri Lanka as International Consultant, for short term FAO consultancy under Global Strategy to Improve Agricultural and Rural Statistics in Sri Lanka during June 16-26, 2015.

PANORAMA OF ACTIVITIES

- Institute Joint Staff Council meeting was held on 01 April, 2015 under the Chaimanship of Director, IASRI.

- RFD Committee meeting was organized under the chairmanship of the Director on April 24, 2015. The Annual Achievements of the year 2014-15 related to the Institute RFD 2014-15 were presented in the meeting. The draft of the Institute RFD 2015-16 was also discussed.

- An expert meeting was organized at the Institute on April 27, 2015 for the project "Pilot study for developing State level estimates of crop area and production on the basis of sample sizes recommended by Professor Vaidyanathan Committee report". Dr Padam Singh, Dr SK Raheja, Dr BBPS Goel and Dr AK Srivastva were invited as the experts in the meeting. A detailed discussion was made regarding the sampling design to be adopted for data collection under the project.

Seminars Delivered

Seminars in different areas of Agricultural Statistics, Computer Application and Bioinformatics were delivered by the Scientists and Students of the Institute. The seminars included presentations on salient findings of the completed research projects and new project proposal 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). One Guest seminar was delivered by Prof. Bikash Sinha, Former Member National Statistics Commission and Professor, Indian Statistical Institute, Kolkata on 08 June 2015. The title of the seminar was "Into the mysterious world of p the Bernoulli parameter"

The Details of Seminars Delivered

Category	Type of seminar	Number
Student	Course	08
	ORW	05
	Thesis	09
	Open	01
Scientist	Project Proposal	01
	Project Completion	01
Guest		01
Total		**26**

PUBLICATIONS

Research Papers

- Balakrishnan, R, Wason, M, Padaria, RN, Singh, P and Varghese, E (2014). An analysis of constraints in e-learning and strategies for promoting e-learning among farmers. *Economic Affairs*, **59**, 727-734.

- Basak, P, Chandra, H, Sud, UC and Lal, SB (2013). Prediction of population total for skewed variable under a log transform model. *Int. J. Agricult. Stat. Sci.*, **9**, Supplement 1, 143-154.

- Bhatia, K, Asrey, R and Varghese, E (2015). Correct packaging retained phytochemical, antioxidant properties and increases shelf life of minimally processed pomegranate (*Punica granatum L.*) arils Cv. Mridula. *J. Sci. Industrial Res.,* **74**,141-144.

- Bhowmik, A, Jaggi, S, Varghese, C and Varghese, E (2015).   Optimal block designs with interference effects from neighbouring units under a non-additive model. *Comm. Statist.Theo. Methods,* **44(10),** 2092-2103.

- Gupta, S, Jadaun, A, Kumar, H, Raj, U, Varadwaj, PK and Rao, AR (2015). Exploration of new drug like inhibitors for serine/threonine protein phosphatase 5 of Plasmodium falciparum: A docking and simulation study. *J. Biomolecular Structure and Dynamics*, DOI: 10.1080/07391102.2015.1051114.

- Jerome, A, Pandey, AK, and Sarkar, SK (2015). Homology modeling of single nucleotide polymorphisms in candidate genes controlling embryonic growth of buffalo. *Ind. J. Anim. Sci.*, **85 (6)**, 578–583.

- Joshi, MA, Aggarwal, D, Pandey, A, Bind, D and Alam, W (2015). Generation of distinct profiles of rice varieties based on agro-morphological characters and assessment of genetic divergence. *Res. on Crops*, **16(2),** 311-319.

- Kale, SJ, Jha, SK, Jha, GK, Sinha, JP and Lal, SB (2015). Soaking induced changes in chemical composition, glycemic index and starch characteristics of basmati rice. *Rice Sci.,* **22(4)**:*DOI: 10.1016/ S1672-6308(14)60296-1.*

- Koltes, JE, Kumar, D, Kataria, RS, Cooper, V, Reecy. JM (2015). Transcriptional profiling of PRKG2-null growth plate identifies putative down-stream targets of PRKG2. *BMC Res Notes*, **8(1)**, 177. DOI: 10.1186/s13104-015-1136-6.

- Kumar, R, Bhowmik, A, Chakdar, ,H, Elumalai, S and Pabbi, S (2015). Biochemical characterization and diversity analysis of cyanobacteria isolated from different locations. *VEGETOS*, **28(1**), 38-48.

- Kushwaha, B, Kumar, R, Agarwal, S, Pandey, M, Nagpure, NS, Singh, M, Srivastava, S, Joshi, CG, Das, P, Shah, TM, Patel, AB, Patel, N, Koringa, P, Das, SP, Patnaik, S, Bit, A, Sarika, Iquebal, MA, Kumar, D and Jena, JK (2014). Assembly and variation analyses of C. batrachus mitogenome retrieved from WGS data and its phylogenetic relationship with other catfishes. *Meta Gene.*, **5**, 105-114.

- Lama, A, Jha, GK, Paul, RK and Gurang, B (2015). Modelling and forecasting of price volatility: An application of GARCH and EGARCH Models. *Agril. Eco. Res. Rev.*, **28(1)**, 73-82.

- Nigam, D, Kadimi, PK, Kumar, S, Mishra, DC and Rai, A (2015). Computational analysis of miRNA-targets community network reveals cross talk of different metabolism. *Genomics Data,* **5**, 292-296.

- Ojha, S and Bhar, LM (2015). Detection of outliers in designed experiments with correlated error. *J. Ind. Soc. Agril. Statist.,* **69(1)**, 57-63.

- Pal, S, Prajneshu and Ghosh, H (2015). Development of a novel Web based WebECGR package for estimation of compound growth rates for monotonically non-decreasing situations. *Agril. Eco. Res. Rev.*, **28(1)**, 163-170.

- Pal, S, Prajneshu and Ghosh, H (2015). Estimation of compound growth rates for non-monotonic situations through nonlinear growth models using WebECGR package. *J. Ind. Soc. Agril. Statist.*, **69**, 95-100.

- Paul, RK, Samanta, S and Gurang, B (2015) Monte Carlo simulation for comparison of different estimators of long memory parameter: An application of ARFIMA model for forecasting commodity price. *Model Assisted Statist. Application*, **10(2)**, 116-127.

- Sarkar, RK, Rao, AR, Meher, PK, Nepolean, T and Mohapatra, T (2015). Evaluation of random forest regression for prediction of breeding value from genome-wide SNPs. *J. Genet.,* DOI:10.1007/s12041-015-0501-5.

- Sengupta, A, Grover, M, Chakraborty, A, Saxena, S (2015). HEPNet: A knowledge base model of human energy pool network for predicting the energy availability status of an individual. *PLoS ONE 10(6): e0127918. doi:10.1371/journal.pone.0127918*

- Shekhar, S, Bhar, LM and Gupta, VK (2014). Incomplete block designs for multiple asymmetric parallel line assays. *Int. J. Computational & Theo. Statist.*, **1(1)**, 29-35.

- Singh, S, Paul, AK, Paul, RK, Bhar, LM, Kumar, A and Alam, W (2015). Study of growth pattern of cattle under different error structures. *Model Assisted Statist. Application,* **10**, 109-115.

- Sud, UC, Aditya, K, and Chandra, H (2015). District level crop yield estimation under spatial small area model. *J. Ind. Soc. Agril. Statist.,* **69(1)**, 49-56.

- Varghese, C, Varghese, E, Jaggi, S and Bhowmik, A (2015). Experimental designs for open-pollination in polycross trials. *J. Applied Statist., DOI*: 10.1080/02664763.2015.1043860.

- Wani, MH, Sehar, H, Paul, RK, Kuruvila, A and Hussain, I (2015). Supply response of horticultural crops: A case of apple and pear in Jammu and Kashmir, India. *Agricl. Eco. Res. Rev.,* **28(1)**, 83-89.

E-learning Portal

- Goyal, RC, Sudeep, Grover, RB and Dahiya, R (2015). E-Krishi shiksha: An e-learning portal on agricultural education in envisioning the library of the future. (2015, Eds. K. Veeranjaneyulu, G.Rathinasabapathy, Rajive K. Pateria), *BS Publications, ISBN* 978-93-83635-58-0,18-29.

Training Mannuals/ e-mannuals

- Bioinformatics Tools for Fish Genomics(2015, Eds. Iquebal, MA, Sarika, Sahoo, L, Rasal, DK, Sundaray, JK, Rai, A and Kumar, D).

- Designing and Analysis of Experiments, Reference Manual, IASRI, New Delhi. (2015, Eds. Sarkar, S and Dash, S).

- Accelerating data-intensive genome analysis in wheat. (2015, Eds. Sarika, Sharma, P, Sheoran, S, Mamrutha, HM, Iquebal, MA, Tiwari, R, Rai, A and Kumar, D)

- Integrated sample survey methodology. (2015, Eds. Chandra, H and Aditya, K).

Project Reports

- Lal, SB, Sharma, A and Sarika (2015). Parallelized workflows for gene prediction, phylogenetic analysis and primer designing SIX1219 I.A.S.R.I./P.R.-01/2015

- Bhardwaj, SP, Singh, DR, Singh, KN, Paul, RK and Panwar, S (2015). Forcasting agricultural commodity prices using time series data AGENIASRISIL201300300004 I.A.S.R.I./P.R.-02/2015

- Srivastava, S, Lal, SB and Mishra, DC (2015). Methodology for protein structure comparison and its web implementation AGENIASRISIL201300600007 I.A.S.R.I./P.R.-03/2015

- Sharma, NK and Dash, S (2015). Planning, Designing and Analysis of On-farm research experiments planned under the project directorate of farming system research SIX0704 I.A.S.R.I./P.R.-04/2015

- Paul, RK, Ghosh, H and Gurung, B (2015). A study on modelling and forecasting of time-series with long memory processes AGENIASRISIL201300700008 I.A.S.R.I./P.R.-05/2015

- Paul, RK (2015). Enhancing resilience of agriculture to climate change through institutions, technologies and policies (NICRA) COP1112 I.A.S.R.I./P.R.-06/2015

- Ahmad, T, Bhatia, VK, Sud, UC, Rai, A and Sahoo, PM (2015). Study to develop an alternative methodology for estimation of cotton production (consultancy mode) I.A.S.R.I./P.R.-07/2015

- Gurung, B, Ghosh, H and Paul, RK (2015). A study on STAR and SV families of nonlinear time-series models fopr describing cyclicity and volatility in agriculture GENIASRISIL201300800009 I.A.S.R.I./P.R.-08/2015

- Sud, UC, Ahmad, T and Jain, VK (2015). District level poverty incidence estimation from NSSO data using small area estimation technique SOX1009 I.A.S.R.I./P.R.-09/2015

Databases Developed

- Mango SNPs database developed and web tools developed for browsing mango SNPs (MA Iquebal, Sarika, UB Angadi, Anil Rai and Dinesh Kumar).
- CearlESTDb: A database for abiotic stress genes, their annotation and pathways of cereal crop has been developed. (Sanjeev Kumar, DC Mishra, Anil Rai, KK Chaturvedi, SB Lal and M Grover).
- Brassica SSR database and web tools for accessing the information (MA Iquebal, Sarika, UB Angadi, Anil Rai and Dinesh Kumar).
- Plant SSR database and web portal has been finalized and article communicated to journal (MA Iquebal, Sarika, UB Angadi, Anil Rai and Dinesh Kumar).

INVITED LECTURES DELIVERED

Dr. Sudeep

- Delivered a lecture on Project monitoring through FMS-MIS and HYPM in training programme on Management Developing Programme on Priority Setting, Monitoring and Evaluation (PME) organized at NAARM Hyderabad during June 02-06, 2015.

Dr. MA Iquebal

- Delivered a lecture and hands-on on Data cleaning and pre-processing, genome assembly and metagenome analysis in the Workshop on Accelerating Data-intensive Genome Analysis in Wheat jointly organized by ICAR-IIWBR, Karnal and ICAR-IASRI, New Delhi at ICAR-IIWBR, Karnal during May 12-14, 2015.

Dr. SK Sarkar

- Delivered a lecture on Testing of hypothesis in Refresher course in Basic Sciences organised during May 05-25, 2015 in the UGC-Academic Staff College of Jamia Millia Islamia (Central University)

Dr. PK Mehar

- Delivered a lecture on Biological sequence analysis and secondary structure prediction using R-software in Workshop on Computational Identification of MicroRNA (miRNA) for Biotic & Abiotic Stress Tolerance in Plants organized by Uttarakhand Council of Biotechnology during June 09-11, 2015 at Dehradun.

PAPERS PRESENTED

- Review Workshop of Network Analysis Project on Market Intelligence at BHU, Varanasi during May 07-08, 2015.
  - Paul, RK. Co-integration Analysis. (Invited talk)
- International Conference on Agriculture, Food Engineering and Environmental Sciences- Sustainable Approaches (AFESA- 2015) organized by "Krishi Sanskriti" at Jawaharlal Nehru University, New Delhi during May 09-10, 2015
  - Grover, M*, Angadi, UB and Sharma, N (2015). Development of models for discovery of novel proteins associated with photosynthesis using machine learning approaches.
- XXXIII Group meeting of AICRP on Vegetable Crops organized at IIVR, Varanasi during May 21-24, 2015.
  - Parsad, R*, Dhandapani, A and Dash, S. Information system for planning and analysis of experiments of AICRP on vegetable crops.
- International Conference on Recent Advances in Mathematics, Statistics and Computer Science organized by the Central University of South Bihar (CUB), Patna held during May 29-31, 2015 at ICAR Research Complex for Eastern Region, Patna.
  - Ahmad, T*, Sud, UC and Sahoo, PM (2015). Status of horticulture statistics in India: A new methodological initiative. (Invited talk)
  - Rathod, S. An improved auto regressive fractionally integrated moving average (ARFIMA) model using artificial neural network (ANN) to forecast spot prices of mustard.

- 9th Statistics Day organized by Ministry of Statistics and Programme Implementation, Govt. of India at Vigyan Bhavan, New Delhi on June 29, 2015.
  - Chandra, H. Some innovative approaches for small area estimation.(Invited talk)

Participation

Conferences / Workshops / Trainings/ Seminars / Symposia etc.

- Workshop on Impact Assessment of Agricultural Research and Development on March 17, 2015 at National Institute of Agricultural Economics and Policy Research (NIAP), New Delhi. (Dr. RK Paul)

- Workshop on "Making Engineering Scientists Contribution More Meaningful to Stake Holders and the Nation" at New Delhi on April 13, 2015. (Dr. Hukum Chandra)

- Engineer's Meet organized by the Agricultural Division of ICAR on April 13, 2015 at NASC Complex, New Delhi. (Dr. Seema Jaggi)

- Workshop on "Advanced Persistent Threats" at Electronic Niketan, CGO Complex organized by CERT.IN. (Dr. Mukesh Kumar)

- One month Orientation Training at IASRI from April 17 to May 16, 2015. Familiarized with the organizational structure of IASRI. Interacted with scientists from all the divisions and gathered valuable information related to their various activities - research, training and teaching. Visited IARI, NIAP, NCIPM and NBPGR under this training. Got familiarized with their research activities. Also visited NASM and gathered a brief idea about the museum and various agricultural practices of ancient civilizations. (Mr. Sunil Kumar)

- Methodology Workshop of APEDA funded project entitled "Effect of Buffaloes Slaughter and Meat Export Policy on Livestock, Meat, Milk, Draught Power And Eco-Balance" held on May 08, 2015 at NRC Meat Hyderabad to finalize the sampling methodology. (Dr. AK Choubey)

- Workshop on "Accelerating Data-intensive Genome Analysis in Wheat" jointly organized by ICAR-IIWBR, Karnal and ICAR-IASRI, New Delhi at ICAR-IIWBR, Karnal during May 12-14, 2015. (Dr. Dinesh Kumar, as Resource Person)

- ICAR Director's Conference held at NASC Complex, New Delhi during May 14-16, 2015. (Dr. UC Sud, Dr. AK Choubey and Dr. Mukesh Kumar)

- Workshop on "Advanced Web Application Security" on 22 May, 2015 at Electronic Niketan, CGO Complex organized by CERT.IN. (Sh Rakesh Kr Saini)

- Workshop on Impact Assessment of Agricultural Research in India at ICAR-NCAP, New Delhi during May 25-29, 2015. (Dr. RK Paul)

- Fourth Annual Review Workshop of National Agricultural Science Fund during May 28-29, 2015 at A.P. Shinde Symposium Hall, NASC Complex, New Delhi. (Dr. AR Rao and Sh. Sanjeev Kumar)

CONSULTANCY /ADVISORY SERVICES PROVIDED

- Dr. Anita Malhotra, Associate Professor, University of Delhi was advised by Dr. Hukum Chandra on suitable statistical techniques for analysis of data on April 25, 2015.

- Sh. Santosha Rathod analyzed data (RBD design in SAS 9.2) of i) Mr. Sunder Pal Kantiya, Ph. D scholar, GB Pant Agril. University for his Ph.D. thesis entitled "Mutation breeding through gamma radiation in dahlia crop" on April 18, 2015 and ii) Mr. Arjun Sutagatti, Institute of Agricultural Sciences, BHU for his M.Sc. thesis entitled "Bio-epicasy of insecticides against major insect pest of rice" on April 27, 2015.

- Dr. Rajender Parsad advised Dr. VK Mishra, Department of Genetics and Plant Breeding, BHU, Varanasi on SAS Code for performing Principal Component Analysis.

- Dr. Hukum Chandra advised Dr. Anita Malhotra, Associate Professor, University of Delhi, on suitable statistical techniques for analysis of data on May 02, 2015.

- One scientist of Division of Statistical Genetics gave the concept of different type of coefficient of determination to Dr. V.K. Mishra, Professor, Genetics and Plant Breeding, BHU, Varanasi.

- Sh. Santosha Rathod analyzed data in Matlab of Mr. Anand Kumar, M. Tech., student, UAS, Raichur for his M. Tech. Thesis on application of ANN in forecasting ground water recharge on May 08, 2015.

- Sh. Mrinmoy Ray analyzed colour index data of Dr. Madhubala Thakrey, Scientist, IARI.

- Dr. Eldho Varghese advised Mr. Azizullah Khalili, a researcher from Kabul, Afghanistan on the procedure of analysis of experiments involving two factors (each at 3 levels) along with 2 control treatments. The analysis has also been done by developing appropriate contrasts as well as computer program using SAS and Dr. Parihar, Scientist from ICAR-IIMR on the use of Proc mixed of SAS for combined analysis of data obtained over years from split plot design.

- Dr. Rajender Parsad advised i). Dr. Swaran Lata, Professor (Plant Breeding), Department of Crop Improvement, College of Agriculture, CSKHPKV, Palampur on estimating genotypic and phenotypic variance-covariance matrix, genotypic and phenotypic correlations, estimates of heritability and co-heritability and path analysis from the data on 13 characters generated from designed experiment on 45 cultivars of maize conducted using an alpha design in 2 replications and 15 blocks of size 3 per replication, ii) Dr.K. Alivelu, Senior Scientist, ICAR-Indian Institute of Oilseeds Research, Hyderabad Advised on randomized layout of alpha designs in (i) v=170, r=2, k=17, k=10; (ii) v=260, r=2, k=13, k=20, k=10; (iii) v=330, r=2, k=11, k=10, k=15 for experiments to be conducted under National Crossing Programme on Sunflower and iii) Dr. Anju Kamra, Principal Scientist, Division of Nematology, ICAR-IARI, New Delhi advised on analysis of data pertaining to 5 experiments completely randomized design.

- Dr. Hukum Chandra provided advice to Dr CR Mehta, Project Coordinator (FIM), CIAE, Bhopal, M. P. on sampling design on June 09, 2015 at IASRI, New Delhi.

- Dr. Susheel Kumar Sarkar provided consultancy services to Dr Tushar Kumar Mohanty, NDRI, Karnal on performing repeated measurement analysis data sets on cattle.

- Dr. BN Mandal provided consultancy services to Dr Ashim Kumar Biswas, Central Avian Research Institute, Izatnagar, UP on performing two way analysis of variance for two data sets.

- Dr. Eldho Varghese advised Dr. Prameela Krishnan, Head, Division Agricultural Physics, IARI on the use of SAS for doing PCA to generate minimum data sets (MDS) for computation of Crop Status Index (CSI).

- Sh. Prakash Kumar advised Ms. Sweta Amrita Lakra, Ph. D. Student, Division of Environmental Science, ICAR-IARI, New Delhi regarding analysis of data of Ph.D. research work entitled "Calibrating the info crop modeling for assessing impact of climate change"

- Sh. Mrinmoy Ray advised Ms. Sukanya Som, M. Sc. (Agril. Extension), ICAR-IARI, New Delhi regarding analysis of social science data employing nonparametric test and Dr. Madhubala Thakrey , Scientist (ICAR-IARI), New Delhi regarding analysis of RBD design.

PERSONNEL
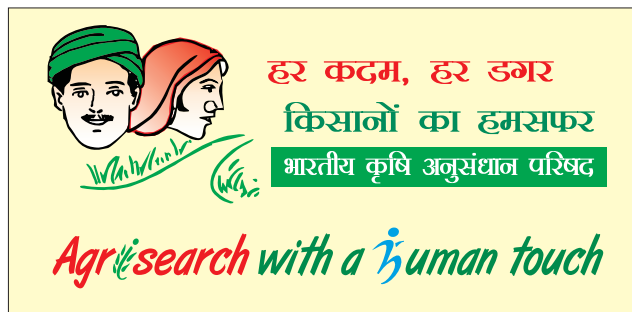
Congratulations on your Appointment

Name	Designation	Effective Date
Sh. Sunil Kumar Yadav	Scientist	08.04.2015

Congratulations on your Promotion

Name	Designation	Effective Date
Sh. Sanjeev Panwar	Sr. Technical Officer	18.03.2013
Sh. Hari Singh	Technical Assistant	25.04.2013
Dr. Cini Varghese	Principal Scientist	10.06.2013
Dr. Hukum Chandra	Principal Scientist	07.09.2013
Dr. Anil Kumar	Principal Scientist	17.12.2013
Sh. Jai Bhagwan	Sr. Technical Officer	27.08.2014
Sh. Virender Kumar	Sr. Technical Officer	15.09.2014
Smt. Anita Kohli	Private Secretary	04.04.2015

Wish you Happy Retired Life

Name	Designation	Effective Date
Smt. Abha Kant	Chief Technical Officer	30.04.2015
Sh. Anil Kumar Bhalla	Assistant	30.06.2015
Sh. Chote Lal	SSS	30.06.2015
Sh. Heera Mani	Driver(T-2)	30.06.2015