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## *From the Director's desk ...*

This Newsletter brings to you the key research achievements, awards and recognitions received, training programmes conducted, workshops and conferences organized/attended, advisory services provided and significant publications of our institute during the period under report.

ICAR-IASRI is adapting itself to the needs and trends of what the present era demands and is indeed working on a couple of projects relating to Artificial Intelligence (AI) having useful applications in the field of agriculture such as detection of crop pests and incidence of diseases. The scientists at the Institute are broadening their horizon of research capabilities in AI tools like Deep Learning. Such a skill strengthening for development of data analytics aided solutions is the best step that can happen for the agricultural research and education. Of late, one can see many universities in India and elsewhere offering Masters in Data Science courses which include statistical computing combined in a packaged format along with R, Python and other computing solutions. The institute is also planning several human resource development programmes in Data Science.

In the field of design of experiments, developed methods of construction for obtaining pairwise and/or variance balanced Structurally Incomplete Row-Column (SIRC) and Sliced Latin Hypercube Designs (SLHDs) of equal and unequal run sizes in all batches (slices). For agroforestry experiments, a class of variance balanced network designs for the estimation of direct as well as network effects of trees from adjacent plots has been obtained.

Research Data Management in ICAR Initiative (developed, strengthened and maintained by ICAR-IASRI along with six partner Institutes) has been conferred with Gold Icon Award in Open Data Championship Category of Digital India Awards 2020 by Ministry of Electronics and Information Technology (MeitY), Govt. of India.

Developed a web server “miRNALoc” for predicting localization of miRNAs; a database “FMDISC” an information system on Foot and Mouth diseases of cattle and a web resource “Water Buffalo Mastitis Database (WBMSTDb)” on information of mastitis associated genes, their annotation, functions, pathways, SNPs and INDELS in buffalo.

A machine learning-based method for prediction of GIGANTEA proteins has been developed and based on the proposed model, the web server “GIpred” has been established. ICAR-IASRI in association with ICAR-IISR, Kozhikode has developed Black Pepper Drought Transcriptome Database (BPDRTDb). Many R-packages have also been developed namely, TEnGExA to classify the user provided gene lists into tissue-enriched or tissue-specific transcripts along with other standard classes, SGARCHelm as Hybridization of MS-GARCH and ELM models and SBAGM to search best ARIMA, GARCH, and MS-GARCH models.

In addition, work has also been accomplished during the reporting period on various aspects, viz., Detecting outlier in high dimensional genomic data, Sampling methodology for estimation of postharvest losses of horticultural crops, Tissue-enrichment analysis for providing gene list for any species, Bioremediation microbial and protein domain analyses in the Ganga and Yamuna riverine ecosystems, Trends and determinants for agricultural wages in India, Online Agricultural University Ranking System, Computational tool for predicting subcellular localizations



of miRNAs, Network-Effect Designs for Agroforestry Experimentation and Online System for Organization of Agri Hackathons.

Our Scientists have brought recognitions to our institute by way of serving as Expert Members in various high level committees, delivering invited talks in prestigious forums. Several training programmes were conducted via online mode and many lectures have been delivered by our Scientists in various training programmes virtually. Our Scientists have also attended many workshops and conferences, besides delivering their work in the form of presentations in them.

I earnestly hope that the contents of this Newsletter would be useful and informative to you all. Any constructive comments for better presentation of this newsletter are most welcome.

(Rajender Parsad)

## RESEARCH ACHIEVEMENTS

### Network-Effect Designs for Agroforestry Experimentation

In agroforestry experiments, different species of trees may interact spatially and experimental plots may be connected through a network of trees which would create non-directional adjacency effects on a plot and give rise to tree network effect on the crop. A class of variance balanced network designs for the estimation of direct as well as network effects of trees from adjacent plots has been obtained.

### Sliced Latin hypercube designs

A Sliced Latin Hypercube Design (SLHD) is a special type of Latin Hypercube Design (LHD) that can be partitioned into slices of smaller LHDs. In such type of designs, when levels collapse over all the slices, the whole design turns out to be a new LHD and possesses maximum coverage in any one dimension. SLHD is useful for computer experiments in slices or batches with qualitative and continuous factors. In some experimental situations, constructions require equal run size for each slice and in some other cases, run size of each slice may be different.

The presence of high correlation among factors (columns) in SLHDs renders poor estimation of effects. For example, first and second order polynomial models are generally used for screening experiments. Designs with poor or no orthogonality cannot ensure the estimation of all expected outputs. In particular, orthogonal designs are very much useful in the first-order and second order polynomial models. Hence, for the aforesaid situation, construction methods were developed to design both SLHDs and Sliced Orthogonal Latin Hypercube Designs (SOLHDs) of equal and unequal run sizes in all batches(slices). The research work includes methodology for obtaining SOLHDs of different types. The final designs obtained have flexible run sizes and most of them are new to the literature. The proposed methods of construction for each of four type of SLHD include (i) SLHD of equal batch size, (ii) SLHD of unequal batch size, (iii) SOLHD of equal batch size, (iv) SOLHD of unequal batch size for each slice. The SLHD and SOLHD obtained are illustrated by some examples.

SLHDs with equal runs in each slice have also been proposed. A catalogue of SLHDs obtained from proposed method of constructions for  $m_{10}$ ,  $t$ , and  $q_6$  has been prepared. The constructed design is restricted for  $t=2$  and even number of runs in each slice. The final design depends on the existence of two OLHDs with specific number of runs. A catalogue of SOLHDs obtained from proposed method of constructions for  $m_{10}$ ,  $t$ , and  $q_6$  has been prepared. The final design depends on the existence of base OLHDs with specific number of runs. A catalogue of SOLHDs obtained from proposed method of constructions for  $m_{10}$ ,  $t$ , and  $q_6$  has also been prepared and these catalogues would serve as ready reckoners.

### Structurally Incomplete Row-Column (SIRC) designs

Structurally Incomplete Row-Column (SIRC) designs can be useful in several experimental situations where only a subset of the treatments may be accommodated in each row and column and where empty nodes do not represent the experimental units that are under-utilized or wasted. Subclass of SIRC designs called Balanced Incomplete Latin Square (BILS) designs are useful in experimental situations with way blocking where replication of each treatment

is less than the number of treatments. However, the precision of comparison of a pair of estimated treatment effects may not be the same because BILS designs, by default, are not pairwise balanced. To overcome this problem, methods of construction for obtaining pairwise and/or variance balanced Structurally Incomplete Row-Column (SIRC)/Balanced Incomplete Latin Square (BILS) designs have been obtained using symmetric Balanced Incomplete Block (BIB) designs, union of two variance balanced SIRC/BILS designs or adding treatments in existing variance balanced SIRC designs. For this, some methods of obtaining pairwise and variance balanced BILS and SIRC designs having same precision of comparison of a pair of estimated treatment effects using the techniques of cyclical rotation of rows, union of rows and columns, inserting treatments to each row and column exactly once have been developed and catalogues of variance and pairwise balance SIRC designs for  $v \leq 15$ ,  $b_1 \leq 15$ ,  $b_2 \leq 15$ ,  $k_1 \leq 15$  and  $k_2 \leq 15$  have been prepared. Layouts of these designs have also been presented. An R code for generating the information matrix given the layout of the design has also been written. Layouts of these designs have been presented. Also R code to derive the information matrix of SIRC design have been written.

### Detecting outlier in high dimensional genomic data

An efficient approach for detecting outlier in high dimensional genomic data has been proposed. The approach is p-value based combination methods to produce single p-value for detecting the outliers. Robustness of this approach has been tested using simulated data through the evaluation measures like precision, recall etc. Significant improvement has been observed in the performance of genomic prediction by detecting the outliers and in handling them accordingly using real data.

### Sampling methodology for estimation of postharvest losses of horticultural crops

Sampling methodology for estimation of postharvest losses of horticultural crops (fruits and vegetables) developed by India has been recommended and adopted by FAO, for conducting the field trials for estimating such losses. Field tests were conducted on the recommended methodology and guidelines on the measurement of harvest and post-harvest losses for Mexico and Zambia for meat and milk have been given.

### Tissue-enrichment analysis for providing gene list for any species

Developed R package and web-interface tool, TEnGExA, which allows tissue-enrichment analysis (TEA) for any number of genes or transcripts for any species by providing only a read-count or FPKM (fragments per kilobase of transcript per million fragments mapped)-value matrix as input. Based on the different FPKM value and fold thresholds, TEnGExA classifies the user provided gene lists into tissue-enriched or tissue-specific transcripts along with other standard classes. By analyzing the published sample data from human, plant and microorganism, TEnGExA can easily handle complex or large data from any species to provide tissue-enriched gene list for downstream analysis in quick time. TEnGExA is quick, easy to use and an efficient tool for TEA. The R package is freely available at <https://github.com/ubagithub/TEnGExA/> and the GUI web interface is accessible at [http://webtom.cabgrid.res.in/tissue\\_enrich/](http://webtom.cabgrid.res.in/tissue_enrich/). This work has been done in collaboration with ICAR-IARI, New Delhi.

### Bioremediation microbial and protein domain analyses in the Ganga and Yamuna riverine ecosystems

In a study conducted in collaboration of ICAR-CIFRI, Kolkata and ICAR-IARI, New Delhi it has been reported for the first time on the richness of bioremediation microbial communities in the Ganga and Yamuna riverine ecosystems, highlighting their importance in aquatic pollution management. PCA (Principal Component Analysis) revealed the relative abundance of bioremediation bacteria and fungi in highly polluted river stretch as compared to less polluted river stretch. Several protein domains, which play a pivotal role in bioremediation in the polluted environments, including urea ABC transporter, UrtA, UrtD, UrtE, zinc/cadmium/mercury/lead-transporting ATPase, etc., were identified using protein domain analysis.

### Trends and determinants for agricultural wages in India

To determine the trends and determinants for agricultural wages in India, panel data regression model analysis showed that non-farm wages, the MGNREGS, irrigation facility, and rural literacy have a significant and positive effect on agricultural wages, and farm mechanization helps reduce the wage rate significantly. This study has been undertaken as a collaborative study with ICAR-NIAP, New Delhi.

## Online Agricultural University Ranking System

In line with the National Initiative on Ranking of Indian Institutions, ranking of Agricultural Universities has been initiated by ICAR with a larger objective to drive the universities towards improving quality standards and enhance their visibility to enable them for participation in global rankings. So far, the ranking has been done for the last three years based on the information received from the universities in the prescribed Proforma through hard copies. In view of the COVID-19 pandemic situation, it has been decided to obtain the required information from the universities through online. Accordingly, an “Agricultural University Ranking System (AURS)” has been developed by ICAR-IASRI, New Delhi to enable the submission of the required data by the universities and the evaluation/verification by the Committee through online. Further, the uploaded information shall be made available in the public domain for bringing transparency to the entire ranking process. AURS can be accessed at <https://education.icar.gov.in/auranking/>.

## Computational tool for predicting subcellular localizations of miRNAs

A SVM (Support Vector Machine) based computational method for predicting subcellular localizations of miRNAs based on principal component scores of thermodynamic, structural properties and pseudo compositions of di-nucleotides has been developed by ICAR-IASRI, New Delhi. A user-friendly prediction server named “miRNALoc” is made available online at <http://cabgrid.res.in:8080/mirnaloc/> to help the biologist working in the field of RNA biology.

## Online System for Organization of Agri Hackathons

An Online System for Organization of Agri Hackathons has been developed and implemented. The system has been effectively used in recently completed KRITAGYA-Promoting Innovation in Farm Mechanization. 784 teams have registered on the platform. These teams are scrutinized for compliance as per terms and conditions announced using the features of the platform. The Hackathon was conducted in two phases viz. five Zonal level competitions and one national level competition using the Online Platform.

## R Packages developed

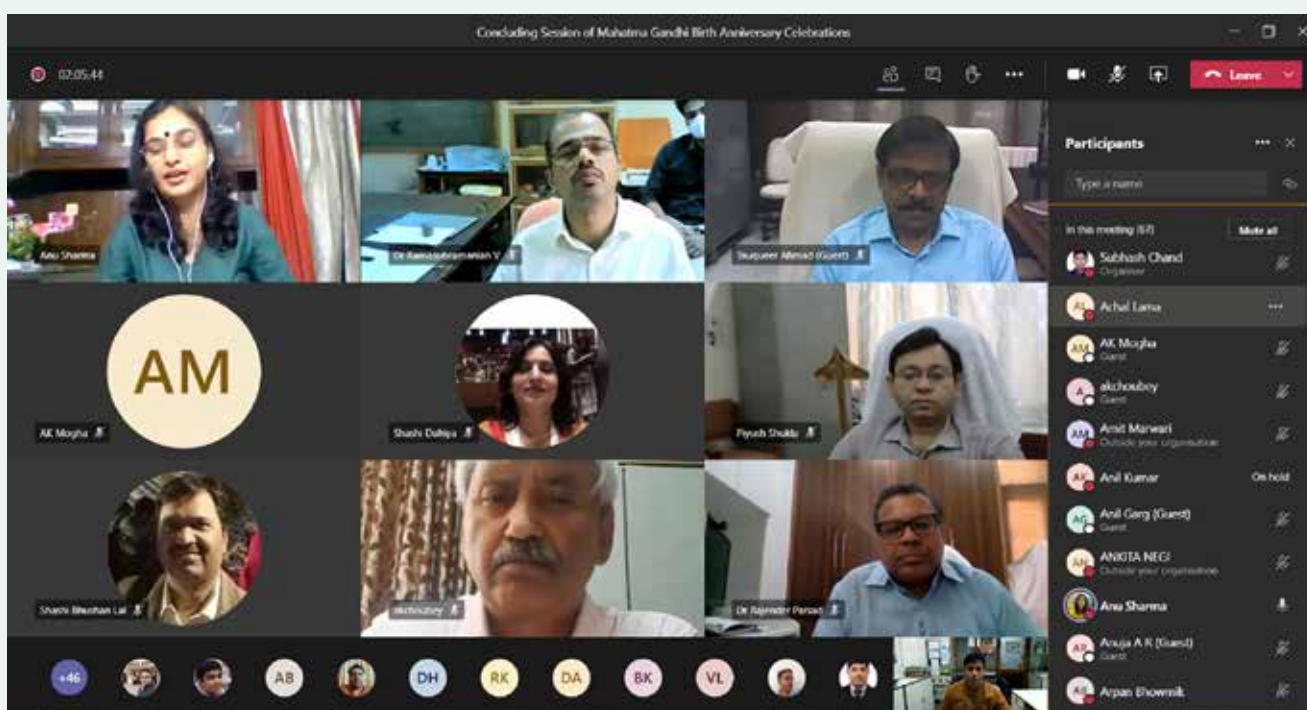
- MSGARCHelm: Hybridization of MS-GARCH and ELM Model  
<https://cran.r-project.org/web/packages/MSGARCHelm/index.html>  
(Rajeev Ranjan Kumar, Girish Kumar Jha, Neeraj Budhlakoti)
- SBAGM: Search Best ARIMA, GARCH, and MS-GARCH Model  
<https://cran.r-project.org/web/packages/SBAGM/index.html>  
(Rajeev Ranjan Kumar, Girish Kumar Jha, Dwijesh C. Mishra, Neeraj Budhlakoti)
- GitHub repository: URL: <https://github.com/ubagithub/TEnGExA/>.  
(Angadi U B, Hukum C Rawal, T. K. Mondal)

## PANORAMA OF ACTIVITIES

### Online Celebration of 150<sup>th</sup> Birth Anniversary of the Father of the Nation Mahatma Gandhiji

Several events viz. quiz, debate, painting competition, special lectures, etc were organized for a week culminating on 150th Birth Anniversary of the Father of the Nation Mahatma Gandhiji. In the special session on October 01, 2020, following lectures on Gandhian Philosophy viz., (i) Gandhian Management by Dr. D. Rama Rao, Former Director, ICAR-NAARM, Hyderabad & Presently Emeritus Scientist, PJTSAU, Hyderabad; (ii) Agricultural Sustainability and Gandhian Philosophy by Dr. N. K. Krishna Kumar, Former Deputy Director General (Horticulture), ICAR, New Delhi & Presently South and Central Asia Regional Representative, Bioversity International and (iii) Gandhian Economic Thought by Dr. M. Krishnan, Former Head, ESM Division, ICAR-NAARM, Hyderabad & Presently Adviser, Committee for Marine Resources, Andhra Pradesh were delivered. Concluding programme for week long





celebrations was organized on October 02, 2020. Dr. Anjani Kumar Choubey, Former Director, ICAR-IASRI as the Chief Guest expressed his thoughts on Gandhian Philosophy during the inaugural function. Dr. Ramasubramanian V. was Convenor for these week long celebrations.

### Celebration of “Mahila Kisan Diwas or Women Farmers’ Day”

To recognize the women’s critical role and significant contributions in agriculture, food and nutrition security and income generation, our institute celebrated “Mahila Kisan Diwas or Women Farmers’ Day” on October 15, 2020.

The Chief Guest of the occasion, Dr. R.C. Agrawal, Deputy Director General (Agricultural Education) & National Director, National Agricultural Higher Education Project (NAHEP) emphasized the women farmers’ role in saving and conserving the genetic and agro-biodiversity in the country. He also highlighted about the invaluable contributions



made by some women farmers from different parts of the country. Dr. Agrawal urged for identifying the feasible solutions for the women farmers’ requirements. Earlier, in his welcome address, Dr. Rajender Parsad, Director, ICAR-IASRI, New Delhi underlined the various details of women-friendly technologies that can be accessed through the ICAR Technology Repository on KRISHI Portal.

Dr. Samhita Barooah, Founder, Queer up India under Women Start up programme of IIM, Bangalore and Former Assistant Professor, North Eastern Hill University, TURA Campus, delivered a talk on “Collective ecology of women food crop farmers in rural Nagaland”. She shared the salient findings of feminist ethnographic research work that she carried out in



**Title: A small thought**

It is a beautiful morning  
The Sun is shining bright,  
There is still moisture in the field  
and the wheat is looking alright.

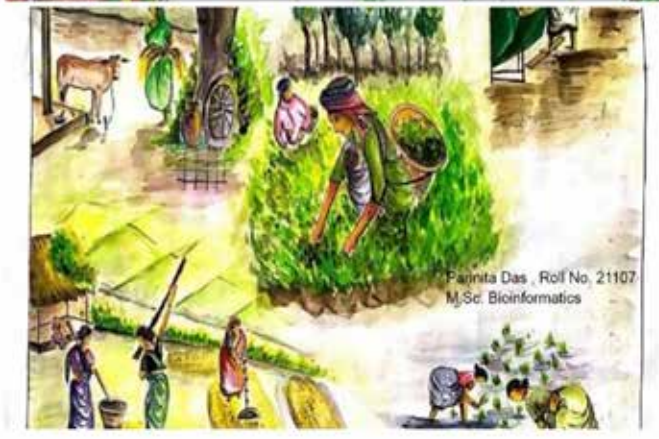
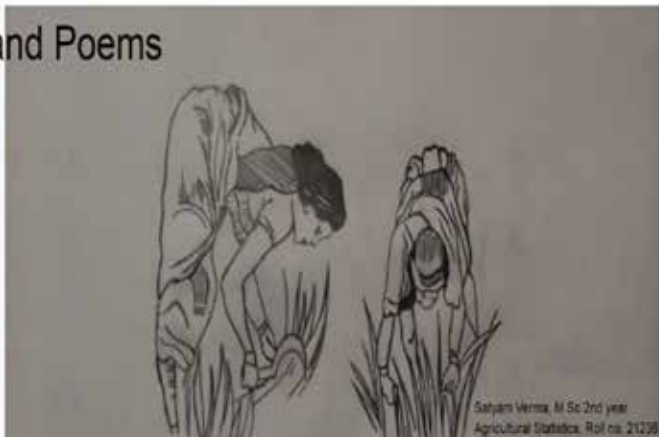
Its only three weeks since I have sown the seeds  
and little leaves has started emerging.  
I have a hoe on my shoulder  
and to a thought my mind is submerging.

As I am tilling the field  
and started to eradicate the weeds,  
Thinking about the hard work I am doing  
will it fulfil my needs?

Not the needs that can be fulfilled by  
food, water, shelter and sleep,  
But the ones that you will find in my heart,  
when you dig deep.

I do tilling, sowing, irrigation, weeding, harvesting  
and protect my field like an armour,  
After all the efforts I am doing  
will you at-least call me a farmer?

“सोचो  
ईश्वर की गन्धी सुबहसुबह कृति है सौ,  
कृति का अन्तर है, सद् है, जीवनदायिनी है सौ।  
पर की नदीय है, गरिया है, ममता की मूल है,  
अनपूर्व है, निर्मल मन, बरषा हृदय की देवी है सौ।  
वेदी, बादन, सौ और पत्नी बनकर हर घर की धारण है सौ,  
सहनशील, सहाय्यी, पुत्रों का अधिपति है सौ।  
अने कष्टों है दुर्गम कि सौ करणों है,  
दो मोहन, फिर देखो उनका या कोई जोड़ है।  
कर सदान कुर्बानियों का सद् को सफल बनाना है,  
सोचो की धार कर आत्मनिर्भर बन दिखाना है।  
हो खेत या खीरदान, इन का अन्तर्गत और विकास,  
कृति क्षेत्र में निर्यात का है अन्तर्गत सौ।  
पालन, पोषण, शल्य और प्रोक्त पर का रक्षणी पूरा मन,  
सफल, सहायक और सार्व, सौ की ये नई पदचर।  
हो पर-अन्तर्गत संभालना या कर्तव्य अन्त-अन्त  
हो देव-निर्देश की सौ या फिर सार्वभौम की सौ।  
हर पर पर सिको में सार्वभौम पक्ष सार्व है,  
बन प्रियात का को उपर, कई बार यह दिखाने है।  
सौ पर की समृद्धि है, हे मे ईश्वर का वरदान,  
अपमान नहीं, सम्मान करो, धर-पर ईश्वर सार्व सार्व।



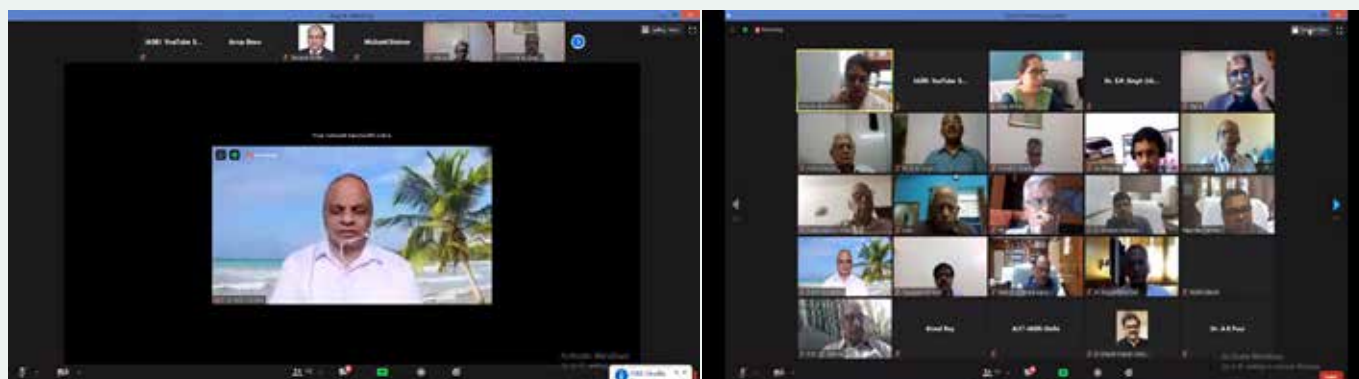


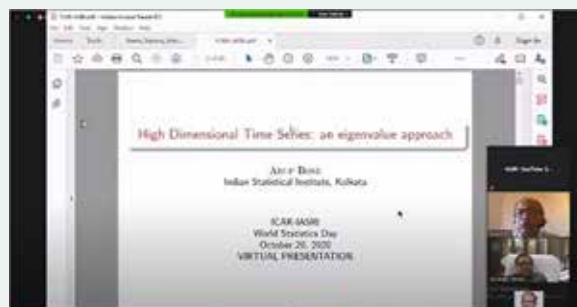
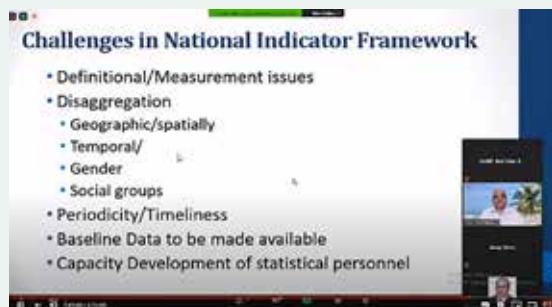
Nagaland with the women farmers. Ms. Rashi Verma, Founder & President, Agrismartic Start-Up delivered a talk on “Gender equality and use of technology in agriculture to boost women’s empowerment”. She outlined the various technological interventions like AI, IoT etc. and their use for empowering the women farmers. With the help of their paintings and poems, the Institute’s staff members and students also expressed their gratitude to the inevitable contributions of women farmers in the Indian agriculture. A total of 82 participants actively participated in the event. The event was coordinated by Dr. Seema Jaggi, Dr. Anshu Bharadwaj and Dr. Shashi Dahiya.

### World Statistics Day Celebrated

The World Statistics Day was celebrated around the globe on 20 October 2020 with the theme “Connecting the world with data we can trust”. Our institute celebrated World Statistics Day on October 20, 2020 virtually by organizing a Symposium on **Relevant and Quality Data for Agricultural Research and Policy Planning**.

The symposium was chaired by Shri Pravin Srivastava, Former Chief Statistician of India and co-chaired by Dr. R.C. Agrawal, Deputy Director General (Agricultural Education) and National Director, National Agricultural Higher Education Project (NAHEP).





Dr. Rajender Parsad, Director, ICAR-IASRI, New Delhi welcomed the dignitaries and participants and briefed about history, themes and importance of the World Statistics Day. He also gave a glimpse of history of ICAR-IASRI and emphasized that there is a heightened need for statistics and statisticians - both in terms of training in statistics to help generate, analyze and interpret the data and research to answer new questions arising from the data, in the current era of data discovery. He emphasized the need of Big Data Analytics, AI etc., judicious blend/ amalgamation of experimental data, survey data, historical data along with data from IoTs, drones, remote sensing, cloud sourcing, administrative data, government data, etc. and bringing data from silos to useable and shareable, machine readable formats.

Dr. R.C. Agrawal, welcomed everyone on the World Statistics Day and complimented ICAR-IASRI for celebrating World Statistics Day and highlighted the need of quality, reliable and timely agricultural data. He clearly identified the new responsibilities of statisticians in analyzing and interpreting data as more and more real time data is coming and quantification of everything that we do is making the role of statisticians all the more important. He also introduced the three eminent and distinguished statisticians and Chair for the function.

Speaking on this occasion, Padma Shri Dr. Bimal Kumar Roy, Chairman, National Statistical Commission, Government of India & Former Director, Indian Statistical Institute, Kolkata highlighted the statistical challenges in analysis of crowd source data and explained that the crowd source data is unstructured and there is no control in generating this kind of data, no accepted methodology exists to analyse them. He urged upon statisticians to research and explore such data for better use. He elaborated the case study on analysis of data generated by usage and issues by using two different versions of Python.

Dr. Michael Steiner, Chair, Committee on Agricultural Statistics, International Statistical Institute, The Netherlands, & Senior Consultant, World Bank, Rome shared his rich experiences on Agricultural Statistics System in global perspective and associated challenges in generating reliable and timely data under the broad heading "Assessment of the Agricultural Information System". He also explained the importance of relevant and quality data in agriculture that has to be timely, accurate and useful. He also discussed about the Action Plan of the Global Strategy to Improve Agricultural and Rural Statistics prepared by FAO. In his talk, Dr. Michael discussed the 16 Thematic domains & 45 research lines to work on for improving the agricultural statistics; 50 × 2030 Initiative for Data-Smart Agriculture.

Professor Arup Bose, Senior Professor, Indian Statistical Institute, Kolkata talked on High Dimensional Time Series: An Eigen Value Approach and emphasized on several researchable issues and ideas to handle such high dimensional data. He also discussed results on random matrices and their usefulness in analyzing high dimensional time series data and also gave several open researchable issues.

In his address, Shri Pravin Srivastava, Chair of Programme, emphasized on several data gaps in both global and national monitoring framework, and amplified demand of timely and disaggregated level data for meeting the challenges in SDG indicators which enhances the need to look at integration of data from different sources. He also explained the importance and challenges in open data and their usage. The Chairman talked of Chief Data Steward who can take full responsibility of data reliability and quality. He also emphasized that the role of research institutions like ICAR-IASRI critical in filling the methodological gaps to meet the emerging statistical challenges.

The programme was attended by more than 125 participants including the participation from World Bank, FAO of United Nations, different departments and ministries in State and Central Governments, Indian Statistical Institute, ICAR institutes, Universities, scientists, technical and students from the Institute.

Dr Rajender Parsad was the convener and Dr. Hukum Chandra and Dr. Ajit were the respectively Organizing Secretary and Co-Organizing Secretary of the Symposium.



## Parliamentary Official Language Committee meeting held on October 31, 2020

संसदीय राजभाषा समिति की दूसरी उप-समिति द्वारा 31 अक्टूबर 2020 को संस्थान का राजभाषा सम्बन्धी निरीक्षण किया गया। निरीक्षण के दौरान समिति सदस्यों ने संस्थान की राजभाषा सम्बन्धी प्रगति की समीक्षा की तथा हिन्दी की उत्तरोत्तर प्रगति के लिए कुछ सुझाव देते हुए संस्थान में हिन्दी में हो रहे कार्यों की सराहना की।



## XXVI meeting of the ICAR Regional Committee (RC) No. V

The XXVI meeting of the ICAR Regional Committee (RC) No. V, comprising Punjab, Haryana and Delhi was organized by ICAR-IASRI, New Delhi on December 07, 2020. It was inaugurated by Shri Parshottam Rupala, Honourable Union Minister of State for Agriculture and Farmers Welfare, Government of India as the Chief Guest. Shri Kailash Choudhary, Honourable Minister of State, Agriculture & Farmers Welfare, Government of India graced the occasion as the Guest of Honour. After initial remarks by Dr. Trilochan Mohapatra, Secretary, DARE & Director General, ICAR and Chairman of the XXVI ICAR Regional Committee-V (RC-V) Meeting, the meeting started with Dr. Rajender Parsad, Director, ICAR-IASRI, New Delhi and Member Secretary, ICAR RC-V delivering his presentation of the Action Taken Report on the Action points and Recommendations of the previous RC Meeting held at ICAR-CSSRI, Karnal during November 02-03, 2018. This was followed by Dr. Trilochan Mohapatra, Secretary, DARE & Director General, ICAR and Chairman of the XXVI ICAR Regional Committee-V (RC-V) Meeting, delivering his inaugural address with warm welcome to the Chief Guest Shri Parshottam Rupala and Guest of Honour Shri Kailash Choudhary, Honourable Union Ministers of State for Agriculture and Farmers Welfare and other dignitaries viz., Vice Chancellors of the Agriculture/ Veterinary State Universities of Punjab and Haryana, DDGs and ADGs of ICAR, Directors of the ICAR Institutes, Secretaries and Senior Officials of the Departments of these three states who were present in the meeting. The presence of Shri Jai Prakash Dalal, Honourable Minister for Agriculture and Farmer Welfare; Animal Husbandry and Dairying; Fisheries; Law & Legislative in Government of Haryana also was an encouragement and boosted the morale of the organizers. Dr. R.C. Agrawal, DDG (Agricultural Education), ICAR was Nodal Officer to conduct the meeting. Dr. Rajender Parsad, Director, ICAR-IASRI is the Member Secretary and Dr. Ramasubramanian V. was Officer-In-Charge to conduct the RC-V Meeting. Other members of RC-V meeting viz., Ajit, Anshu Bharadwaj, Prawin Arya, Susheel Kumar Sarkar and Anil Kumar (of PME Cell) were actively involved in smooth organization of the event.

Regional Committee meetings serve as a platform for the Council to reach out to various states in the country with the objective of providing solutions to agricultural problems and to find ways and means to develop relevant technologies and tools to enhance overall agricultural productivity. This concept was conceived in the year 1975 and the States have benefitted immensely through this mechanism. ICAR has a very strong presence in Punjab, Haryana and New Delhi (Zone V), with 5 universities, 16 ICAR institutes, 10 regional centers and some AICRPs. The impact of

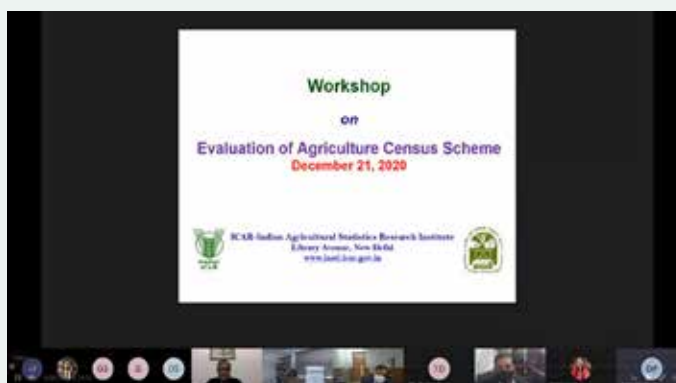


Indian green revolution has been felt in this region immensely and has made the farmers of this region very receptive and techno-friendly. The challenging factors of this region are residue burning, groundwater depletion, deterioration in soil health/ water quality, climatic and other factors. Since the farmers of this region are slowly realizing the need for crop diversification and so are moving away from Wheat and Paddy. Doubling their income is possible either through productivity enhancement or lowering the cost of cultivation through research/technological innovations. Thus, in this meeting, the challenges and constraints in agriculture and allied sectors were discussed and action points for the next meeting was chalked out.

### Workshop on Evaluation of Agricultural Census Scheme

As part of a study entitled “Evaluation of Agricultural Census Scheme” a workshop was organized on December 21, 2020. The study was conducted to examine methodology, number and type of data items being collected, method of data collection and data quality assessment, review the adequacy of administrative, data processing arrangements, etc. The study was funded by Department of Agriculture, Cooperation and Farmers Welfare (DAC&FW), Ministry of Agriculture and Farmers Welfare (MoA&FW), Govt. of India. DAC&FW is implementing Agriculture Census Scheme since 1970-71 at an interval of five years and the Agriculture Census conducted during 2015-16 is tenth in the series. Agriculture Census Scheme is an important activity of Government of India and acts as a significant baseline data for formulation of policies by various State Governments, Departments of Central Ministries, Research Organizations/Individual Researchers, International Organizations and individual researches from abroad, and various other Organizations. Several major government schemes and policies such as PM-KISAN Scheme and Loan Waiver Scheme of various State Governments also depend on Agriculture Census data.

The main aim of the workshop was to discuss the major findings and recommendations of this study. Dr. V.K. Gupta, Former ICAR-National Professor; Dr. A. K. Srivastava, Former Joint Director, ICAR-IASRI; Shri Rajeev Lochan, Former Director General, CSO, MoSPI, and Dr. Vidya Dhar, Former Additional Director General, DAC&FW, MoA&FW gave their expert comments and valuable suggestions. Dr. Rajender Parsad, Director, ICAR-IASRI, New Delhi welcomed the participants and delivered inaugural address. He also suggested to explore

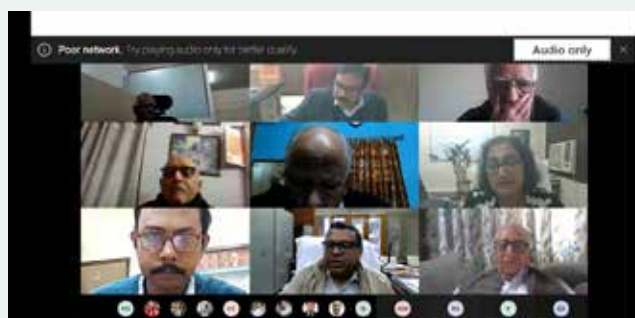
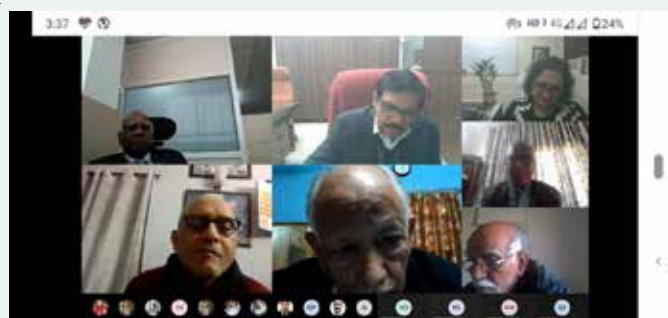
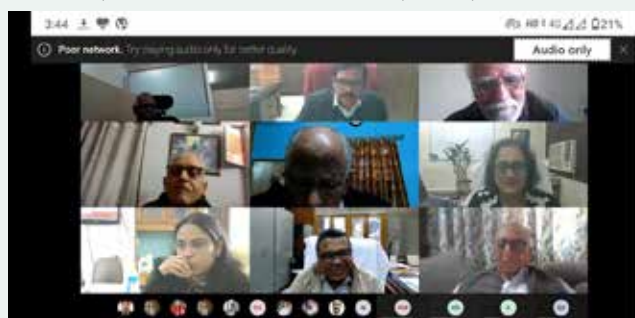




the option for availability of Agriculture Census data in Machine Readable Formats, possibly through Web Services/ Application Programming Interfaces (APIs). Further, he advised for collection of data on the ownership of land by gender. Dr. Dalip Singh, Agricultural Census Commissioner, DAC&FW in his remarks highlighted the importance of the scheme and appreciated the work undertaken by the Institute. Dr. Hukum Chandra, ICAR-National Fellow and Project Investigator presented the findings and recommendations from this study. The workshop was attended by representatives from MoA&FW, experts in the subject area, representatives from different state Governments and Scientists from the Institute.

### Workshop on Evaluation of Comprehensive Scheme for Studying Cost of Cultivation of Principal Crops (CS Scheme)

A Workshop was organized on “Evaluation of Comprehensive Scheme for Studying Cost of Cultivation of Principal Crops (CS Scheme)” funded by Directorate of Economics and Statistics, Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare on December 28, 2020. Seven Experts namely Dr. Padam Singh, Former Additional Director General, ICMR and Former Member, National Statistical Commission; Dr. S.D. Sharma, Former Vice Chancellor, Dev Sanskriti Vishwa Vidyalaya (DSVV), Haridwar and Former Director, ICAR-IASRI, New Delhi; Dr. U.C. Sud, Former Director, ICAR-IASRI, New Delhi; Dr. A.K. Srivastava, Former Joint Director, ICAR-IASRI, New Delhi; Dr. Randhir Singh, Former Principal Scientist, ICAR-IASRI, New Delhi; Dr. K.K. Tyagi, Former Principal Scientist, ICAR-IASRI, New Delhi and Sh. Awadhesh Kumar Mishra, Additional Director General, Social Statistics Division, NSO, Govt. of India expressed their views.



In India, the Directorate of Economics and Statistics (DES), Ministry of Agriculture & Farmers Welfare is responsible for collection of data on cost of production of crops. Some of the State Directorate of Economics and Statistics also independently collect cost of production data. The DES operates a scheme entitled “Comprehensive Scheme for Studying Cost of Cultivation / Production of Principal Crops” launched in the year 1970-71. It was meant to collect representative data on inputs and output

in physical and monetary terms which could then be used for estimation of cost of cultivation per hectare and cost of production per quintal of principal crops. This study entitled “Evaluation of Comprehensive Scheme for Studying Cost of Cultivation of Principal Crops (CS Scheme)” aims at evaluating the Comprehensive Scheme for studying cost of cultivation of principal crops to assess the effectiveness and usefulness of the scheme. The primary task is to critically evaluate the objectives, methodology followed under the scheme, to examine data quality, manpower structure at different levels under the scheme, expansion of scheme in other states.

Dr. Rajender Parsad, Director ICAR-IASRI delivered the welcome speech and opined that for better accessibility the data should be shared in machine readable formats. Dr. Tauqueer Ahmad, Head, Division of Sample surveys and Principal Investigator of the project discussed about the details of the project and further details were presented by Dr. Prachi Misra Sahoo, Principal Scientist. Smt. Ruchika Gupta, Advisor, Directorate of Economics and Statistics gave her remarks.

Several aspects concerning the project like basic information, scope, objectives, planned program of work under the study, sampling design of the scheme, states covered under the scheme, definitions about items of cost, state-

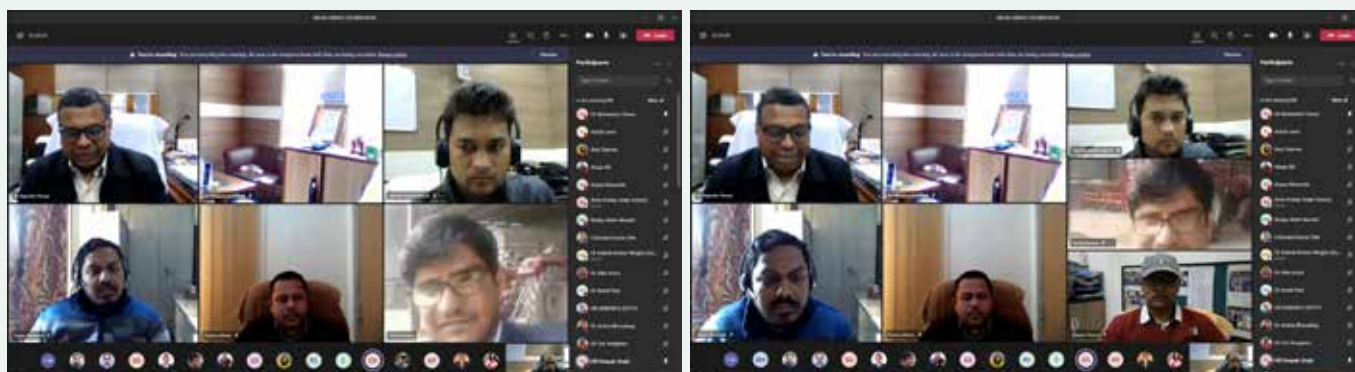


wise crop complex selection for block period 2020-23, status of staff position at Implementing Agency under the Scheme were discussed. Discussions were also held regarding the selected states viz. Haryana, Uttar Pradesh, Punjab, Rajasthan and Orissa were proposed in the presentation. Three different questionnaires at three different levels viz. ministry, implementing agencies and village, prepared under the project were discussed. One of the prime agenda of the Workshop was to present the developed questionnaires and receive feedback from all the participants. All the participants contributed in the deliberations and discussion and provided valuable suggestions to improve upon the questionnaires. Some of the important suggestions are as follows:

- i) Information should be gathered from CACP also.
- ii) Adequacy of sample size for each crop should be emphasized.
- iii) Emphasis should be given on the issues related to operationalization and implementation of the scheme.
- iv) Cost of cultivation scheme should be different for small, marginal and large farmers.
- v) To include Kerala or Tamil Nadu state in the study for field data collection.
- vi) To drop questions on sampling design and estimation procedure.
- vii) Enquire about computation of standard error under scheme and the results.

### Kisan Diwas Celebrated

On December 23, 2020, Kisan Diwas was organized online. Five members from farming community namely Mr Suresh Kumar (Rajasthan), Mr Ujjawal (Rajasthan), Mr Vinod Kumar (Haryana), Mr. Rajneesh Kumar (Rajasthan), Mr Dharmendra (U.P.) and ICAR-IASRI staff were invited. Director ICAR-IASRI addressed the meeting and felicitated the farmers. The Director also apprised them of various digital resources developed by our institute and other ICAR institutes and demonstrated some of them. The farmers also expressed their views. They lauded the efforts of ICAR scientists in generating wealth from waste, for example in generation of compost from waste. The farmers also stressed that on-farm demonstrations by ICAR scientists are really helpful and farmers want more such interactions. They also praised the efforts of scientists towards water harvesting and parali management. Farmers also stressed the need for further improvement in the farmer-research community interaction.



## WORKSHOPS/WEBINARS/MEETINGS/CELEBRATIONS ETC. ORGANIZED

### Workshops/Webinars

- Hindi Workshop on “File management System in E-Office” was organized on October 09, 2020 (Mukesh Kumar and Rakesh Kumar Saini).
- Webinar on ICAR Research Data Repository for Knowledge Management for ICAR-Central Institute of Fisheries Education, Mumbai was organized on October 21, 2020 (Subodh Gupta of ICAR-CIFE, Mumbai; Mukesh Kumar and Rajender Parsad)
- Webinar on ICAR Research Data Repository for Knowledge Management for ICAR-Directorate of Groundnut Research, Junagarh was organized on October 27, 2020 (Rajender Parsad; Kona Praveen, DGR, Junagarh)
- Online Hindi workshop on Overview of Tools and Techniques in Agricultural Bioinformatics. was organized

during December 14-16, 2020 (Sudhir Srivastava, Md. Samir Farooqi and K.K. Chaturvedi)

- Half Day e-Office Workshop for ICAR-NCIPM, New Delhi staff was organized on December 17, 2020 (Mukesh Kumar).

### Meetings

- Organized a meeting with Bioinformatics Group, C-DAC Pune on October 06, 2020 to discuss about the workflow/ pipelines development in ANVAYA and its installation in our HPC cluster of ASHOKA. (K.K.Chaturvedi)
- IJSC meeting conducted at our institute on December 24, 2020.
- IMC (Institute Management Committee) meeting conducted at our institute on December 31, 2020.

### Other events

- Constitution Day was celebrated by our institute on November 26, 2020.
- Swachta-Pakhwara was organized at our institute during December 16-31, 2020.
- Staff members and students of the Institute virtually participated in the Interaction of Hon'ble Prime Minister with farmers and Release of next installment of PM– Kisan Samman Nidhi programme on December 25, 2020.

### Seminars Delivered

A total of 38 seminars on different areas of Agricultural Statistics, Computer Application and Bioinformatics which include presentations on new project proposals, salient findings of the completed research projects and Training undertaken at International level by the Scientists, Course/ Thesis/ ORW Seminars of students of M.Sc. and Ph.D. disciplines of Agricultural Statistics, Computer Application and Bioinformatics. The category-wise break-up is given below.

Category	Type of Seminar	Number
Scientist	Project Completion	1
	New Project Proposal	1
Student	Course	32
	ORW	
	Thesis	4
Total		38

## PUBLICATIONS

### Research Papers

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## Books

- Ram, C, Haldhar, HM, Sharma, RP, Bhati, V, Singh, D and Parihar, D (2020). *Agricultural Science at your finger tips*. Scientific publishers. ISBN: 978-93-89832-92-1.

## Book Chapters

- Mandal, BN and Parsad, R (2020). Construction of efficient incomplete block designs using linear integer programming approach, In: *Advances in Mathematics and Research*, Volume 28, Edited by Albert R Baswell), Nova Science Publishers, New York, ISBN 978-1-53618-2823(ebook) pp 107-119.
- Kumar VVS, Deb, C, Subeesh, A, Godara, S, Pradhan, AS, Kumar, N, Haque, MA, Madhu, Soam SK, Rao NS, Ravisankar, H and Sreekanth PD (2020). Recent advancements in artificial intelligence (AI) and internet of things (IoT) for efficient water management in agriculture. In: Srinivasarao, Ch, Srinivas, T, Rao, RVS, Srinivasarao, N, Vinayagam, SS and Krishnan, P (Eds). *Climate Change and Indian Agriculture: Challenges and Adaptation Strategies*, ICAR-National Academy of Agricultural Research Management, Hyderabad, Telangana, India. 473-484.

- Dheeraj, A, Nigam, S, Begam, S, Naha, S, Devi, SJ, Chaurasia, HS, Kumar, D, Ritika, Soam, SK, Rao, NS, Arora, A, Sreekanth, PD and Kumar, VVS (2020). Role of artificial intelligence (AI) and internet of things (IoT) in mitigating climate change. In: Srinivasarao, Ch, Srinivas, T, Rao, RVS, Srinivasarao, N, Vinayagam, SS and Krishnan, P (Eds). *Climate Change and Indian Agriculture: Challenges and Adaptation Strategies*, ICAR-National Academy of Agricultural Research Management, Hyderabad, Telangana, India. 465-472.
- Prabha R, Sahu S, Charles S, Supriya P, Yuvaraj I, Balakrishnan M, Soam SK, Mangrauthia SK, Pandey MK and Srinivasa Rao Ch (2020). Role of genomics in agriculture in age of climate change. In: Srinivasarao, Ch, Srinivas, T, Rao, RVS, Srinivasarao, N, Vinayagam, SS and Krishnan, P (Eds). *Climate Change and Indian Agriculture: Challenges and Adaptation Strategies*, ICAR-National Academy of Agricultural Research Management, Hyderabad, Telangana, India. pp-539-560.
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### Technical Reports

- Ahmad, T, Rai, A., Sahoo, PM, Biswas, A and Singh, M (2020). Guidelines on the measurement of harvest and post-harvest losses – Findings from the field test on estimating harvest and post-harvest losses of fruits and vegetables in Mexico. Field test report. FAO, Rome. <http://www.fao.org/3/cb1511en/CB1511EN.pdf>
- Ahmad, T, Rai, A, Sahoo, PM, Biswas, A and Singh, M (2020). Guidelines on the measurement of harvest and post-harvest losses – Estimating harvest and post-harvest losses in Zambia. Meat and milk. Field test report. FAO, Rome. <http://www.fao.org/3/cb1965en/CB1965EN.pdf>
- Ramasubramanian V, Ajit, Anshu Bharadwaj, Prawin Arya, Susheel kumar Sarkar, Sanjeev Panwar and Rajender Parsad (2020). (Compiled by) Action Taken Report, Agenda Notes & Status Report of Centre-State Coordination For R & D Linkages In Agricultural Research, Education And Extension of XXVI Meeting of ICAR Regional Committee-V organized by Member Secretary Dr. Rajender Parsad, Director, ICAR-IASRI, New Delhi on December 07, 2020, Total no. of pages 188.

## LECTURES DELIVERED / PAPERS PRESENTED

### Lecture Delivered (Outside institute)

1. One lecture entitled “Principles of Experimental Designs” on October 26, 2020 to the participants of the 3<sup>rd</sup> Refresher Course in Research Methodology (IDC) organized by Human Resources Development Centre, Jawaharlal Nehru University, New Delhi during October 19-31, 2020 through online mode. (Rajender Parsad)
2. One lecture in a Webinar on ICAR Research Data Repository for Knowledge Management for scientists of ICAR-DGR, Junagarh on October 27, 2020 (Rajender Parsad)
3. One lecture on Big data and artificial intelligence in animal genomics: Opportunities and challenges (Invited Talk) at GADVASU, Ludhiana under NAHEP programme on November 19, 2020 (Dinesh Kumar)

### Paper presented /Invited talk delivered in Conferences

- National Workshop on **Fundamental Concepts and Applications of Research Methodology** organised by Bihar Agricultural University, Sabour, Bhagalpur, Bihar during October 06-07, 2020.  
-D. C. Mishra. Role of Statistics in Research Methodology (Invited Talk)
- The Meeting of **Experiential Learning** Coordinators of SAUs organized by Education Division, ICAR on October 06, 2020  
-Alka Arora. Experiential Learning System developed under Education Portal.
- International Webinar on **DUS testing data management/Automation/Image Analysis** during October 06-07, 2020.  
-Alka Arora. Knowledge Management System for DUS Characteristics.

- National Symposium on **Recent Developments in Buffalo Research** jointly organized by Indian Society for Buffalo Development (ISBD) in collaboration with ICAR-Central Institute for Research on Buffaloes (CIRB), Hisar on October 08, 2020.  
-Dinesh Kumar. Domestic animals computational genomics: Global and Indian Status (Invited Talk)
- Webinar on **Diagnostics and Remedial Measures for common error in application of Statistics** organized by Department of Agricultural Statistics, College of Agriculture, Navsari Agricultural University, Navsari during October 20-21, 2020  
-Arpan Bhowmik. Some anomalies in design of experiment during field experiment (Invited Talk).
- 7<sup>th</sup> Malaysia Statistics Conference 2020: Census Shapes Nation's Future organized by Department of Statistics Malaysia on October 22, 2020.  
-Hukum Chandra. Small Area Prediction (Short Course).
- International Workshop on **Statistical Computing using R Software** organized by Department of Statistics, MIT, Art Commerce & Science College, Alandi, Pune during October 29-31, 2020.  
-Hukum Chandra. Graphics in R and Writing R functions (Invited Talk).
- Webinar on **Statistical Approach for Producing Agricultural Statistics in India** organized by Amity Institute of Applied Sciences, Amity University, Uttar Pradesh on November 02, 2020  
-Hukum Chandra. Statistical Approach for Producing Agricultural Statistics in India (Invited Talk)
- Workshop and **Annual Review Meeting of ABIs/ ZTMCs/ ITMUs** under ICAR institutes of NRM, Agricultural Engineering and Agricultural Education Divisions during November 23-24, 2020.  
-Rajender Parsad. ICAR-IASRI ITMU Achievements for 2017-18 to 2019-20 and Future Work Plan.
- CAAST-NC National e-Training **Research Ethics and Thesis/Research Paper Writing Skills Development** organized by Chandra Shekhar Azad University of Agriculture and Technology, Kanpur during November 24-28, 2020.  
-K.K.Chaturvedi. Research Ethics. (invited Talk) in November 28, 2020.
- International Virtual Conference on **Prof. CR Rao's School of Thought on Statistical Sciences** organized by Department of Statistics, Pondicherry University, Pondicherry during November 21-22 & 28-29, 2020.  
-Rajender Parsad. Web Resources For Research & Dissemination in Statistical Sciences (invited Talk on November 29, 2020).  
-Hukum Chandra. Small Area Prediction of Survey Weighted Counts under a Spatial Model (Invited Talk)
- 28<sup>th</sup> AERA annual conference on the theme **Future of Indian Agriculture: Challenges and Opportunities** held virtually by University of Agricultural Sciences, Bengaluru during December 16-18, 2020.  
-Anuja AR. Pattern of crop diversification and its implications on under nutrition in India.

## PARTICIPATION

### International Conference/ Workshop/Symposium etc.

- The International conference Vaishvik Bhartiya Vaigyanik (VAIBHAV) Summit, a global virtual summit of Overseas Indian Researchers and Academicians, organized during October 02-31, 2020. (M.A. Iquebal, Sarika, K.K.Chaturvedi, Mohammad Samir Farooqi, D. C. Mishra)
- An International Workshop-training on "Designing and Implementing the Genomic Selection in Aquaculture" organised by ICAR-CIFE, Mumbai during October 12-16, 2020. (P.K. Meher)
- International Summit of Quality Indices in Higher Education – 2020 (ISQIHE) held during November 06-07, 2020 at Delhi Technological University, Delhi. (K.K.Chaturvedi, Mohammad Samir Farooqi and S.B. Lal)
- 2020 International Conference on Agricultural and Food Science (4th ICAFS2020) held as Webinar in Istanbul-Turkey during October 28-30, 2020 (Sapna Nigam)
- Four days International workshop on "Basics to advanced genome annotation at Ensembl and REST Application



Programming Interfaces (APIs)” during November 17-20, 2020 jointly organized by European Bioinformatics Institute (EMBL-EBI) and Nextgenhelper. (M.A. Iquebal and Sarika)

- International Virtual Conference on Prof. CR Rao’s School of Thought on Statistical Sciences organized by Department of Statistics, Pondicherry University, Pondicherry during during November 21-22 & 28-29, 2020 (Rajender Parsad, Hukum Chandra and Shashi Dahiya)

### National Conference/ Workshop/ Seminar/ Symposia/Training/Foundation Course/ Annual Day/ Lectures, etc.

- ◆ Global Summit on Responsible AI for Social Empowerment (RAISE 2020) held virtually from October 5-9, 2020 inaugurated by the Hon’ble Prime Minister of India. (K.K.Chaturvedi, Mohammad Samir Farooqi, M.A. Iquebal and Sarika)
- ◆ National Symposium on “Recent Developments in Buffalo Research” jointly organized by Indian Society for Buffalo Development (ISBD) in collaboration with ICAR-Central Institute for Research on Buffaloes (CIRB), Hisar on October 08, 2020. (Dinesh Kumar, M.A. Iquebal and Sarika)
- ◆ Indo-GBC Seminar on Data Sharing at a Global Level: Evolving perspectives amidst challenges Webinar held online on October 26, 2020. (K.K.Chaturvedi and Mohammad Samir Farooqi)
- ◆ Online Webinar on “Data Governance Quality Index” by NITI Aayog on October 28, 2020 (Rajender Parsad and Anil Rai )
- ◆ Virtual Regional Expert Consultation on Agriculturally Important Microorganisms held on October 28, 2020. (Sunil Kumar)
- ◆ Webinar on “Transformative Technologies and Entrepreneurship in Agriculture” on November 09, 2020 organized by National Director, NAHEP and DDG (Ag Edn.). (K.K.Chaturvedi, Mohammad Samir Farooqi, S.B.Lal and D.C. Mishra)
- ◆ Webinar on Big Data and Artificial Intelligence in Animal Genomics: Opportunities and Challenges organized at GADVASU, Ludhiana under NAHEP programme on November 19, 2020. (M.A. Iquebal and Sarika)
- ◆ FICCI’s Webinar on “Deep Tech for smart agriculture in India” on November 20, 2020 organized by FICCI. (Anil Rai, K.K.Chaturvedi, Anu Sharma and S.B.Lal)
- ◆ 5th National Conference on Review of Implementation of Pradhan Mantri Fasal Bima Yojna / RWBCIS organized by Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare held at Bhubaneshwar during November 27-28, 2020. (Tauqueer Ahmad, Hukum Chandra, Prachi Misra Sahoo and Ankur Biswas)
- ◆ A National Workshop on Intellectual Property Management in Agriculture on November 28, 2020 organized by ICAR-IIAB, Ranchi (B N Mandal)

## HUMAN RESOURCE DEVELOPMENT

### Professional Attachment Training of Scientists at our institute in 2020

S#	Scientist under whom training done	Name of Scientist Trainee	Affiliation of the Scientist trainee	Attachment training Period	Topic of training
1.	P.K. Meher	Ms. Shabna Begam	ICAR-NIPB, New Delhi	28.08.2020 to 27.11.2020	Application of machine learning methods for prediction of abiotic stress-responsive miRNAs
2.	Sudeep	Ms. Ritika	ICAR-IARI, New Delhi	19.08.2020 to 18.11.2020	IARI scholarship automation through Service plus
3.	Sudeep	Sh. Dilipkumar	ICAR-NIAP, New Delhi	15.07.2020 to 15.10.2020	Study of ICAR-E-platform and website development

## Professional Attachment Training of Scientists of our institute in 2020

S#	Name of Scientist	Division	Attachment training Period	Topic of training	Place of Training
1.	Bharti	Sample Surveys	10.08.2020 to 09.11.2020	Application of Randomized Response Technique in Forestry – a case study to measure proportion of forest encroachment in Himachal Pradesh	Punjab Agricultural University, Ludhiana
2.	Pankaj Das	Sample Surveys	11.09.2020 to 10.12.2020	Application of machine learning techniques on spatial prediction using geospatial data	Indian Institute of Remote Sensing, Dehradun
3.	Rahul Banerjee	Sample Surveys	06.08.2020 to 05.11.2020	Prediction Approach in Repeated Measurement Survey	West Bengal State University, Kolkata
4.	Chandan Kumar Deb	Computer Applications	08.09.2020 to 07.12.2020	Climate change impact on phenological cycle of rice: a study based on Enhanced Vegetation Index (EVI)	Indian Institute of Technology, Kharagpur
5.	Madhu	Computer Applications	10.09.2020 to 09.12.2020	Identification of paddy leaf disease (Blast and Brown spot) detection algorithm	Centre for Development of Advanced Computing, Kolkata
6.	Md. Ashraf Haque	Computer Applications	08.09.2020 to 07.12.2020	Digital Soil Mapping (DSM) using ML/DL Techniques	Indian Institute of Technology, Kharagpur
7.	Samarth Godara	Computer Applications	24.09.2020 to 23.12.2020	Machine learning	Indian Institute of Technology, Roorkee
8.	Sanchita Naha	Computer Applications	08.09.2020 to 07.12.2020	Language Detection and Labelling from Hindi English Code Mixed Text	Centre for Development of Advanced Computing, Noida
9.	Ratna Prabha	Centre for Agricultural Bioinformatics	30.06.2020 to 29.09.2020	Study of Taxonomic and Functional diversity of Rumen Microbiome of Mehsani Buffalo through Metatranscriptome approach and its Biological Impact Assessment	Bihar Animal Sciences University, Patna
10.	Sarika Sahu	Centre for Agricultural Bioinformatics	01.08.2020 to 31.10.2020	Study the Role of lncRNA and Alternative splicing in various flowering initiation stages of chick-pea	National Institute of Plant Genome Research, New Delhi

## CONSULTANCY/ADVISORY SERVICES PROVIDED

- Dr. Rajender Parsad working on the Consultancy Project on Evaluation of Agricultural Census Scheme from Department of Agricultural Co-operation and Farmers' Welfare, Government of India (Hukum Chandra, L.M. Bhar, Tauqueer Ahmad, Rajender Parsad, Kaustav Aditya, Pradip Bask, Vandita Kumari): Date extended till October 31, 2020.
- Dr. Arpan Bhowmik advised Dr. Nandita Sahana, Assistant professor, Uttarbanga Krishi Viswa Vidyalyaya, Coochbehar, West Bengal on the use of Principal Component Analysis (PCA) to identify the significant determinants with respect to both biochemical and phenotypic parameters for a study on "Evaluation of indigenous aromatic rice cultivars from sub-Himalayan Terai region of India for nutritional attributes and blast resistance" which consists of 35 local aromatic rice genotypes. Based on PCA results, bi-plot analysis have been carried out to see the impacts of different biochemical and phenotypic attributes respectively on different genotypes. Beside, k-means non-hierarchical clustering algorithm were performed for grouping the rice genotypes under the present investigation based on different biochemical and phenotypic attributes respectively.
- Dr. Anindita Datta advised Mr. Ganesh Das, Subject Matter Specialist (Agril.Extension), KVK, Uttar Banga Krishi Viswavidyalaya, Coochbehar on his research project "Role of Farm Science Centre on Agricultural information Networks: A study among the farm women of North Bengal". Carried out correlation analysis on the survey data and ranked 33 explanatory behaviors according to their correlations and tested them sequentially in a stepwise regression model; also measured the importance of 33 independent variables using Random Forest Classifier, a machine learning technique used for data driven classification and prediction.

- Dr. P.K. Meher advised Dr. Ravinder Singh, Assistant Professor, Department of Biotechnology, SKUAST Jammu on linkage disequilibrium (LD) analysis performed for the genotypic data of Mustard using the TASSEL software, by using the data in HapMap format.
- Dr. U.K. Pradhan advised Dr. RK Jena, Scientist, ICAR-NBSSLUP, Nagpur on digital soil nutrient mapping using different Machine learning technique (SVR, RFR, XGBoost regression and DL-regression) and delineation of management zones by using geo-graphical weighted principal component analysis (GWPCA) and possibilistic-FUZZY clustering for Nagaland state considering 900 soil profiles.

## AWARDS AND RECOGNITIONS

### Award

- The Hon'ble President of India, Shri Ram Nath Kovind conferred Indian Council of Agricultural Research (ICAR), New Delhi with the “Digital India Awards – 2020” (Ministry of Electronics and Information Technology (MEITY), Govt. of India)” under the Open Data Champion category through an event organized in virtual mode on December 30, 2020. The ICAR was felicitated with the Gold Icon Award for its Research Data Management Portal. This portal is developed, strengthened and maintained by ICAR-IASRI as lead centre in partnership with other Institutes. The Open Data Champion Award is to acknowledge the Ministries/Departments/ Organizations/ States for proactive, timely and regular release of datasets / resources through Web Services/APIs on the Open Government Data (OGD) Platform in compliance with the National Data Sharing and Accessibility Policy (NDSAP). The ICAR is committed for organizing its knowledge and making it available to the fullest extent possible through OGD Platform (<https://data.gov.in>) and its own Portal- KRISHI (Agricultural Knowledge Resources and Information System Hub for Innovations) Portal (<https://krishi.icar.gov.in>). The Portal has been developed by ICAR-IASRI as a centralized data repository system for Research Data Management in the Council.

### Recognitions

- Rajender Parsad
  - ◆ Honorary Secretary of the Indian Society of Agricultural Statistics from October 09, 2020 (AN)
- Anil Rai
  - ◆ Expert member of a National level Committee on Mission Mode in the domain of Precision Agriculture constituted by CSIR under the Chairmanship of Ex- Secy (DARE) and DG ICAR
- Hukum Chandra
  - ◆ Expert Member, FAO of United Nations, Rome
  - ◆ Expert, World Resources Institute India
  - ◆ Resource Person, 7th Malaysia Statistics Conference 2020: Census Shapes Nation's Future, Malaysia on October 22, 2020
  - ◆ Expert Member, Committee to bridge the data gaps for Sustainable Development Goals (SDGs) indicators through Small Area Estimation techniques, Ministry of Statistics and Programme Implementation, Government of India
  - ◆ Expert Member, FAO of the United Nations, Rome
  - ◆ Member, Governing Body Meeting (GBM) of Institute of Applied Statistics and Development Studies (IASDS), Lucknow

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S. No.	Name	Registration number	Received date
1	Agricultural Universities-Project Information Management System(AU-PIMS) (in collaboration with Krishi Anusandhan Bhawan-II, New Delhi)	SW-13946/2020	08.12.2020
2	Accreditation System For Higher Agricultural Education Institution (in collaboration with Krishi Anusandhan Bhawan-II, New Delhi)	SW-13947/2020	08.12.2020
3	Krishi Vishwavidyalaya Chhatr Alumni Network(KVC ALNET) (in collaboration with Krishi Anusandhan Bhawan-II, New Delhi)	SW-13948/2020	08.12.2020



## PERSONNEL

### Congratulations on your Promotion/ New Assignment/ New Joining

Name	Designation	Effective date
Dr. Rajender Parsad	Director	09.10.2020
Dr. Md Wasi Alam	Principal Scientist	10.01.2018
Dr. KK Chaturvedi	Principal Scientist	07.08.2018
Dr. SB Lal	Principal Scientist	23.09.2018
Smt. Kalasya Devi	Skilled Supporting Staff	23.10.2020

### Wish you a Happy Retired Life

Name	Designation	Effective date
Sh. Naresh Kumar	Chief Technical Officer	30.11.2020
Sh. Pratap Singh	Chief Technical Officer	30.11.2020

### Transfer/ Resignation

Name	Designation	Effective date
Dr. Ravindra Shekhawat	Scientist	Transferred to ICAR-CAZRI, Jodhpur w.e.f. 07.11.2020
Dr. Pradip Basak	Scientist	Voluntary Retirement on 30.11.2020

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Anil Kumar Kochlay, V.P. Singh, Naresh Kumar, Jyoti Gangwani and Neha Narang

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