



- Research Achievements
- Papers presented/Lectures Delivered
- Consultancy/Advisory Services
- Copyrights/MOUs
- Panorama of Activities
- Participation in Conferences
- Awards and Recognitions
- Personnel
- Publications
- Human Resource Development
- Projects Initiated/Completed

## 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 ICAR-IASRI during the period under report. .

ICAR-IASRI for the first time developed a machine learning based computational tool called "RBPLight" to identify RBPs in plants and also developed machine learning-based computational model for predicting abiotic stress responsive lncRNAs in plants. The Institute assessed the genomic prediction accuracy (GPA) for three micronutrient traits (grain iron, grain zinc, and  $\beta$ -carotenoid concentrations) in wheat using various Bayesian regression models.

Information System for AICRP on Weed Management Launched during XX Annual Review Meeting of AICRP on weed Management held at SKUAST-J Jammu during May 26-27, 2023. Developed Methods of construction of Rotatable mixed-level response surface designs, Resolvable PBIB design for multi-site varietal trials, Trend Resistant Balanced Bipartite Block Designs, Partially Balanced t-Designs, etc.

Dr. Prachi Misra Sahoo visited USA, for presenting paper titled 'Neoteric and Innovative end-to-end solution for generating livestock statistics in India: eLISS Portal and eLISS Data Collection App' in the 9<sup>th</sup> International Conference on Agricultural Statistics (ICAS). Dr Alka Arora and Dr. Soumen Paul attended Workshop on Designing Digital Survey Tool organized by EiA-CSISA in Bangkok, Thailand during April 19-21, 2023. For capacity building, the Institute conducted two Hindi Workshops and 27 Sensitization programmes.


The Institute organized XXVII Meeting of ICAR Regional Committee-V in hybrid mode on April 27, 2023 for discussing the Centre-State relations in the domain of agricultural and allied sciences pertaining to the Zone-V constituent states viz., Punjab, Haryana and Delhi. Institute also organized an Online Workshop on Statistical Meta-Analysis at ICAR-IASRI and Dr. Guido Knapp, Department of Statistics, TU Dortmund University, Germany was the invited speaker. 4<sup>th</sup> workshop on Applied Deep Learning (IWADL) in hybrid mode was organized jointly with BITS, Goa, Indian Institute of Technology, Mandi and ICAR-IASRI, New Delhi on Blended Learning Platform. Two Guest seminars were organized at Institute (i) Dr. Maxwell Mkondiwa, Associate Scientist, Spatial Economist, CIMMYT, New Delhi and (ii) Professor Partha P Lahiri, Professor and Director, Joint Programme in Survey Methodology, Department of Mathematics, University of Maryland, College Park, USA.

Institute also celebrated Environment Day on June 05, 2023, International Yoga Day on June 21, 2023 and 17<sup>th</sup> National Statistics Day on June 29, 2023. On the occasion of 17<sup>th</sup> National Statistics Day, a walkathon was also organized. The Institute initiated 01 new project and 04 research project was completed and received 02 copyrights. The scientists of the Institute were associated with two Patents filed by ICAR-IARI, New Delhi. A total of 64 Research Papers and 03 R Packages were published.

The scientists of the Institute brought recognitions by way of serving as Expert Members in various high level committees, presenting research work in different prestigious conferences/ workshops.

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.



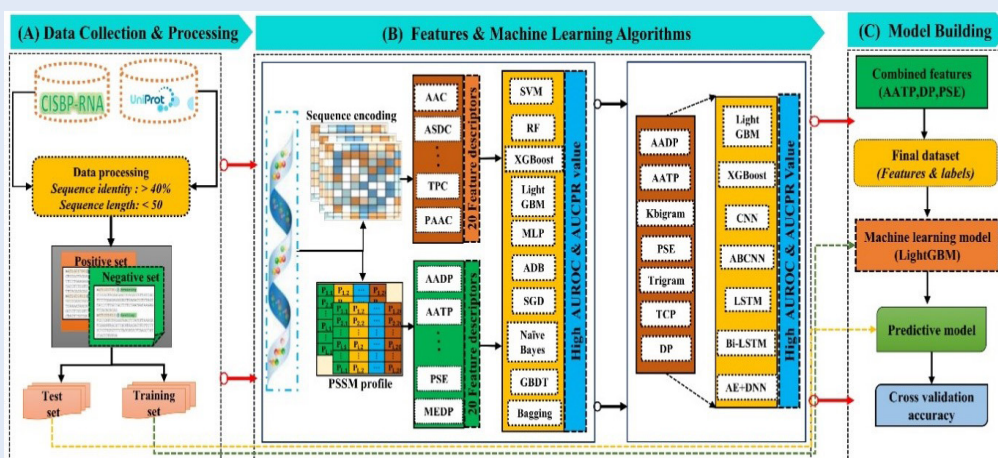
  
(Rajender Parsad)

## RESEARCH ACHIEVEMENTS

### RBP Light: A Computational Tool for RNA-Binding Protein Prediction in Plant

RNA binding proteins (RBPs) are essential players in post-transcriptional gene regulation in plants. They influence RNA stability, splicing, localization, translation, stress response, development, and epigenetic regulation. Their diverse functions contribute to the precise control of gene expression and the maintenance of plant growth, development, and adaptation to changing environments. Thus, accurate identification of RBPs is important in plants. Majority of the computational techniques suggested for identifying RBPs are mainly applicable to human and mice datasets. Even though some models have been tested on *Arabidopsis thaliana*, they produce poor accuracy when applied to other plant species. Despite substantial improvements in the prediction of RBPs, the development of plant-based models is mostly disregarded.

To bridge the gap, a machine learning based computational tools called “RBPLight” has been developed for identification of plant specific RBPs. Five deep learning models and ten shallow learning algorithms were utilized for prediction. Despite the fact that certain models have already been trained and assessed on the model organism *Arabidopsis thaliana*, this is the first comprehensive computer model for the discovery of plant-specific RBPs. To develop the generalised plant specific models, RBP sequence dataset from 36 different plant species including cereals, pulses, oilseed, vegetables, fruits and commercial crops are considered in the current study. The highest repeated five-fold cross-validation accuracy, 91.24% area under the receiver operating characteristic (AU-ROC) and 91.91% area under Precision-Recall curve (AU-PRC), was achieved by a light gradient boosting machine. The RBPLight achieved high accuracy and outperformed several existing tools for RBP identification in different plant species. Species-specific RBP identification using experimentally validated RBP sequences confirmed the reliability and generalised predictive ability of RBPLight. The web server RBPLight is publicly accessible at <https://iasri-sg.icar.gov.in/rbplight/>, for the convenience of researchers to identify RBPs in plants. The proposed approach is expected to supplant the existing tools and wet-lab methodologies for recognizing plant-specific RBPs. The RBPLight can be applicable to cereals, pulses, oilseed, vegetables, fruits and commercial crops and will contribute to the development of improved crop varieties and sustainable agricultural practices, thereby addressing global food security and agricultural sustainability challenges.



**Figure 1.** The diagram depicts the overall design of the entire computational strategies followed to develop the RBP prediction model.

### ASLncR: A Novel Computational Tool for Abiotic Stress Responsive Long Non-coding RNAs Prediction in Plants

Sustainable food production is necessary to meet the demands of the ever-increasing human population. Conversely, crop plants are constantly exposed to adverse environmental perturbations that are predicted to result in a 70% yield loss in important agricultural crops. Abiotic stresses, such as cold, drought, heat, salt, and nutrient deficiencies, have been a major factor in limiting crop yield and productivity. A growing body of evidence indicates that a large number of long non-coding RNAs (lncRNAs) are key to many abiotic stress responses. Thus, identifying abiotic stress-responsive lncRNAs is essential in crop breeding programmes in order to produce cultivars resistant to abiotic stresses.

ICAR-IASRI developed the machine learning-based computational model for predicting abiotic stress responsive lncRNAs. To develop this generalised abiotic stress specific model, the datasets covered 114 different plant species including cereals, pulses, oilseed, vegetables, fruits and commercial crops. The Kmer features ranging from size 1 to 6 were utilized to represent lncRNAs in numeric form. To select important features, four different feature selection strategies were utilized. Among the seven shallow learning algorithms, support vector machine (SVM) achieved the highest cross-validation accuracy with the selected feature sets. The observed 5-fold cross-validation accuracy, area under the receiver operating characteristic (AU-ROC), and area under Precision-Recall curve (AU-PRC) were found to be 68.84%, 72.78%, and 75.86% respectively. Further, the robustness of the developed model (SVM with selected feature), was evaluated using an independent test dataset, where the overall accuracy, AU-ROC and AU-PRC were found to be 76.23, 87.71 and 88.49 percentage, respectively. The SVM also outperformed six different deep learning models in terms of accuracy for predicting abiotic stress responsive lncRNAs. For easy accessibility, the developed computational approach “ASLncR” was established as an online prediction tool available at <https://iasri-sg.icar.gov.in/aslncr/>. “ASLncR” is applicable to cereals, pulses, oilseed, vegetables, fruits and commercial crops and may contribute to the development of abiotic stress resistance improved crop varieties.

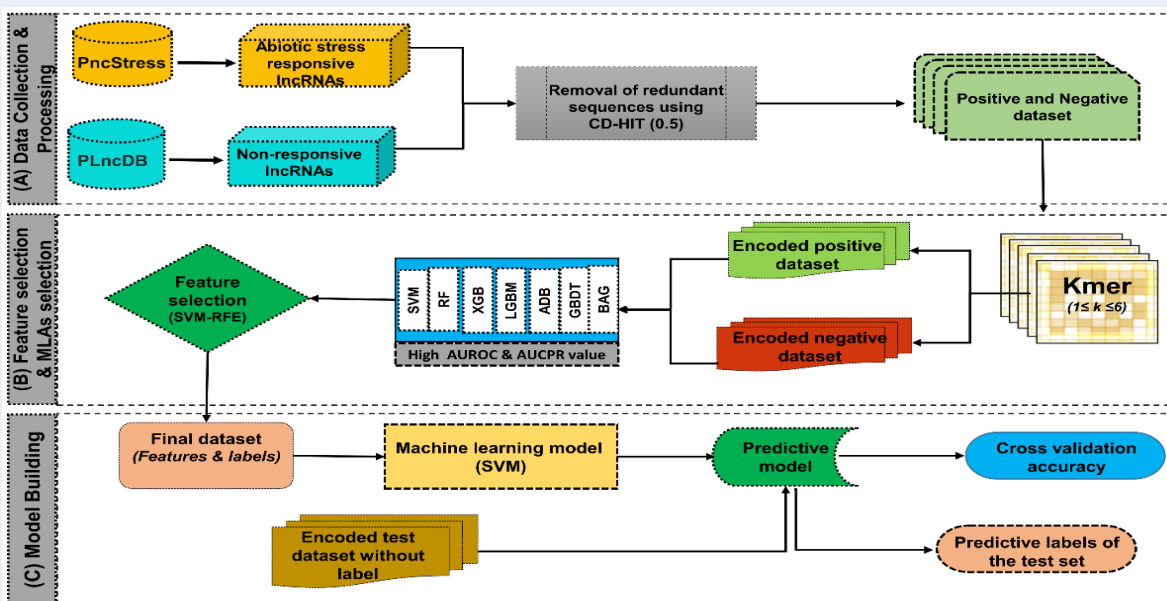


Figure. 2. The diagram illustrates the overall workflow of the entire computational strategies followed to develop the abiotic stress responsive lncRNA prediction models.

## Evaluation of Eight Bayesian Genomic Prediction Models for Three Micronutrient Traits in Bread Wheat (*Triticum aestivum* L.)

In wheat, genomic prediction accuracy (GPA) was assessed for three micronutrient traits (grain iron, grain zinc, and  $\beta$ -carotenoid concentrations) using eight Bayesian regression models. For this purpose, data on 246 accessions, each genotyped with 17,937 DArT markers, were utilized. The phenotypic data on traits were available for 2013–2014 from Powerkheda (Madhya Pradesh) and for 2014–2015 from Meerut (Uttar Pradesh), India. The accuracy of the models was measured in terms of reliability, which was computed following a repeated cross-validation approach. The predictions were obtained independently for each of the two environments after adjusting for the local effects and across environments after adjusting for the environmental effects. The Bayes ridge regression (BayesRR) model outperformed the other seven models, whereas BayesLASSO (BayesL) was the least efficient. The GPA increased with an increase in the size of the training set as well as with an increase in marker density. The GPA values differed for the three traits and were higher for the best linear unbiased estimate (BLUE) (obtained after adjusting for the environmental effects) relative to those for the two environments. The GPA also remained unaffected after accounting for the population structure. The results of the present study suggest that only the best model should be used for the estimations of genomic estimated breeding values (GEBVs) before their use for genomic selection to improve the grain micronutrient contents.

## Other Achievements

- **Rotatable Mixed-level Response Surface Designs:** Under response surface model for mixed level factors of the form  $2^n \times 3$ , where experimental units experience the overlap effects from immediate left and right neighboring units conditions have been derived for the orthogonal estimation of the parameters. A method of constructing rotatable mixed-level response surface designs of the form  $2^n \times 3$  has been proposed. The method has been extended to the case of mixed-level rotatable designs of the form  $2^n \times 3^n$ . Further the work has been extended to  $s^1 n^1 \times s^2 n^2$ .
- **Rotatable Mixed-level Response Surface Designs:** Method of construction for a class of resolvable PBIB designs suitable for multi-site varietal trials has been developed and are based on newly defined four-associate class association scheme named as Dichotomized Split-Set (DiSS) association scheme.
- **Trend Resistant Balanced Bipartite Block Designs:** Methods of construction for trend resistant Balanced Bipartite Block (BBPB) designs are developed that are useful when the interest of the experimenter is in making comparisons between two disjoint sets of treatments, in the presence of systematic trend within a block.
- **Trend Resistant Balanced Bipartite Block Designs:** Developed two series of partially balanced t-designs using the triangular association scheme with some interesting characterization properties. These designs find high application potential in crop and animal experimentation, especially in Integrated Farming Systems research involving both crop and livestock components.
- **CNN-FunBar:** A convolutional neural network (CNN) based approach for the classification of fungi Internal Transcribed Spacer (ITS) sequences has been developed. Effects of convolution kernel size, filter numbers, k-mer size, degree of diversity and category-wise frequency of ITS sequences on classification performances of CNN models have been assessed at all taxonomic levels (species, genus, family, order, class and phylum). The best CNN model architecture called as “CNN\_FunBar” produced >93% average accuracy for classifying ITS sequences from balanced datasets with 500 sequences per category and 6-mer frequency features at all levels. The comparative study has revealed that CNN\_FunBar out performed different machine learning algorithms such as Support Vector Machine (SVM), k-nearest neighbors (KNN), Naïve-Bayes and Random Forest (RF) as well as existing fungal taxonomy prediction software (funbarRF, Mothur, RDP Classifier and SINTAX). The findings will be helpful for fungal taxonomy classification using large metagenomic datasets.
- **CCncRNAdb:** CCncRNAdb (Common Carp non-coding RNA database) is a comprehensive tissue-specific database of Common carp long non-coding RNAs (lncRNAs) and circular RNAs (circRNAs). Currently, this database has a total of 33,990 lncRNAs and 22,854 circRNAs. The database is freely accessible at <http://backlin.cabgrid.res.in/ccncrnadb/>

## R-Packages Developed: 03

- **MixedLevelRSDs:** Response Surface Designs (RSDs) involving factors not all at same levels are called Mixed Level RSDs (or Asymmetric RSDs). In many practical situations, RSDs with asymmetric levels will be more suitable as it explores more regions in the design space. A packages named Mixed Level RSDs developed for generating Mixed Level RSDs and is available at <https://CRAN.R-project.org/package=MixedLevelRSDs>.
- **pRepDesigns:** Partially Replicated (p-Rep) Designs Version 1.1.0: Early generation breeding trials are to be conducted in multiple environments where it may not be possible to replicate all the lines in each environment due to scarcity of resources. For such situations, partially replicated (p-Rep) designs have wide application potential as only a proportion of the test lines are replicated at each environment. R package pRepDesigns is available at <https://CRAN.R-project.org/package=pRepDesigns>
- **EpiSemble:** A novel ensemble model for the prediction of epigenetic sites of genomes in plants. Available at <https://cran.r-project.org/web/packages/EpiSemble/index.html>.

### Release of Information system for AICRP on Weed Management

- Information System for AICRP on Weed Management Launched during XXX Annual Review Meeting of AICRP on weed Management held at SKUAST-J Jammu during May 26-27, 2023. It was launched by Dr JS Misra, Director, ICAR-DWR, Jabalpur.

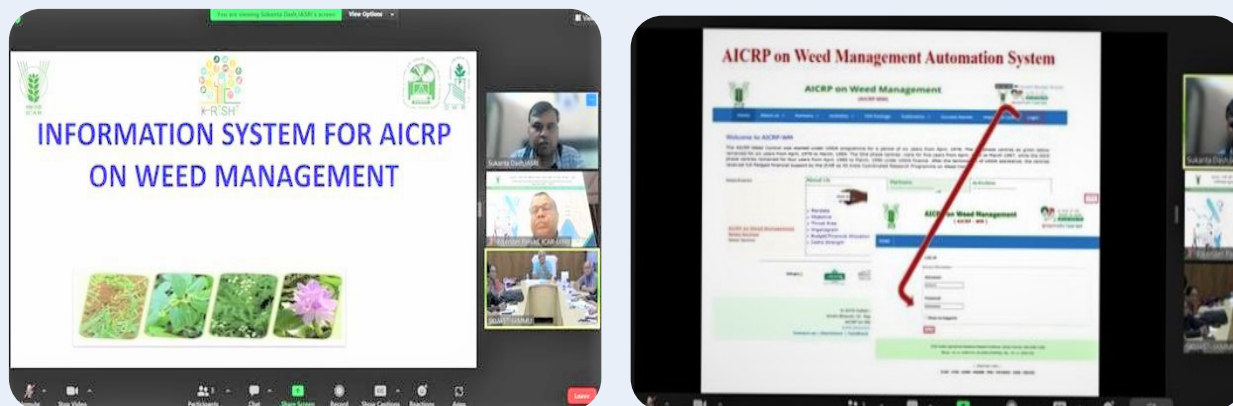


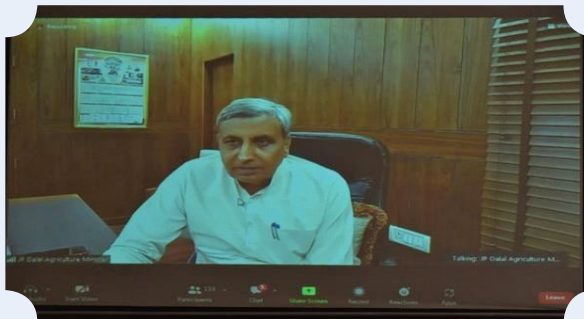
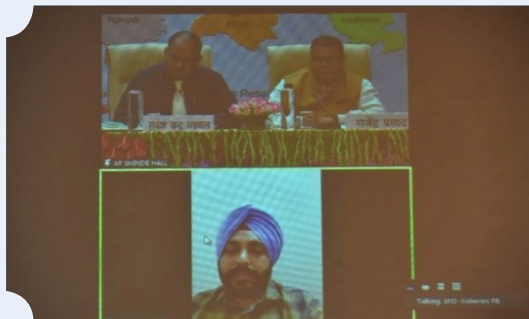
Figure 3. Information System for AICRP on Weed Management

## PANORAMA OF ACTIVITIES

### XXVII Meeting of ICAR Regional Committee-V

- The XXVII Meeting of ICAR Regional Committee-V was organized in hybrid mode at National Agricultural Science Complex, New Delhi on April 27, 2023 under the Chairmanship of Dr. Himanshu Pathak, Secretary, DARE & Director General (DG), ICAR, New Delhi for discussing the Centre-State relations in the domain of agricultural and allied sciences pertaining to the Zone-V constituent states viz., Punjab, Haryana and Delhi. Thereafter, Dr. Pratap Singh Birthal, Director, ICAR-National Institute of Agricultural Economics and Policy Research (NIAP), New Delhi gave a presentation on Agricultural Status and Development Perspective of the states of Punjab, Haryana and Delhi vis-à-vis other states of India. Dr. Rajender Parsad, Director, ICAR-IASRI, New Delhi and Member Secretary, RCV presented the Action Taken Report on the Action points of the last RC-V Meeting (i.e. XXVI Meeting held on December 07, 2020). Shri Jai Parkash Dalal, Minister for Agriculture and Farmer Welfare; Animal Husbandry and Dairying Fisheries; Government of Haryana graced the RC-V Meeting in online mode. He delivered his special remarks by raising the issues faced by Haryana state in the agricultural, horticultural, livestock and fisheries sectors. The detailed points flagged by him have been included in the Action points which have been annexed subsequently. The state-wise problems and research needs and developmental issues were flagged by the senior officials of State Departments and responses were provided by the DDGs/ Vice Chancellors/ Scientists of ICAR/ SAUs. Post lunch session was presided over by Secretary, DARE and Director General, ICAR. The meeting ended with suggestions by Governing Body Members of RC-V and also Remarks given by Dr. R.C. Agrawal, DDG (Agricultural Education), ICAR & Nodal Officer of the RC-V meeting.





### World Environment Day Celebrations

- Institute celebrated World Environment Day on June 05, 2023 and planted guava, orange, peach and lemon plants. Also launched single use plastic free campus campaign. Dr. Rajender Parsad, Director, ICAR-IASRI requested to all IASRI family members to keep the campus clean, free from single use plastic, effective use of electric appliances and judicious use of water. (Convener: Rajender Parsad)



### 4<sup>th</sup> Workshop on Applied Deep Learning

- The 4<sup>th</sup> Indian workshop on Applied Deep Learning, hosted at Birla Institute of Technology and Science Pilani, K.K. Birla Goa campus from June 12-16, 2023, was organized jointly by BITS Pilani, Indian Institute of Technology (IIT) Mandi and ICAR-Indian Agricultural Statistics Research Institute (ICAR-IASRI) in a blended learning format. It is an absolute game-changer! From sequences and natural language processing to deep reinforcement learning, it covers a wide range of cutting-edge topics. The agricultural community has seized this golden opportunity

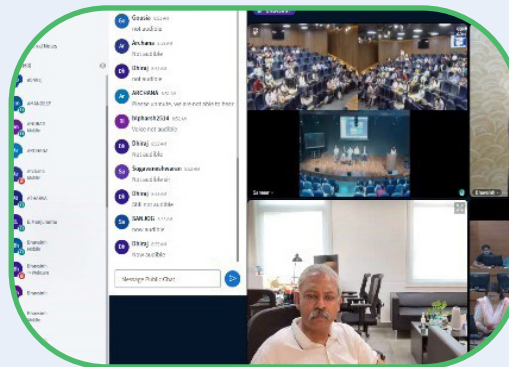
to enhance their knowledge through this incredible training program using National Agricultural Research and Education System - Blended Learning Platform (NARES-BLP). NARES-BLP platform has usefully employed in this workshop. Professor Phalguni Gupta, Vice Chancellor, GLA University and Dr. Rajender Parsad, Director, ICAR-IASRI, New Delhi expressed their views about the importance of IWADL workshop and NARES-BLP during

the inaugural session. NARES-BLP enabled researchers, experts, and enthusiasts in the field of deep learning to explore and learn the subject in a cohesive environment. Prominent researchers from various institutions and companies, including IIT Mandi, IIT Delhi, IIT Kharagpur, International Institute of Information Technology (IIIT) Hyderabad, BITS Pilani, Harman DTS, Fujitsu, and Sahaj AI focuses on the application of deep learning architectures such as Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), Autoencoders, Generative Adversarial Networks (GANs), Transformers, Diffusion models, and more. These architectures have shown great potential in addressing a wide range of problems in diverse domains such



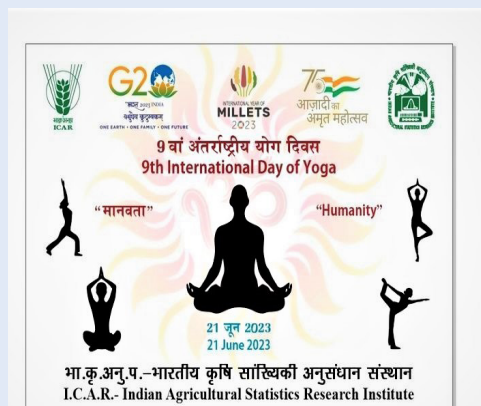
as agriculture, healthcare, finance, transportation, education, manufacturing, and entertainment. Dr. Suman Kundu, Director BITS Pilani, K.K. Birka Campus was the chief guest during the valedictory session. He emphasized greater collaboration among the participating institutions. A total of 203 participants across India from agriculture and general universities and industry, joined the training programme. Out of these 98 participants joined online through BLP and 105 participants joined in person. 15 faculty from BITS Pilani, IIT Mandi, IIT Delhi, IIT Kargpur, IIIT Hyderabad, Texas State University, Fujitsu, Sahaj AI and Herman delivered lectures in the training programme. Following are some of the highlights of the workshop:

(i) The workshop was organized on the Main tenant of ICAR BLP (<https://icarblp.krishimegh.in>); (ii) For five days, 90+ Participants attended virtual/online classes of the IWADL workshop 2023 using the ICAR BLP; (iii) Three Assessments (Quiz 1, 2 and 3) were successfully conducted over the ICAR BLP platform. 190+ Participants successfully attempted assessment over the ICAR BLP; (iv) Customisation Email sent for all users for registration purposes; (v) Throughout the workshop, optimal and flawless video-conferencing performance was observed; (vi) IWADL workshop Feedback taken via ICAR BLP and (vii) Learners expressed their satisfaction on the topics covered and practical exercises given to understand the actual applications of deep learning.



## International Yoga Day

- The Institute celebrated 9<sup>th</sup> International Yoga Day on June 21, 2023 with the theme “Vasudhaiv Kutumbkam” to achieve the objective of “Yoga for humanity”. “योग करें, रोज करें, स्वस्थ रहें और सुरक्षित रहें” The focus of the session was aimed to focus on “Aasan and Pranayam” and “Lifestyle: Eating and behavioral habits” with common yoga protocol. Shri Vedraj Soni, Member, Delhi State Yog Karyakarini, Bhartiye Yog Sansthan, and Shri Vedprakash Sachdeva, District Yog Adhikari, Bhartiya Yog Sansthan conducted the Yoga session on this special day. Dr. Rajender Parsad, Director, ICAR-IASRI urged the participants to practice Yoga for good mental and physical health. The session covered the usefulness of Yoga, Pranayam and eating habits(s) including type of food intake and schedule. Participants: 120. (Convener: K.K. Chaturvedi)



## 17<sup>th</sup> National Statistics Day

- The Institute celebrated National Statistics Day Lecture and Walkathon on the eve of 17<sup>th</sup> National Statistics Day on 28<sup>th</sup> June 2023. The theme of 17<sup>th</sup> National Statistics Day is Alignment of State Indicator Framework with National Indicator Framework for Monitoring Sustainable Development Goals. Shri Ashish Kumar, Former Director General, Central Statistics Office, Ministry of Statistics and Programme Implementation, Government of India, Chief Guest delivered the Keynote Address online on **National and International Experience in Official Statistics System and Capacity Building with Special Reference to Agricultural Statistics**. He shared his valuable insights regarding the importance of official statistics in efficient policy formulation. Further, he emphasized the applicability of Machine Learning/Artificial Intelligence in the field of statistics. He appreciated the role of ICAR-IASRI for building quality human resources. Sh. Rakesh Kumar Tyagi, Former Director General, National Sample Survey Office, Ministry



of Statistics and Programme Implementation, Government of India and Guest of Honour shared his experiences as alumnus of ICAR-IASRI, New Delhi and his experiences in National Statistics System. He also highlighted the rich heritage and the significant contributions made by the Institute in National Agricultural Research and Education System and National Agricultural Statistics System.

- Earlier in his welcome address, Dr Rajender Parsad, Director, ICAR-IASRI gave the genesis and growth of the Institute. He also enumerated the significant contributions of the Institute during last 93 years since its beginning as a small statistical section of the Imperial Council of Agricultural Research. He also emphasized on the importance of National Statistics Day highlighting the contribution of Professor P.C. Mahalanobis. Students of ICAR-IASRI made a presentation on the inspiring journey of Professor P.C. Mahalanobis and other eminent national and international statisticians. Alumni of ICAR-IASRI currently working in various sectors viz., Indian Statistical Service, Agricultural Research Service, Agricultural Universities and Multinational companies interacted online with the students. A two-hour offline interaction session with alumni working in the corporate sector was also organized to make the students prepared for corporate sector and entrepreneurs. Logo designing and poster making competitions were organized for students. The event brought together the staff, students, and alumni of ICAR-IASRI. Some interesting competitions for M.Sc. and Ph.D. students were organized on this occasion.







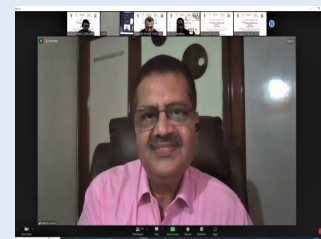
**17 वॉ राष्ट्रीय सांख्यिकी दिवस**  
**17<sup>th</sup> National Statistics Day**  
 Celebrations  
**JUNE 28, 2023 (2:30 PM)**  
 (Zoom link: <https://qps.ly/abv56t>)

**Theme: "Alignment of State Indicator Framework with National Indicator Framework for Monitoring Sustainable Development Goals"**

<b>Chief Guest and Keynote Speaker</b>  <b>Sh. Ashish Kumar</b> Former Director General, Central Statistics Office, Govt. of India	<b>Guest of Honour</b>  <b>Sh. Rakesh Kumar Tyagi</b> Former Director General, National Sample Survey Office, Govt. of India	<b>Guidance</b>  <b>Dr. Rajender Parsad</b> Director, ICAR-IASRI, New Delhi
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**Major Attractions**  
**Keynote Address**  
 Topic: National and international experience in official statistics system with special reference to agricultural statistics  
**Students Presentation**  
**Alumni Interaction**  
**Walkathon**

ICAR-INDIAN AGRICULTURAL STATISTICS RESEARCH INSTITUTE, NEW DELHI  
 (Please visit: <https://iasri.icar.gov.in>)



- A Walkathon was organized on June 28, 2023 starting from ICAR-IASRI to KAB-II, Director Office, ICAR-IARI and IARI Library and back to the Institute. Dr. R.C. Agrawal, Deputy Director General (Agricultural Education), Dr. Seema Jaggi, Assistant Director General (HRD), Dr. Viswanathan Chinnusamy, Joint Director (Research), ICAR-IARI and other officials from KAB-II and ICAR-IARI joined the Walkathon. A total of around 200+ participants including staff, students and alumni took part in the celebrations.

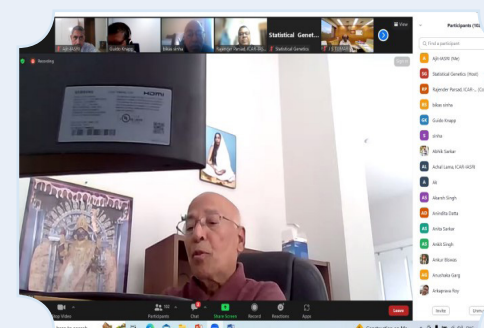
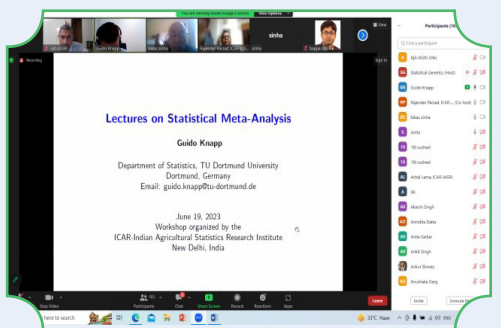
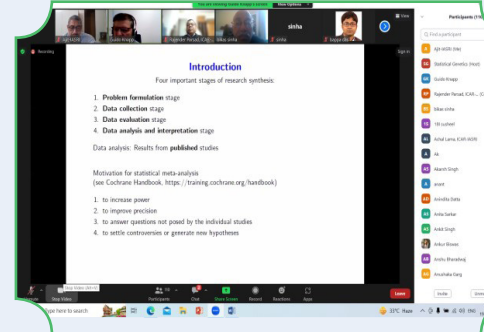
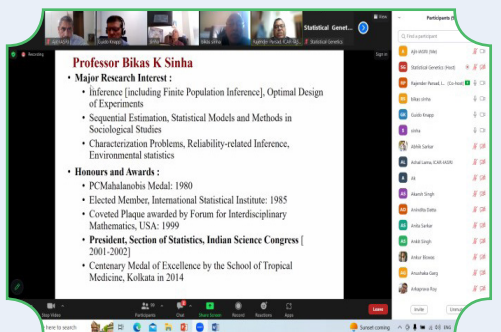
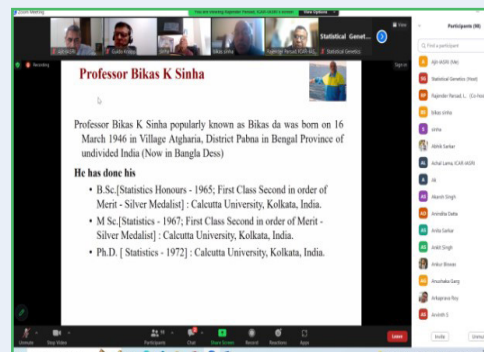
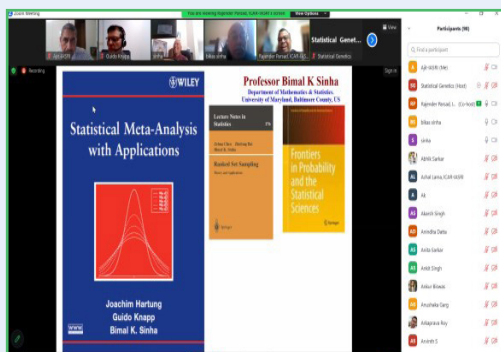
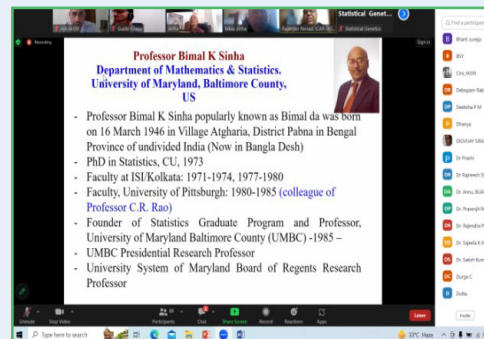
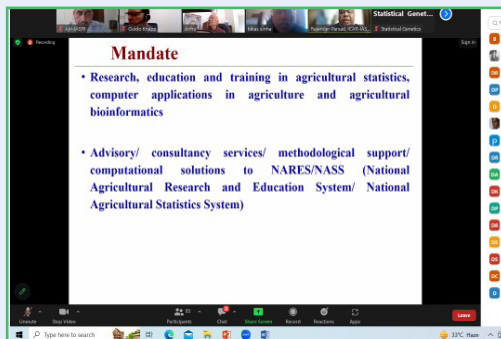


## WORKSHOPS/WEBINARS/ MEETINGS ETC. ORGANIZED

### Workshops

- A workshop on 'Compilation of Food Loss Index for India' was organized on May 09, 2023 at ICAR-IASRI in hybrid mode in which participants from FAO, Rome, FAO-India, MoSPI, MoFPI, SSER and ICAR-IASRI project team members participated. The participants were trained/ capacitated on compilation of Food Loss Index for India during the workshop. The report on Compilation of Food Loss Index for India demonstrating the possibility of computing and reporting the food loss index for India using the FAO methodology and the data collected by the Government of India was shared with MoSPI for their comments, if any, so that the SDG Indicator 12.3.1a (Food Loss Index) may be included in the National Indicator Framework of India for official reporting of FLI for India by MoSPI to FAO, the custodian agency for this indicator. (Conveners: Tauqueer Ahmad and Prachi Misra Sahoo)

- Online workshop on Statistical Meta-Analysis was organized at ICAR-IASRI on June 19, 2023. This workshop was chaired by Professor Bimal K Sinha, Department of Mathematics and Statistics, University of Maryland, Baltimore, County, US and Professor Bikas K Sinha, Former Member National Statistical Commission, Government of India. Dr. Guido Knapp, Department of Statistics, TU Dortmund University, Germany covered the topics on Meta-analysis of normal and binary data; Methods for assessing publication bias and Meta-regression and General Introduction to meta- analysis; Review of basic SMA methods and SMA using R package. (Conveners: Rajender Parsad and Ajit)



## Seminars Delivered

- A total of 58 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	2
	New Project Proposal	2
	Foreign Visit	3
	General	
Student	Course	7
	ORW	34
	Thesis	8
	Guest Seminar	2
<b>Total</b>		<b>58</b>

## Guest Seminars:

- Dr. Maxwell Mkondiwa, Associate Scientist, Spatial Economist, CIMMYT, New Delhi was invited at ICAR-IASRI and delivered talk on 'Towards Personalized Agro-Advisories: Causal Machine Learning and Spatial Bayesian Modelling Insights from the Landscape Diagnostic Survey (LDS)' on May 19, 2023. (Conveners: Alka Arora and Soumen Pal)
- Professor Partha P Lahiri, Professor and Director, Joint Programme in Survey Methodology, Department of Mathematics, University of Maryland, College Park, USA delivered talk on 'A Nested Error Regression Model with High Dimensional Parameter for Small Area estimation on June 21, 2023 at ICAR-IASRI, New Delhi. (Convener: Rajender Parsad)

## Foreign visit seminars delivered :

- Susheel Kumar Sarkar: Attended training programme on Intensive GS & Modern Experimental Design at International Rice Research Institute, Philippines during February 13-24, 2023 and delivered seminar on April 19, 2023.
- Alka Arora and Soumen Pal: Attended Data Management Workshop on Designing Digital Survey Tool organized by EiA-CSISA at Bangkok, Thailand during 19-21 April, 2023 and both of them delivered seminar in Institute on May 18, 2023

## PUBLICATIONS

### Research Papers

- Agrawal R, Singh KN, Lama A, Gurung B, Haque MA, Singh KK and Singh P (2023). Weather based models for pre-harvest crop Yield forecasting. *Journal of Indian Society of Agricultural Statistics*, 77(1), 59–69.
- Ahmad T, Biswas A, Sud UC, Sahoo PM and Singh M (2023). Sampling methodology for estimation of private food grains stock at farm level aligned with input survey of agriculture census in India. *Journal of Indian Society of Agricultural Statistics*, 77(1), 95-104. <https://krishi.icar.gov.in/jspui/handle/123456789/79675>
- Arora R, Sharma R, Ahlawat S, Chhabra P, Kumar A, Kaur M, Vijh RK, Lal SB, Mishra DC, Farooqi MS and Srivastava S (2023). Transcriptomics reveals key genes responsible for functional diversity in pectoralis major muscles of native black Kadaknath and broiler chicken. *3 Biotech*, 13, 253. <https://doi.org/10.1007/s13205-023-03682-0>

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### Book Chapters

- S Marwaha, CK Deb, MA Haque, S Naha and AK Maji (2023). Application of Artificial Intelligence and Machine Learning in Agriculture. In: *Translating Physiological Tools to Augment Crop Breeding*. Eds. Harohalli Masthigowda M., Gopalareddy K., R. Khobra, G. Singh, G. Pratap Singh. Springer, Singapore. [https://doi.org/10.1007/978-981-19-7498-4\\_21](https://doi.org/10.1007/978-981-19-7498-4_21)
- A Arora, T. Misra, M. Kumar, S. Marwaha, S. Kumar, V. Chinnusamy (2023). Computer Vision Approaches for Plant Phenotypic Parameter Determination. In: *Digital Ecosystem for Innovation in Agriculture*. Eds. S. Chaudhary, C.M. Biradar, S. Divakaran, M.S. Raval. Studies in Big Data, Vol. 121. Springer, Singapore. [https://doi.org/10.1007/978-981-99-0577-5\\_13](https://doi.org/10.1007/978-981-99-0577-5_13)
- A. Dheeraj and S. Chand (2022). Deep Learning Model for Automated Image Based Plant Disease Classification. In: *Proceedings of International Conference on Intelligent Vision and Computing*. Eds. Sharma, H, Saha, A.K, Prasad, M (eds). ICIVC 2022. Proceedings in Adaptation, Learning and Optimization, Vol. 17. Springer, Cham. [https://doi.org/10.1007/978-3-031-31164-2\\_3](https://doi.org/10.1007/978-3-031-31164-2_3)
- R. Jain, S. Nigam, V. Kumasagi, S. Shaloo Begam and R. Saravanakumar R (2022). Technology Foresight: Anticipating Agricultural Applications. In: *Agri-base Technological Interventions for Entrepreneurship Development in Semi-Arid Zone*. Eds. R.K. Yogi, A.K. Sharma, Vinod Kumar, P.K. Rai, B. Renuka Rani B and S.K. Jamanal (2022). National Institute of Agricultural Extension Management (MANAGE), Hyderabad and ICAR-Directorate of Rapeseed Mustard Research, Bharatpur, India. ISBN: 978-93-91668-42-6.

### Report Compilation

- Action Taken Report, Agenda Notes & Status Report for XXVII Meeting of ICAR Regional Committee V held on April 27, 2023. (Compiled by Ramasubramanian V, Anshu Bharadwaj, Prawin Arya, Susheel Kumar Sarkar, Ajit, Sanjeev Panwar, Rajender Parsad, Anil Kumar and RC Agrawal)

## PAPERS PRESENTED/LECTURES DELIVERED

### Paper presented /Invited talk delivered in Conferences

- 6th International Conference on ‘Advances in Agriculture Technology and Allied Science’ at Hyderabad on June 20, 2023
  - S.N. Islam. Strengthening Agriculture and Education with ICT and other allied Technology for consolidating Farmer’s income: An ICAR-NAHEP initiative.

- Ninth International Conference on ‘Agricultural Statistics (ICAS IX)’ held at World Bank in Washington, DC, U.S.A during May 17-19, 202
  - Prachi Mishra Sahoo\*, Tauqueer Ahmad, Ankur Biswas, Anil Rai and Chirag Vasudev. Neoteric and Innovative end-to-end solution for generating livestock statistics in India: eLISS Portal and eLISS Data Collection App in the session of Modernising Survey Process.
- XXVII Meeting of ICAR Regional Committee No. V comprising the States of Punjab, Haryana, and Delhi on April 27, 2023 at NASC Complex, New Delhi in hybrid mode (online / In-Person).
  - Rajender Parsad. Action Taken Report of XXVI ICAR Regional Committee-V Meeting

### Lecture Delivered (Outside Institute)

- ‘Computational tools and techniques for molecular biology research’ on April 05, 2023 in National Workshop on Utilizing Germplasm to Identify Gene(s) / QTL(s) for Root Nodules in Food Legumes organized by Division of Genetics, ICAR-IARI, New Delhi during April 05-06, 2023. (Mir Asif Iquebal).
- ‘Research problem identification in light of NEP 2020’ on April 21, 2023 at DCR University of Science & Technology (Government of Haryana University) Murthal, Sonapat, Haryana. (Dinesh Kumar)
- ‘Livestock data management by advanced tools’ on April 26, 2023 in the Training programme on Entrepreneurship Development programme on Donkey Farming organized by ICAR-National Research Centre on Equines, Hisar during April 24-28, 2023. (Mir Asif Iquebal).
- ‘Experimental designs and/or ANOVA’ on April 24, 2023 in the training programme on Research Methodology and Computer Application organized for Ph.D. students at Maharshi Dayanand Saraswati University Ajmer during April 12-May 01, 2023. (Anindita Datta)
- Online training programme on Data Driven Agriculture: A Statistical training programme using R organized by College of Agriculture, Sumerpur (Pali), Rajasthan, during May 23-27, 2023.
  - ‘Introduction to R programming language and exploratory data analysis’ on May 23, 2023. (Rajeev Ranjan Kumar)
  - ‘Design of Experiments’ on May 24, 2023. (Rahul Banerjee)
- Two lectures on ‘Correlation and Regression Analysis’ on (i) May 23, 2023 and (ii) on May 24, 2023 for students of College of Forestry and for students of College of Horticulture in a training programme on Soft Skill for Statistical Analysis organized by Department of Basic Sciences, Dr YSP UHF Nauni-Solan during May 18-31, 2023. (Bharti)
- ‘Landscape on IT Interventions in Agriculture Education’ on May 26, 2023 in one day workshop on Blended Learning Platform in Jayalaltha Fisheries University (TNJFU). (Sudeep Marwaha)
- ‘Digitalization of information system on AICRP on vegetable crops’ was delivered on June 05, 2023 in the 41<sup>st</sup> Annual Group Meeting of AICRP-VC organized at SKUAST, Srinagar during 03-05 June, 2023. (Sukanta Dash)
- ‘Big Data Analytics and Applied Data Science’ was delivered on June 12, 2023 in 14 days FDP under IQAC organized at Sanskriti University, Mathura during June 01-14, 2023. (K.K. Chaturvedi)
- ‘Design and analysis of crop improvement trials’ on June 16, 2023 in Interactive session on Increasing Precision in Mustard Breeding Trials with Brassica Breeders of AICRP on Rapeseed and Mustard organized by Directorate of Rapeseed and Mustard, Bharatpur on June 16, 2023. (Rajender Parsad)

## PARTICIPATION

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

- 9<sup>th</sup> National Review Conference as Expert Committee member in online mode on Pradhan Mantri Fasal BimaYojana organized by Ministry of Agriculture and Farmers Welfare, Government of India in hybrid mode to discuss multiple issues between the States-ICs and Reinsurers-ICs, preparedness Technology Implementing Partners (TIPs) and MITR Agencies for implementation of YES-Tech program for Paddy and Wheat in 2023-24 and also WINDS and CROPPIC programs during April 14-15, 2023. (Tauqueer Ahmad)
- National workshop on Utilizing Germplasm to identify the Gene(s)/QTL(s) for Root Nodules in Food Legumes organized by Division of Genetics, ICAR-IARI, New Delhi during April 05-06, 2023. (Sneha Murmu and Prakash Kumar)


- Workshop on Regreen-Climate Change Adaptation and Mitigation in Agriculture organized by NAHEP Component-2 at KAB II on June 14, 2023. (Rajender Parsad)

## Meetings

- Consumer Affairs, Food & Public Distributions, Government of India and FCI officials under the Chairmanship of Director, ICAR-IASRI on April 06, 2023 at ICAR-IASRI, New Delhi and presented a new Project Proposal before them for their suggestions. (Rajender Parsad, Tauqueer Ahmad, Prachi Misra Sahoo and Ankur Biswas)
- Technical Committee of Bureau of Indian Standard MSD: 03 Sub Committee on April 19, 2023 (online). (Rajender Parsad)
- XXVII ICAR Regional Committee No. V (RC-V) Meeting at AP Shinde Hall, NASC Complex, New Delhi organized by ICAR-IASRI, New Delhi on held on April 27, 2023. (Rajender Parsad, Ramasubramanian V., Tauqueer Ahmad, Prawin Arya, Kanchan Sinha, Achal Lama, HS ROY, DC Mishra, Cini Varghese, Susheel Kumar Sarkar and Sukanta Dash, Mukesh Kumar, KK Chaturvedi and SB Lal)
- Review the work related to Kisan Sarathi, KVK Portal and Darpan Dashboard under the chairmanship of DDG (Extn.) at KAB-I, ICAR, New Delhi on April 28, 2023. (SB Lal and KK Chaturvedi)
- Under the Chairmanship of Sh. S.S. Nagrare, Adviser (Statistics), Department of Animal Husbandry & Dairying, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India to discuss issues related to the estimates generated from unit level data of pilot study on May 12, 2023 under the project titled “Integrated Sample Survey Solution for Major Livestock Products” at AHSD, New Delhi. (Tauqueer Ahmad, Prachi Misra Sahoo and Ankur Biswas)
- Expert Committee on Revisiting Survey Design, Ministry of Statistics and Programme Implementation, Govt. of India on May 26, 2023. (Rajender Parsad)
- 132th Executive Council Meeting of National Academy of Agricultural Sciences held on June 03, 2023. (Rajender Parsad)
- 30th Annual General Meeting of National Academy of Agricultural Sciences held on June 05, 2023. (Rajender Parsad)
- Aligning the activities of Various Disciplines under different subject matter divisions organized by Agricultural Education Division, ICAR on June 15, 2023.(Rajender Parsad)
- Visit of NAAC Peer Review Team for Graduate School, IARI, New Delhi to ICAR-IASRI, New Delhi on June 26, 2023. (Rajender Parsad, Alka Arora, Cini Varghese, Sudeep, Mukesh, KK Tyagi)

## HUMAN RESOURCE DEVELOPMENT

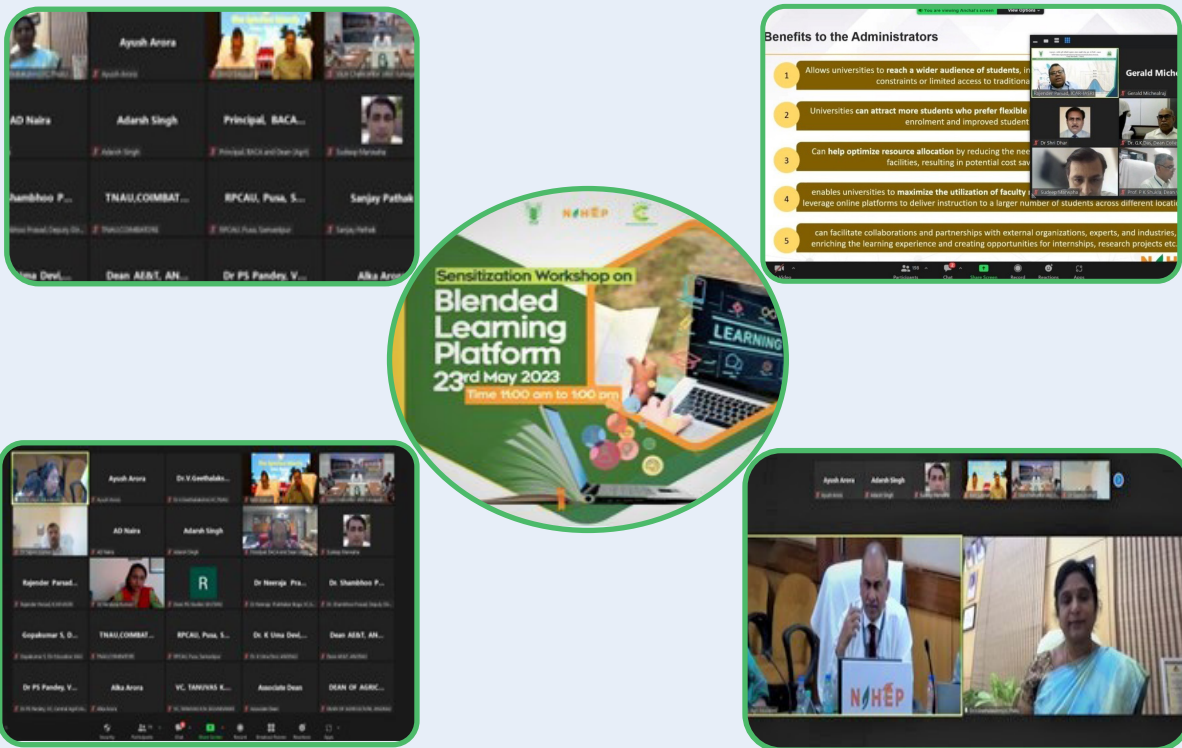
### Training Programmes/Workshops Organized: 2 (53participants)

S.No.	Topic	Venue	Period	No. of Participants
<b>हिंदी कार्यशाला</b>				
1.	सरकारी काम काज की करने लिया ई-टूल्स तथा राजभाषा नियम, अधिनियम के जानकारी” (संयोजक: अभिषेक श्रीवास्तव और मनोज कुमार)	भाकृअनुप- भकृसांअसं, नई दिल्ली	मई 30, 2023	28
				
2.	कृषि में सांख्यिकीय और मशीन लर्निंग तकनीक का परिचय” (संयोजक: प्रकाश कुमार; हिमांद्री शेखर राय और अजित )	भाकृअनुप- भकृसांअसं, नई दिल्ली	जून 06-12, 2023	25

## Sensitization Workshops: 27

### NARES-Blended Learning Platform: 03 (560+ participants)

- Online Sensitization workshop on NARES – Blended Learning Platform (i) for the Vice Chancellors of Agricultural Universities on May 23,2023: Participants- 80+; (ii) for Dean and Directors of 75 Agricultural Universities on June 09,2023: Participants- 250+ and (iii) Demonstration Session on NARES- Blended Learning Platform at TANUVAS on May 26,2023. Participants: 130+ (Coordinator: Sudeep Marwaha)



### Agri-DIKSHA Web Education Channel : 03 (382+ participants)

- Online capacity building session on Features and Functionalities of Agri-DIKSHA Web Education Channel on April 28, 2023: Participants- 70+. (Coordinators: Sudeep and Anshu Bharadwaj)
- Online training program on Operationalization and Usage of Agri-DIKSHA Web Education Channel on May 29-31, 2023: Participants- 250+. (Coordinators: Sudeep, Anshu Bharadwaj and Sanchita Naha)
- Training on Features and Functionalities of Agri-DIKSHA at IARI on June 23, 2023: Participants- 12. (Coordinator: Sudeep)

### Augmented Reality/Virtual Reality: 09 (180+ participants)

- Online 8 capacity building sessions on unboxing and Installation of VR modules in between April 19-28, 2023. Participants: 140+; (Coordinators: Anshu Bharadwaj and Sudeep Marwah)
- Online training program on Features and Functionalities of Virtual Kits on May 03, 2023. Participants: 50+ (Coordinators: Anshu Bharadwaj and Sudeep Marwah)

### E-Learning Portal : 01

- Conducted online review workshop of E-Learning Content from June 07-09, 2023. Participants: 100+ (Coordinator: Sudeep Marwah, Shashi Dahiya and Madhu)

### Academic Management System: 07 Demonstration Sessions

- Demonstration Session on AMS for (i) Viswa-Bharti on April 12 and May 26, 2023; (ii) Banaras Hindu University on April 14, 2023; (iii) VCSG Uttarakhand University of Horticulture & Forestry, Bharsar on May 24, 2023; (iv) Rani Lakshmbai Central Agricultural University, Jhansi; Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli and Sher-e-Kashmir University of Agricultural Sciences and Technology on June 08, 2023; (v) Agriculture University, Jodhpur; Agriculture University, Kota and students and faculties of AAU, Jorhat on June 09, 2023; (vi) Dau Shri Vasudev Chandrakar Kamdhenu Vishwavidyalaya, Durg; Maharana Pratap Horticultural University, Karnal and Guru Angad Dev Veterinary And Animal Sciences University on June 13, 2023; (viii) U.P. Pt. Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go-Anusandhan Sansthan (DUVASU), Mathura and Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola on June 12, 2023. Participants: 460+(Coordinator: Sudeep Marwah)

### Other Digital Initiatives: 04

- Offline training on various Digital Initiatives at Maharashtra Animal & Fishery Sciences University, Nagpur during June 27-28, 2023. Participants 40+. (Coordinator: Anshu Bharadwaj)
- Offline training on various digital initiatives at (i) Agricultural University, Jodhpur on May 29, 2023: Participants 45; (ii) Veer Chandra Singh Garwali Utrakhand University of Horticulture & Forestry, Pauri Garhwal during June 15-17, 2022, Participants: 180+
- eLISS Data Collection App under the project Integrated sample survey solution for major livestock products during April 27-28, 2023. (Prachi Misra Sahoo)

### CONSULTANCY/ADVISORY SERVICES PROVIDED

- Kaustav Aditya advised (i) Ms. Sonali Mallik, Ph.D. (Ag. Extn), ICAR-IARI for data analysis using structural equation modelling; (ii) Dr. Soulma Das, Junior Scientist, BCKVV, Mohanpur, West Bengal regarding RCBD design and analysis on May 06, 2023 and (iii) Dr. Shriha Das, Scientist, Soil Science and Agricultural Chemistry, ICAR-IARI, New Delhi regarding ANOVA analysis on May 25, 2023.
- Mohd Harun advised Dr. Manish Kumar Mittal, Scientist, ICAR-Directorate of Medicinal and Aromatic Plants Research, Gujarat for analysis of data obtained from experiment involving Ocimum. The experiment was conducted during two years (2021 and 2022) separately. There were 36 genotypes of Ocimum, which were grown in two replications, where each replication constituted of six incomplete blocks of size 6 each. The data was obtained on various parameters viz. plant height, leaf lengths, leaf width, etc. The ANOVA was carried out for the usual simple square lattice designs followed by the post hoc analyses. Prakash Kumar advised Dr. Gayacharan, Scientist (Agricultural Biotechnology), ICAR-National Bureau of Plant Genetic Resources, New Delhi on Mung-bean data analysis for qualitative and quantitative characters of core and entire set of population of genotypes.
- Rajeev Ranjan Kumar advised Dr. Chavlesh Kumar, Scientist, Division of Fruits and Horticultural Technology, ICAR-IARI, New Delhi on stepwise regression using R software.
- Sarika Sahu advised Sh. Nikhil Chand, Ph.D. (Plant Molecular Biology and Biotechnology) student from Sardar Vallabhbhai Patel University of Agriculture Meerut for the bioinformatics analysis.

### AWARD AND RECOGNITIONS

#### Awards

#### Cini Varghese and Sukanta Dash

- awarded as the “Best Research Paper for the year 2022-23” on the occasion of 34<sup>th</sup> Foundation day of the ICAR- Indian Institute of Farming Systems Research, Modipuram, celebrated on April 1, 2023 for the paper {Natesan Ravisankar, Meraj A. Ansari, Mohammad Shamim, Ashisa K. Prusty, Raghuveer Singh, Azad S. Panwar, Debashis Dutta, Suryanarayana Bhaskar, Jayasree S. Bindhu, Mothkur T. Sanjay, Jashonjot Kaur, Cini Varghese, Sukanta Dash, Arpan Bhowmik, Santanu K. Bal. (2022) Sustainable livelihood security of small farmers improved through resilient farming systems in the Semi-Arid Region of India. *Land Degradation and Development*, **33(15)**, 2830-2842. <http://krishi.icar.gov.in/jspui/handle/123456789/72413>}

### Sarika Sahu

- received 2<sup>nd</sup> prize in Best oral presentation award in International conference “Strategies and Challenges in Agricultural and Life Science for Food Security and Sustainable Environment” during April 28-30, 2023 at Himachal Pradesh University, Summer Hill, Shimla, HP, India for the paper {Sarika Sahu\*, Swati Saxena, Palak Gupta, Priya Sharma, Kishor Gaikwad and AR Rao. Identification of differentially expressed long non-coding RNAs in cluster bean (*Cyamopsis tetragonoloba*) for regulating growth and development in various tissues}.

### Rahul Banerjee

- received INSC Young Researcher Award-2023 for the research paper {Rahul Banerjee, Seema Jaggi, Arpan Bhowmik, Eldho Varghese, Cini Varghese and Anindita Datta. (2022). Cost friendly Experimental Designs for Product Mixtures in Agricultural Research. Journal of Community Mobilization and Sustainable Development, 17(1), 120-133}.

### Recognitions

#### Rajender Parsad

- Chairman, Technical Session during XXX Annual Review Meeting of AICRP on Weed Management held at SKUAST-J during May 26-27, 2023.
- Panelist in Panel Discussion on Roadmap for Agricultural Research, Education and Extension for Amrit Kaal-2047 organized by National Academy of Agricultural Sciences held on June 04, 2023 and provided views on Digital Agriculture Roadmap

### Visits Abroad

- Prachi Misra Sahoo, winner of USDA scholarship, for presenting paper titled “Neoteric and Innovative end-to-end solution for generating livestock statistics in India: eLISS Portal and eLISS Data Collection App” in the International Conference on Agricultural Statistics (ICAS) held World Bank in Washington, DC, USA during May 17-19, 2023.
- Alka Arora and Soumen Paul attended Workshop on Designing Digital Survey Tool organized by EiA-CSISA in Bangkok, Thailand during April 19-21, 2023.

## PROJECTS/ SCHEMES/ PROGRAMME/ CENSUS/ SAMPLE SURVEYS/ EVALUATION STUDIES / SOFTWARE DEVELOPED/ INITIATED/ COMPLETED

### Initiated

- ‘Development of prediction server for internal ribosomes entry sites in agricultural important species’ w.e.f. June 01, 2023. (Sarika Sahu, Soumya Sharma, D.C. Mishra)

### Completed

- ‘Forecasting onion prices using deep learning techniques’ completed on April 19, 2023. (Kanchan Sinha, KN Singh, Mrinmoy Ray, Harish Kumar HV (till 16.10.2022))
- ‘Modelling and forecasting for time-to-event analysis in Agriculture’ completed on June 21, 2023. (Himadri Ghosh, AK Paul; ICAR- NBPGR: Sherry Jacob)
- ‘Development of statistical and computational approach for preprocessing and analysis high-throughput proteomics data with missing values’ completed on June 12, 2023. (Sudhir Srivastava, DC Mishra, UB Angadi, KK Chaturvedi)
- ‘Sustainable biochar production and use through Rice-Cotton based agro-forestry system in Odisha: A climate resilient soil management approach’ completed on May 31, 2023. (ICRAF: Javed Rizvi, Shiv K. Dhyani, Aqeel Hasan Rizvi, Archana Singh; ICAR-IISS, Bhopal: Brij Lal Lakaria, Promod Jha, AK Biswas; ICAR-IASRI: BN Mandal (till 22.08.2022 & rejoined as Co-PI on 27.02.2023), Ajit (since 23.08.2022 & Co-PI till 22.08.2022), Rajender Parsad: 25.08.2021-31.05.2023)

## COPYRIGHTS GRANTED/MOU/LOA SIGNED/PATENTS

### Copyrights

S.No	Name	Registration Number	Granted (Received) Date
1.	WBMSTDb: Water Buffalo Mastitis Database	SW-16058/2023	23.02.2023 (15.03.2023)
2.	VISTa app: Variety identifying system for triticumaestivum (wheat) mobile application.	SW-16057/2023	23.02.2023 (15.03.2023)

### Patents filed

- Saha S, Singh A, Kundu A, Banerjee T, Dutta A, Singh D, Mandal A, Dash Sukanta, Kumar Anil, Patanjali Nand Kumar R. (2022). An energy efficient and greener process for production of azadirachtin rich concentrate from neem, Application Number: 202211063013, Dated: 04.11.2022
- Dutta A, Singh A, Kundu A, Mandal A, Patanjali N, Kumar Rajesh, Ghosh A, Bhagyashree S, Dash Sukanta and Kumar Anil (2022). Biopesticidal multicomponent oil dispersion and process of preparation, Application Number: 202211039287, Dated: 08.07.2022

## PERSONNEL

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

Name	Designation	Effective date
Sh. Ratan Singh and Sh Dinesh	Upper Division Clerk	Extension of Deputation for 24.06.2023 to 23.06.2025

### Wish you a Happy Retired Life

Name	Designation	Effective date
Smt. Rajni Bala Grover	Chief Technical Officer	30.04.2023

### Transfer/ Resignation/Deputation

Name	Designation	Effective date
Sh. Raj Kumar Verma	Assistant	30.06.2023, Directorate of Extension, Department of Agriculture & Farmer Welfare, Krishi Vistar Bhawan, Pusa, New Delhi


  
**Azadi Ka  
 Amrit Mahotsav**
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