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

From the Director's desk ...

This newsletter highlights the key research accomplishments, awards and recognitions received, training programs conducted, workshops and conferences organized or attended, advisory services offered, and notable publications of ICAR-IASRI during the reporting period.

The Institute developed a geographically weighted spatially integrated (GWSI) estimator by merging data from two different surveys using spatial information. To estimate the unbiased variance of the dual frame population total estimator, a method called Post-Stratified Rescaling Bootstrap with Unknown Domain Size has been developed. The Institute also developed ASPTF prediction server for abiotic stress responsive transcription factor prediction in plant. In collaboration with ICAR-National Institute of Plant Biotechnology the MustardFamilyExplorer database has been developed as a comprehensive resource, providing essential information on variety name, oil content, year of release, yield, recommended state, and salient features.

During the period under report, the Institute also developed 4 R-packages for generation of generalized row-column designs, efficient latin hypercube designs and uniform designs, balanced and partially balanced semi-latin rectangles with cell size two and fitting of Hybrid ARMA-LSTM Models on time series dataset.

The Institute has also developed two Machine Learning based Computational Model /Web Application/Biological Databases *viz*. PhytoMicroBioPred" for Prediction of Compound Bioactivity against plant and microbes target proteins and "MgSatDB" - A Marigold Microsatellite Marker database in association with ICAR-IARI, New Delhi.

In the 62nd Convocation of PG School, ICAR-IARI, New Delhi, 39 (Ph.D. and M.Sc.) Students (16 Agricultural Statistics, 15 Bioinformatics and 8 Computer Applications) received their degrees. The Institute celebrated Republic Day, National Science Day and International Women's Day. A total of 69 Research Papers, 05 Book Chapters; 03 Popular Articles; were published. The Institute initiated 03 new research projects and received 13 copyrights. Through 10 training programmes and one workshop, trained 429 personnel and 14 participated in Hindi Workshop. A total of 1502 participants attended sensitization training programmes on NARES-Blended Learning Platform and Demonstrationof eLISS V2.0.

The scientists of the Institute brought recognitions by way of serving as Expert Members in various high-level committees, presenting research work in 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

➤ **Estimation of Unbiased Variance in Dual Frame Surveys**

Dual frame (DF) surveys represent a specialized category within multiple frame (MF) surveys, involving two frames that collectively encompass the entire population. These surveys are particularly useful when one frame covers the entire population but is prohibitively expensive to sample, prompting the utilization of an alternative frame that, while not comprehensive, is more readily accessible. Estimating unbiased variance in dual frame surveys poses greater challenges compared to estimators in single frame surveys. The variance of the dual frame estimator incorporates population variances of distinct domains, typically unknown, further complicating the task of obtaining an unbiased variance estimate. To address this complexity, a method known as Post-stratified Rescaling Bootstrap with unknown domain size has been developed specifically for variance estimation of the dual frame estimator of population total. Through simulation analysis, the method has shown to offer an unbiased estimation of the variance of the dual frame estimator, outperforming standard bootstrap methods.

➤ **Geographically Weighted Spatially Integrated (GWSI) estimator**

A key objective of survey sampling is to make inferences about a finite population. However, large-scale surveys now face challenges such as rising data collection costs, increasing non-response rates, demand for detailed statistics, and the need for timely estimates. Data integration offers a solution by combining information from multiple surveys to provide more accurate estimates. ICAR-IASRI has developed a framework for integrating data from various surveys, addressing the challenge of spatial non-stationarity, where relationships between variables and covariates vary across locations. This study introduced a Geographically Weighted Spatially Integrated (GWSI) estimator for finite population totals by merging data from two independent surveys using spatial information. The statistical properties of the estimator were tested through spatial simulations, showing it outperforms traditional design-based estimators across different spatial populations. Additionally, a Spatial Proportionate Bootstrap (SPB) method has been developed for variance estimation of the GWSI estimator.

➤ **Mustard Family Explorer database**

The MustardFamilyExplorer database (https://mustardfamilyexplorer.icar-web.com/) is a pioneering platform that consolidates a wide range of information on Indian mustard varieties. This comprehensive resource encompasses fundamental details such as variety name, oil content, year of release, yield, recommended state, and salient features. Additionally, it offers invaluable source of genomic data for varieties where molecular and genomic studies have been conducted. It provides a holistic resource for stakeholders in the mustard farming community. This platform serves as a model for similar initiatives in other crop domains, emphasizing the power of integrated databases in modern agriculture. This has been developed in collaboration with ICAR-National Institute of Plant Biotechnology, New Delhi.

➤ **ASPTF – Abiotic Stress Responsive Transcription Factor Prediction in Plant**

Abiotic stresses pose serious threat to the growth and yield of crop plants. Several studies suggest that in plants, transcription factors (TFs) are important regulators of gene expression, especially when it comes to coping with abiotic stresses. Therefore, it is crucial to identify TFsassociated with abiotic stress response for breeding of abiotic stress tolerant crop cultivars. Based on a machine learning framework, a computational model was envisaged to predict TFs associated with abiotic stress response in plants. To numerically encode TF sequences, four distinct sequence derived features were generated. The prediction was performed using ten

shallow learning and four deep learning algorithms. For prediction using more pertinent and informative features, feature selection techniques were also employed. Using the features chosen by the light-gradientboosting machine-variable importance measure (LGBM-VIM), the LGBM achieved the highest cross-validation performance metrics (accuracy: 86.81%, auROC: 92.98%, and auPRC: 94.03%). Further evaluation of the proposed model (LGBM prediction method + LGBM-VIM selected features) was also done using an independent test dataset, where the accuracy, auROC and auPRC were observed 81.98%, 90.65% and 91.30%, respectively. To facilitate the adoption of the proposed strategy by users, the approach was implemented as a prediction server called ASPTF, accessible at https://iasri-sg.icar.gov.in/asptf/. The developed approach and the corresponding web application areanticipated to supplement experimental methods in the identification of transcription factors (TFs) responsive to abiotic stress in plants.

➢ **R-Packages Developed: 04**

- **GRCdesigns: Generalized Row-Column Designs:** Generalized Row-Column (GRC) designs are defined as designs with *v* treatments in *p* rows and *q* columns such that intersection of each row and column (cell) consists of *k* experimental units.These designs are useful when the number of treatments is large with limited experimental resources. For example, to conduct an experiment for comparing 4 treatments using 4 plants with leaves at 2   different heights, row-column design with two units per cell can be used (Bailey & Monod (2001). The GRCdesign package is available at https://cran.r-project.org/package=GRCdesigns

- **ARMA-LSTM**: The real-life time series data are hardly pure linear or nonlinear. Merging a linear time series model like the autoregressive moving average (ARMA) model with a nonlinear neural network model such as the Long Short-Term Memory (LSTM) model can be used as a hybrid model for more accurate modeling purposes. This package is useful for fitting of Hybrid ARMA-LSTM Models on time series dataset and is available at https://CRAN.R-project.org/package=ARMALSTM

- **CompExpDes:** In computer experiments space-filling designs are having great impact. Most popularly used space-filling designs are Uniform designs (UDs), Latin hypercube designs (LHDs) etc. In this package, we have provided algorithms for generating efficient LHDs and UDs. The generated LHDs are efficient as they possess lower value of Maxpro, Phi_p and Maximum Absolute Correlation (MAC) measures. On the other hand, the produced UDs are having good space-filling property as they attained the lower bound of Discrete Discrepancy measure. This package is useful for generating efficient Latin hypercube designs and Uniform designs and is available at https://CRAN.R-project.org/package=CompExpDes

- **slr:** Semi-Latin Rectangles package designed to generate balanced and partially balanced semi-Latin rectangles with cell size two available athttps://CRAN.R-project.org/package=slr

➢ **Machine Learning Computational Model/Web Application/Biological Databases developed: 02**

- **PhytoMicroBioPred**: A machine learning-based web application, "PhytoMicroBioPred", has been developed for predicting compound bioactivity against plant and microbial target proteins. It is accessible at http://login1.cabgrid.res.in:5260/.

- **MgSatDB:** In collaboration with ICAR-IARI, the institute has developed **"MgSatDB"**, a Marigold Microsatellite Marker database. This resource offers various customized search

options to support future marigold breeding and improvement programs. It is accessible at http://backlin.cabgrid.res.in/mgsatdb/.

PANORAMA OF ACTIVITIES

Celebrations of Republic Day

The Institute celebrated the 75th Republic Day on January 26, 2024, with active participation from staff and students. Dr. Rajender Parsad, Director, ICAR-IASRI, unfurled the national flag and presided over the celebrations. Students showcased a captivating cultural program featuring patriotic songs, poems, and dances. On this significant occasion, everyone resolved to take pride in achievements and committed to striving for greater progress in the future.

National Science Day

Institute celebrated "National Science Day" on February 28, 2024 on the theme "Indigenous Technology for Viksit Bharat". Students showed a captivating documentary on the life of Sir C.V. Raman and his ground breaking discovery of the Raman Effect. Their presentation also covered India's major scientific and agricultural achievements, highlighting the incredible strides made in these fields. One of the highlights was discussing Honourable Prime Minister's vision for National Science Day, inspiring us to continue breaking boundaries in science and technology.
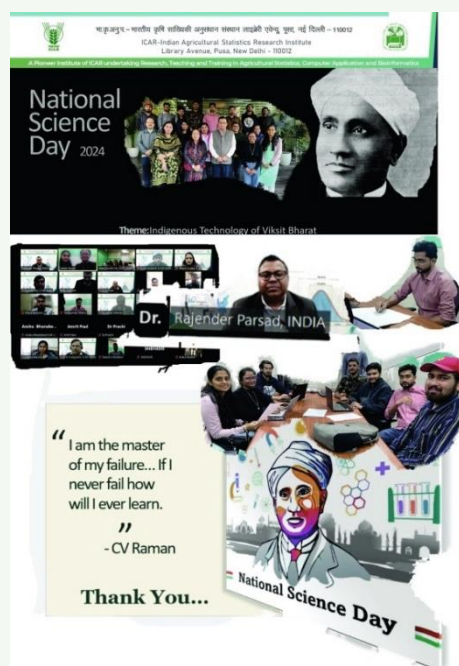
International Women's Day 2024

Institute celebrated International Women's Day with a series of engaging events for two days during March 07-08, 2024. The celebration aimed to honor the achievements of women and promote gender equality. On March 07, 2024 the celebrations began with a "Pink Walkathon" within the picturesque confines of the Institute's campus. Participants, adorned in pink attire, partook in the walkathon, symbolizing solidarity. In addition to the walkathon, a Rangoli competition added a creative flair to the celebrations. Eight groups, comprising students, scientific/administrative/MTS staff, showcased their artistic talents through vibrant and intricate Rangoli designs.

-   The main event took place on March 08, 2024, where Institute organized a program dedicated to celebrate International Women's Day. The esteemed presence of Professor (Dr.) Charru Malhotra, Professor in e-Governance and ICT at the Indian Institute of Public Administration, as the Chief Guest, added prestige to the occasion.

- The program commenced with the ICAR-IASRI song. The Director, Dr. Rajender Parsad extended a warm welcome to the Chief Guest, presenting her with a shawl and a potted plant as tokens of appreciation. The cultural extravaganza unfolded with a diverse array of performances by the students, including a captivating welcome dance, a rendition of the "1000 hands," poetry recitals, and a mock press, eliciting applause from the audience. Students also showcased their musical talents through melodious songs, enriching the cultural fabric of the event. Adding a touch of humor, the women staff of the Administration section presented a delightful skit. The announcement of the Rangoli competition results further added to the excitement of the day, acknowledging the creativity and skill of the participants.

- The Chief Guest delivered an insightful talk on **Inclusiveness in Innovations: A Woman-Centric Perspective**, emphasized the necessity of increased female participation in the TechSpace, highlighting the importance of engaging women to explore creativity through technology. She highlighted the invaluable contributions women bring to innovation and advocated for initiatives to address barriers and promote gender inclusivity in the tech industry. Finally, in his address the Director reiterated ICAR-IASRI's unwavering commitment to fostering an inclusive and equitable environment for all members of the community.

WORKSHOPS/WEBINARS/ MEETINGS ETC. ORGANIZED
Seminars Delivered

A total of 46 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	
	New Project Proposal	
	Foreign Visit	
	General	
Student	Course	40
	ORW	2
	Thesis	3
	Guest Seminar	1
Total		**46**

PUBLICATIONS
Research Papers

1. Anjum A, Jaggi S, Lal S, Varghese E, Rai A, Bhowmik A and Mishra DC (2024). A two-step procedure for detecting change points in genomic sequences. *Current Science*, **126(1),** 54-58**.**
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Book Chapters

- Bedi J, Begam S and Godara S (2024). Development of Biological Databases for Genomic Research. In: *Genomics Data Analysis for Crop Improvement*, pp. 309-323. Ed. Anjoy P, Kumar K, Chandra G, Gaikwad K. Springer Protocols Handbooks. Springer, Singapore. ISBN: 978-981-99-6912-8.https://doi.org/10.1007/978-981-99-6913-5_12

- Begam S, Bedi J and Godara S (2024). Artificial Intelligence in genomic studies. In: Genomics Data Analysis for Crop Improvement, pp 325-342. Ed. Anjoy P, Kumar K, Chandra G, Gaikwad K. Springer Protocols Handbooks. Springer, Singapore. ISBN: 978-981-99-6912-8. https://doi.org/10.1007/978-981-99-6913-5_13

- Behera SK, Dewali S, Sharma NP, Bisht SS, Panda AK, Pati S and Kumar S (2024). Paradigms of omics in bioinformatics for accelerating current trends and prospects of stem cell research. In: *Computational Biology for Stem Cell Research*, pp 187-198. Ed. Raghav et al. ISBN: 978-0- 443- 13222-3; eBook ISBN: 978-0-443-13221-6

- Yadav MK, Bhutani K, Ahmad S, Raza K, Singh A and Kumar S (2024). Application of machine learning based approaches in stem cell research. In: *Computational Biology for Stem Cell Research*, pp 65-76. Ed. Raghav et al. Paperback ISBN: 978-0-443-13222-3; eBook ISBN: 978-0-443-13221-6.

Popular Articles

- Das R, Rakshit D, Murmu S, Sharma S and Paul D (2024). Beneath the soil, beyond the roots: mycobiome's impact on crop nutrition and plant protection. Published in Krishi Science eMagazine for Agricultural Sciences, **5(2)**, pp 35-39. ISSN: 2583-4150

- Das R, Roy A, Paul D and Rakshit D (2024). Seaweed: superhero for enhancing environmental health and sustainability. Published in Food and Scientific Reports, 5 Article 5, pp 27-30.

- Murmu S, Sharma S, Das R and Farooqi MS (2024). Small molecules, big impact: how ligands help plants battle disease. Published in Krishi Science e-Magazine for Agricultural Sciences, **5(1)**, pp 20-24. ISSN: 2583-4150 (https://www.krishiscience.co.in/)

PAPERS PRESENTED/LECTURES DELIVERED
Paper presented /Invited talk delivered in Conferences

- Quad AI-Engage Scoping Workshop on 'Advancing Innovation × Agriculture' research collaboration among Japan, the United States, Australia and India held at Singapore during February 14-15, 2024

- - Rajender Parsad. AI-ENGAGE: Advancing Innovation to Empower NextGen Agriculture (Indian Perspective)
- Annual Group Meeting of AICRP on IFS organized at Indira Gandhi Krishi Vishwavidyalaya (IGKV), Raipur, Chhattisgarh during January 28-30, 2024
    - Cini Varghese. Online data submission system and statistical analysis techniques for on-station and on-farm experiments.
- Annual conference of Vice Chancellors of Agricultural Universities and Directors' of ICAR Institutes organized at NASC complex during February 26-27, 2024
    - Rajender Parsad. Promoting digital Agriculture through NARE-NAAS-PAAS collaboration.
- 74th Annual Conference of the Indian Society of Agricultural Statistics on 'Harnessing Statistics and Artificial Intelligence for Sustainable and Smart Agriculture' organized by the Department of Agricultural Statistics, N.M. College of Agriculture, Navsari Agricultural University, Navsari, Gujarat during February 02-04, 2024
    - Rajender Parsad. Life and achievements of Late Professor M N Das. (Dr. M.N. Das Centenary Celebrations) (Invited Talk)
    - Med Ram Verma. Meta-analysis- an important statistical methodology for estimating pooled prevalence of animal diseases. (Invited Talk)
    - Susheel K Sarkar. Optimal covariate designs: an overview in a Contributory paper session.
    - Sukanta Dash. A note on balanced and partially balanced semi-latin rectangles. (Invited Talk)
    - Anindita Datta. Ordering factorial experiments: an overview. (Invited Talk)
    - Mohd Harun. Experimental designs for breeding trials. (Invited Talk)
    - Amrit Kumar Paul. Heritability estimation with correlated error structures (Dr. Prem Narain Memorial Session). (Invited Talk)
    - Ranjit Kumar Paul. Can denoising enhance prediction accuracy in the technical session on forewarning and forecasting modelling for crop production and health monitoring. (Invited Talk)
    - Prakash Kumar*, Tanvi Sharma, Nitesh Kumar Sharma, Ravi Shankar and Sanjay Kumar. Picro-DB: an extensive genomic resource portal dedicated to picrorhizakurroa a medicinal plant.
    - Himadri Shekhar Roy*, Ranjit Kumar Paul, Md Yeasin, Kanchan Sinha, S vennila and AK Paul. Impact of environmental factors on pest population using multivariate cointigration model evidence from India.
    - Md Yeasin. Arbitrage of forecasting experts based hybrid time series model fir crop yield prediction. (Contributory paper)
    - Prachi Misra Sahoo. Integrated sample survey for crop yield estimation using advanced technologies in the technical session on survey methodology for field crop yield estimation.
    - Ankur Biswas. Generation of horticultural statistics in India: Methodological aspects, challenges and the road ahead in the session on Current Status and Challenges in Official and Horticultural Statistics.
    - Deepak Singh*, Raju Kumar, Ankur Biswas, Kaustav Aditya and Tauqueer Ahmad. "An efficient exponential-type family of estimators for the population variance in simple random sampling". (Invited Talk)

- Nitin Varshney*, Tauqueer Ahmad, Anil Rai, Ankur Biswas and Prachi Misra Sahoo. Rescaling bootstrap variance estimation of the prediction-based estimator under two-phase sampling. (Invited Talk)
- Raju Kumar*, Deepak Singh, Ankur Biswas and Tauqueer Ahmad. A novel survey-weighted propensity score methodology to enhance impact assessment". (Invited Talk).
- Das, P. The co-integration based support vector regression model and its application in Agriculture. (Invited Talk)
- Sudhir Srivastava*, Mohammad Samir Farooqui, KK Chaturvedi, Anu Sharma, Shashi Bhushan Lal, Deepa Bhatt, Priyanka Balley and Girish Kumar Jha. The halophile protein database 2.0: a comprehensive resource of chemical and physical properties of halophilic proteins".
- Anu Sharma*, Dwujesh Chandra Mishra, Sharunbasappa, Dipro Sinha, Bhavesh Kumar Choubisa and Ragini Kushwaha. Omics research in the era of artificial intelligence. (Invited talk)
- Mukesh Kumar. Information technology application for assessment of physiological and postural ergonomics in agricultural activities. (Invited Talk)
- Chan.dan Kumar Deb. Artificial Intelligence (AI) in agriculture: advancing steps towards sustainability.
- Manoj Verma, K.N. Singh, Achal Lama and S. Verma. A new regression model based on global distribution for proportional data.
- Anushaka Garg, K.N. Singh and Achal Lama. Forecasting agricultural price volatility using GARCH-MIDAS model for onion crop
- Ankit Kumar Singh, Ranjit Kumar Paul, Md. Yeasin and Amrit Kumar Paul. Time dependent dynamic ensemble method for pest population prediction in rice crops.
- Satyam Verma, K.N. Singh and Achal Lama. Seasonal approach of deep learning models for forecasting rainfall series.
- Anita Sarka, Amrit Kumar Paul, Ranjit Kumar Paul and Md. Yeasin. Intuitionistic fuzzy time series forecasting based on long short term memory.
- Kaushal Kumar Yadav, Sukanta Dash, Baidya Nath Mandal, Rajender Parsad. Construction of balanced semi-latin rectangles in block size two.
- Deepak Pandey, Y.A. Garde, V.S. Thorat, Nitin Varshney and Alok Srivastava. Quantifying agricultural diversification trends: a statistical analysis in Gujarat.

- 26th Annual Conference of the Society of Statistics, Computer and Applications (SSCA) on International conference on 'Emerging Trends of Statistical Sciences in AI and its Applications' organized by Department of Mathematics and Statistics & Centre for Artificial Intelligence, Banasthali Vidyapith, Banasthali, Rajasthanduring 26-28 February, 2024
  - Med Ram Verma. Sample allocation proportional to strata total and joint effect of linear and exponential phases under cost constraints. (Invited Talk)
  - Cini Varghese. Analysis of neutrosophic data from designed experiments. (Invited Talk)
  - Susheel K Sarkar. Optimum covariate design in a contributory paper session.
  - Sukanta Dash. Construction of three associate constant block sum PBIB designs in a Contributory paper session.
  - Sudhir Srivastava. Advanced approach for differential expression analysis in label-free LC-MS proteomics data.
  - Neeraj Budhlakoti. An integrated analysis of lncRNAs, miRNAs, and mRNAs regulatory networks in response to heat stress in wheat.

- - Ashutosh Dalal, Cini Varghese, Rajender Parsad, Mohd. Harun, B.N.Mandal. Algorithmic construction of Gerechte-based uniform designs.
  - Neethu RS, Cini Varghese, Mohd. Harun, Susheel Kumar Sarkar, Sukanta Dash and Anindita Dutta. Optimal covariate designs with good space-filling properties.
  - Anita Sarkar, Prachi Misra Sahoo, Tauqueer Ahmad and Ankur Biswas. An improvement over estimation of milk production in integrated sample survey scheme.
  - Ankit Kumar Singh, Ranjit Kumar Paul, Md. Yeasin and Amrit Kumar Paul. Temporal aggregation and forecast reconciliation for improving rainfall predictions.
  - Anushaka Garg, Anindita Dutta and Rajender Parsad. Designing factorial experiments involving order-of-addition effects with six components.
- National Seminar on 'Sustainable Agriculture, Rural Development and Future Food Security in India: An Interdisciplinary Approach' organized by Department of Agricultural Economics Palli Siksha Bhavana (Institute of Agriculture) VISVA-BHARATI, Sriniketan, Birbhum West Bengal during March 01-02, 2024
  - Ranjit Paul. Forecasting agricultural prices using wavelet based approach.
  - Md. Yeasin. Impact of blending policy on mustard prices in india: insights from a bayesian structural causal inference model. (Contributory talk).
- 6th National Conference on 'Nature-based Solution for Achieving Sustainable Development Goals' organized by Cooch Behar Association for Cultivation of Agricultural Sciences, in association with Uttar Banga Krishi Viswavidyalaya, Pundibari during March 05-06, 2024
  - Kanchan Sinha. Innovative multivariate deep learning frameworks for forecasting volatile Indian onion market prices.
  - Ankur Biswas. Food loss assessment for achieving sustainable development goals.
  - Himadri Shekhar Roy. Deep neural network models with attention for prediction of evapotranspiration
- 17th Annual International Biocuration Conference (AIBC) at Regional Centre for Biotechnology, Faridabad during March 06-08, 2024
  - KK Chaturvedi. Supercomputing Platform and Data Resources derived from OM-ICS data in Agriculture.
- National Conference on 'Advances in AI Systems' organized by Department of Computer Science, Fakir Mohan University, Balasore, Odisha in collaboration with IEEE during March 22-23 2024
  - Mrinmoy Ray* and Rajeev Ranjan Kumar. Spatio-temporal Long-short term memory models for Potato price forecasting.
- 5th IGM Conference on 'Climate-Proofing Cereal Agriculture: Strategies for Resilience and Sustainability' organized at ICAR-IIWBR during March 27-29, 2024
  - Anu Sharma. A Comparative Study on Applying Machine Learning Techniques for Seed Classification.

Lecture Delivered (Outside institute)

- 'Artificial Intelligence based Market Intelligence for Unified Market (e-NAM)' on January 09, 2024 in State Level Workshop on Agriculture Marketing: Problems and Prospects at Krishi Vigyan Kendra, Kota during January 09-10, 2024. (Girish Kumar Jha)
- 'Significant Achievements of ICAR-IASRI and Impact' in the presence of Honourable Secretary Agriculture during his visit to the Institute on January 10, 2024. (Rajender Parsad)

- 'Indian Knowledge System & NEP 2020: implementation in HEI' on January 04, 2024 in the Faculty Development Programme (FDP) of NEP Orientation and Sensitization at UGC-Malaviya Mission Teachers Training Centre of Central University of Haryana, organized during January 03-12, 2024. (Dinesh Kumar)
- 'Computational Genomics in Agricultural Germplasm Improvement and Management: Indian Perspective and Challenges' on January 24, 2024 in International Conference organized in Golden Jubilee Celebration of Life Sciences Research at Central University, JNU, New Delhi during January 21-24, 2024. (Dinesh Kumar)
- 'Digital Initiatives in Agricultural Higher Education' on January 03, 2024, Training programme on Agri-derived Nutrients and Nutraceuticals for Innovative Health Foods: Tools and Strategies organized under the aegis of CAFT at Division of Biochemistry, ICAR-IARI, New Delhi during December 15, 2023 - January 04, 2024. (Shashi Dahiya)
- 'Exploratory Data Analysis using R' on February 03, 2024 in Training Program on Soft Skills for Statistical Methods and Software Packages organized by Statistics Section of Dr. YS Parmar University of Horticulture and Forestry, Nauni Solan for State Government Officials during January 20 –February 03, 2024. (Bharti)
- 'Multivariate Analysis for Agricultural Data using R' on February 09, 2024 in the National Training Programme on Exploring Host-Pathogen Interactions in Crop Plants: Integrating Classical and Molecular Approaches organized at ICAR-NBAIM, Mau during February 07 -14, 2024. (Rajeev Ranjan Kumar)
- 'Malviya Philosophy of Holistic Education: Character Building to Nation Building' on February 06, 2024 in the 5th NEP Orientation and Sensitization at UGC-Malaviya Mission Teachers Training Centre of Central University of Haryana, organized during February 05-14, 2024. (Dinesh Kumar)
- Training programme on GridScore, Experimental Designs and Statistical Analysis for Breeding and Multi-Environmental Trials organized at ICARDA, New Delhi, India during February 19-23, 2024
    - (i) 'Introduction to R software' and (ii) 'Practical on analysis of experimental designs using R software' on February 19, 2024. (Rajender Parsad)
    - 'Test of Significance (on means, variances, proportions), Correlation and regression analysis, cluster and principal component analysis' on February 19, 2024. (Girish Kumar Jha)
    - (i) 'Introduction to R Software' and (ii) 'Practical on analysis of experimental designs using R software' on February 19, 2024. (Sukanta Dash)
- 'Identification of non-coding Regulatory Molecules from Transcriptome Data by Machine learning approaches' on February 28, 2024 in National symposium on Genomics Revolution to foster advances and innovation in crop improvement, organized at PAU, Ludhiana during February 27-29, 2024. (Sarika Sahu)
- 'National Education Policy 2020 & Skill Development' on February 07, 2024 in the Orientation and Sensitization at UGC-Malaviya Mission Teachers Training, Central University -Assam University Silchar, organized during February 05-14, 2024. (Dinesh Kumar)
- 'IPR Strategies for Livestock-based Functional Foods' on February 09, 2024 held at College of Veterinary and Animal Sciences, Sardar Vallabhbhai Patel University of Agriculture & Technology Meerut, UP. (Dinesh Kumar)
- (i) 'Intellectual Property Rights: Enforcement and Policies' and (ii) 'Role of Bioinformatics in IPR Development & Management in Agriculture' was delivered on February 28, 2024 at UP State Government University, Chaudhary Charan Singh University, Meerut. (Dinesh Kumar)

- (i) 'Analyzing data Including Regression Analysis, etc. using MS Excel' and (ii) 'Displaying Data – Methods of Communicating and Displaying Analyzed Data with Case Exercise' on February 15, 2024 in the training programme on Study and Research Methodology, Report Writing using Statistical and online tools organized at National Bank Staff College (NBSC), Lucknow during February 12-16, 2024. (Girish Kumar Jha)

➤ (i) 'Fundamentals of AI and Machine Learning techniques' and (ii) 'Hands on training on AI and ML techniques'on February 28, 2024 in the training programme on ICSSR sponsored Research Methodology Course (RMC) on Advanced Quantitative Techniques for Social Science Research' organized at Navsari Agricultural University, Gujrat during February 20-29, 2024. (Girish Kumar Jha)

- 'Decoding Host-Pathogen Interactions: Bioinformatics Insights into Effector Molecule Dynamics' on February 09, 2024 in the National Training Programme on Exploring Host-Pathogen Interactions in Crop Plants: Integrating Classical and Molecular Approaches organized at ICAR-National Bureau of Agriculturally Important Microorganisms (NBAIM), Kushmaur, Mau, UP during February 07-14, 2024. (Neeraj Budhlakoti)

- 'Artificial Intelligence and its Role in Transforming Agriculture' on February 20, 2024 in the CAFT Training programme on Harnessing Disruptive Technology in ICT for Agricultural Extension and Research organized at Bihar Agricultural University, Sabour, Bhagalpur, Bihar during February 01-21, 2024. (Alka Arora)

- 'ARCH family of Models' on February 28, 2024 in the Capacity Building Program organized by All India Coordinated Research Project on Agrometeorology (AICRPAM) on "Applications of Machine Learning in Agricultural Meteorology" at ICAR-CRIDA, Hyderabad from 24 February to 03 March 2024. (Achal Lama)

- 'Statistical Analysis of Different Field Experiments' on March 14, 2024 in a training programme on Layout and Maintenance of Field Experiments and Recording Observations on Real Time Basis organized by Agronomy Division, ICAR-IARI, New Delhi during March 11-15, 2024. (Med Ram Verma)

- Winter School on Quantitative Methods for Social Sciences organized at ICAR-NIAP, New Delhi March 08-28, 2024
    - 'Correspondence Analysis' on March 26, 2024. (Himadri Shekhar Roy)
    - 'Linear and Nonlinear Regression Models' on March 11, 2024. (Ranjit Kumar Paul)
    - 'Discriminant Function Analysis' on March 27, 2024. (Pankaj Das)

- 'Anushandhan National Research Foundation Act and National Education Policy 2020' on March 05, 2024 in 6th NEP Orientation and Sensitization programme organized at UGC-Malaviya Mission Teachers Training Centre of Central University of Haryana, during March 04-13, 2024. (Dinesh Kumar) (Online)

- (i) 'Academic Integrity & Plagiarism' on March 07, 2024 and (ii) 'ANRFA Act 2023 & NEP2020: Role of Higher Educational Institutions' on March 12, 2024 in the Faculty Induction Programme (FIP) organized at UGC-Malaviya Mission Teachers Training Centre of Central University of Haryana, during February 29- March 29, 2024 (online). (Dinesh Kumar)

- 'Skill Development in light of NEP 2020' on March 27, 2024 in NEP Orientation and Sensitisation Program organised at UGC -MMMTC Centre, Silchar University Assam (Central University) during March 18-29, 2024 (Online). (Dinesh Kumar)

- DBT Sponsored Winter Research Workshop on 'Applications of Bioinformatics in Life Science Research' under the DBT-BUILDER program (C2MOD) in School of Life Sciences, Jawaharlal Nehru University during March 11-21, 2024.

- (i) 'Applications of DNA Markers in Crop Sciences' on March 13, 2024 and (ii) 'Applications of DNA Markers in Animal Sciences' on Mach 14, 2024. (Dinesh Kumar)
- 'Mining of SNP markers from whole genome resequencing data' on March 13, 2024 and 'Mining of SSR, INDEL and CNV variants from whole genome resequencing data' on March 14, 2024. (Mir Asif Iquebal)
- 'Differential Gene Expression Analysis using NGS data' on March 13, 2024 and 'Construction of Gene Regulatory Network using RNA Seq NGS Data' on March 14, 2024. (Sarika)
- 'Introduction of R to the Plant Breeders' on March 12, 2024 in the two days Hands-on training program on High Throughput Phenotyping and Genomics jointly organized by CIMMYT-BISA, Ludhiana & ICAR-NBPGR, New Delhi during March 11-12, 2024. (Neeraj Budhlakoti)

PARTICIPATION

International Conference/ Workshop/Symposium etc.

- International Conference on 'Current Trends in Biological Sciences' organised by School of Life Sciences, Mizoram University (Central University), Aizawl during March 18-21, 2024. (Dinesh Kumar)
- 17th Annual International Biocuration Conference (AIBC) at Regional Centre for Biotechnology, Faridabad during March 06-08, 2024. (KK Chaturvedi)

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

- Technical Committee on Direction for Improvement of Livestock Statistics, DAHD, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India, New Delhi held at Udaipur on January 16, 2024. (Rajender Parsad)
- Workshop on SRIJAN: Empowering ZTMCs/ ITMUs of ICAR Institutes during January 17-19, 2024 at NASC complex, New Delhi. (UK Pradhan)
- XXVII workshop of the ICAR-AICRP on EAAI at PAU, Ludhiana during Jan 28-30, 2024 and presented the progress of project on January 30, 2024. (Bharti)
- Annual Group Meeting of AICRP on IFS organized at Indira Gandhi Krishi Vishwavidyalaya (IGKV), Raipur, Chhattisgarh during 28-30 January 2024. (Cini Varghese, Susheel Kumar Sarkar, Sukanta Dash, Mohd Harun)
- 74[th]Annual conference of Indian Society of Agricultural Statistics organized at Agricultural Statistics Department, NM Agricultural College, Navsari Agricultural University, Navsari, Gujarat during February 02-04, 2024. (Rajender Parsad, KN Singh, Tauqueer Ahmed, Sudeep Marwah, Med Ram Verma, KK Chaturvedi, Prachi Mishra Sahoo, Anshu Bharadwaj, Mukesh Kumar, Anu Sharma, Shashi Dhaia, Prakash Kumar, Shashi Bhushan Lal, Susheel Kumar Sarkar, Sukanta Dash, Raju Kumar, Deepak Singh,Sudhir Srivastava, Pankaj Das, Ankur Biswas, Mohd. Harun, Anindita Datta (Online participation) Chandan Kumar Deb, Mohd. Yasin)
- Online QUAD AI-ENGAGE SCOPING WORKSHOP on 'Advancing Innovation × Agriculture' research collaboration among Japan, the United States, Australia and India held at Singapore during February 14-15, 2024. (Rajender Parsad and Alka Arora)
- Annual conference of Vice Chancellors of Agricultural Universities and Directors' of ICAR Institutes organized at NASC complex during February 26-27, 2024. (Rajender Parsad)

- 26th Annual conference of the Society of Statistics, Computer and Applications as an international conference on 'Emerging Trends of Statistical Sciences in AI and its Applications – (ETSSAA -2024)' during February 26-28, 2024 jointly organized by the Society of Statistics, Computer and Applications, Department of Mathematics and Statistics & Centre for Artificial Intelligence, Banasthali Vidyapith at Banasthali Vidyapith, Banasthali.   (Med Ram Verma, Cini Varghese, Susheel K Sarkar and Sukanta Dash)
- Workshop on 'Cultivating tomorrow: Advancing digital agriculture through IoT and AI' in collaboration with the Food and Agriculture Organization of the United Nations (FAO), hosted by the Telecommunication Engineering Centre (TEC), Department of Telecommunications (DoT), Ministry of Communications, India and Indian Council of Agricultural Research (ICAR), Department of Agricultural Research and Education (DARE), Ministry of Agriculture and Farmers' Welfare, India held during March 18-19, 2024. (Rajender Parsad, Sudeep Marwaha, Alka Arora, Anshu Bharadwaj, Mukesh Kumar, KK Chaturvedi, S.B. Lal and Sanjeev Kumar)
- Conclave on 'Precision Agriculture Conclave for Public Private Partnership' organized by ICAR on March 20, 2024. (Rajender Parsad, Sudeep Marwaha, Alka Arora, Anshu Bharadwaj, Mukesh Kumar, KK Chaturvedi, S.B. Lal and Sanjeev Kumar)

HUMAN RESOURCE DEVELOPMENT

➤ Training Programmes/Workshops Organized: 11(443 Participants)

S.No.	Title	Venue	Period	No. of Participants
Centre of Advanced Faculty Training, Education Division, ICAR, New Delhi				
1.	Advanced Forecasting Techniques in Agriculture Science Research (*Coordinators:* K.N. Singh, Achal Lama and Rajeev R. Kumar	ICAR-IASRI, New Delhi	January 24-February 13, 2024	24
2.	Statistical and Computational Advances for Bioinformatics Data Analysis in Agriculture: Practical Aspects (*Coordinators*: Girish Kumar Jha, Sudhir Srivastava and Neeraj Budhlakoti)	ICAR-IASRI, New Delhi	January 02-22, 2024	23
3.	Development of AI-based Android Mobile App under the aegis of Centre of Advanced Faculty Training, sponsored by Education Division, ICAR, New Delhi. (*Coordinators*: Chandan Kumar Deb and Md. Ashraful Haque)	ICAR-IASRI, New Delhi (Online)	March 05-25, 2024	35
HRM Training Programmes				

4.	Recent Advances in Data Analysis and Applications for scientific and technical personnel of NARES (*Coordinators*: Cini Varghese, Anindita Datta and Mohd Harun)	ICAR-IASRI, New Delhi	January 16-22, 2024	34
5.	Digital Competency, New Tools and Software for Efficient Computer Applications'through NARES-Blended Learning Platform. (*Coordinators*: Shashi Dahiya, Sanchita Naha and Akshay Dheeraj)	ICAR-IASRI, New Delhi	January 03-09, 2024	28
6.	E-Governance Tools and applications in ICAR. (*Coordinators*: S.B. Lal, Mukesh Kumar and K.K. Chaturvedi)	ICAR-IASRI, New Delhi (Online)	February 08-14, 2024	30
7.	Advanced Data Analysis and Statistical Programming a training programme was organized for senior-level Ph.D. students of Agricultural Statistics & Informatics and under SEVA (Students Empowerment Via Alumni) (*Coordinator:* Cini Varghese)	ICAR-IASRI, New Delhi	March 01, 2024	33
Training Programmes: **DBT project "Establishment of Centre for Bioinformatics and Computational Biology in Agriculture-BIC"**				
8.	Decoding Genomics & Proteomics Data using Machine Learning Approach (*Coordinators*: Sunil Kumar, Sanjeev Kumar and Sarika Sahu)	ICAR-IASRI, New Delhi (Online)	February 21-27, 2024	51
9.	Genomic Data Analysis in Agriculture (*Coordinators*: M.A. Iquebal, Sarika and Dinesh Kumar)	ICAR-IASRI, New Delhi (Online)	March 18-28, 2024	125
Training Programmes: **CRP Genomics Project**				
10.	RNAome: Profiling and characterization of non-coding	ICAR-IASRI,	March 14-20,	46

	RNAs under Consortium Research Platform on Genomics. (*Coordinators*: Sarika Sahu, Neeraj Budhlakoti and Soumya Sharma)	New Delhi (Online)	2024	
हिन्दी कार्यशाला				
11.	कृषि शिक्षा में डिजिटल पहल (संयोजक: मधु, संचिता नाहा,सपना निगम)	भाकृअनुप-भाकृसांअंसं,नई दिल्ली	मार्च 06-08, 2024	14

➤ Sensitization Workshop/Trainings

- Following 07 workshops were conducted on **NARES-Blended Learning Platform**: (i) Andhra Pradesh Fisheries University, Naraspuram: January 24-25, 2024: Particpants: 80; (ii) Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar: January 23-24, 2024: Participants: 57; (iii) Kerala University of Fisheries and Ocean Studies, Ernakulam: January 24-25, 2024: Participants: 195; (iv) University of Agricultural Sciences, Raichur: January 12-13, 2024: Participants: 191; (v) University of Horticultural Science, Bagalkot: January 09-10, 2024: Participants: 40; (vi) University of Agricultural and Horticultural Sciences, Shivamogga: January 30-31, 2024: Participants: 50; (vii) Maharana Pratap Horticulture University, Karnal: January 30, 2024: Participants 20. Total Participants: 633.

- All-India Online Training Programme on **Demonstration of eLISS V2.0** on March 20, 2024: participants: 869. (Dr Prachi Misra Sahoo).

➤ Students passed out

- Institute congratulated all the 39 (Ph.D. and M.Sc.) Students (16 Agricultural Statistics, 15 Bioinformatics and 8 Computer Applications) in the 62nd Convocation of PG School, ICAR-IARI, New Delhi for receiving their degrees.

CONSULTANCY/ADVISORY SERVICES PROVIDED

- Prakash Kumar advised Dr. Kanupriya, Senior Scientist (Pomology), ICAR-Indian Institute of Horticultural Research, Bengaluru for statistical analysis of biochemical, morphological and climate data of jackfruit.
- M.A. Iquebal advised (i) Dr. Manish Srivastav, Principal Scientist regarding QTL-Mapping analysis in mango; (ii) Dr. Niranjana M, Scientist regarding QTL-Mapping analysis in wheat and (iii) Dr. Shrawan Singh, Scientist regarding QTL-Mapping analysis in brassica.
- Sarika advised Dr. Manisha Mangal, Principal Scientist and Dr. Arpita Srivastava, Principal Scientist regarding GWAS analysis in Chilli.
- Kaustav Aditya advised (i) Sh. RD Meena, Ph.D. student of soil science on construction of soil quality index; (ii) Dr. Amit Goswami, Senior Scientist, ICAR-IARI for analysis of data using augmented design; (iv) Mr. Gurpreet Singh, Engeering, CSKHPKV, Palampur for analysis of energy data using multistage sampling design.
- Mohd. Harun advised Umesh Singh Ph.D. (Genetics and Plant Breeding) student from Indira Gandhi Krishi Vishwavidyalaya, Raipur regarding the analysis of data collected via experimental study on genetic analysis for yield and bacterial leaf blight (Xanthomonas oryzae pv. oryzae) resistance in rice.
- Pankaj Das advised Dr. Anju Sharma, Assistant Professor (Statistics), Department of Basic Sciences, Dr. YS Parmar University of Horticulture and Forestry, Nauni, Solan, HP incrop yield prediction using machine learning techniques.
- Bharti advised Dr. Ashutosh Singh, Assistant Professor (Plant Biotechnology), Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur, Bihar on graphical representation of data.

AWARDS AND RECOGNITIONS

Awards

Ankur Biswas

- **Young Scientist of the Year Award 2024** by the Cooch Behar Association for Cultivation of Agricultural Sciences (COBACAS), Uttar Banga Krishi Viswavidyalaya (UBKV) during the 6th National Conference on Nature-based Solutions for Achieving Sustainable Development Goals organized at UBKV, Pundibari, Cooch Behar, West Bengal during March 05-06, 2024.

Kanchan Sinha

- **Young Scientist of the Year Award 2024**by the Cooch Behar Association for Cultivation of Agricultural Sciences (COBACAS), Uttar Banga Krishi Viswavidyalaya (UBKV) during the 6th National Conference on Nature-based Solutions for Achieving Sustainable Development Goals organized at UBKV, Pundibari, Cooch Behar, West Bengal during March 05-06, 2024.

Sudhir Srivastava

- 2nd Best Oral Presentation Award in the 74th Annual Conference of the Indian Society of Agricultural Statistics on 'Harnessing Statistics and Artificial Intelligence for Sustainable and Smart Agriculture' organized by the Department of Agricultural Statistics, N.M. College of Agriculture, Navsari Agricultural University, Navsari, Gujarat during February 02-04, 2024 for presenting the paper:{Sudhir Srivastava*, Mohammad Samir Farooqi,

Krishna Kumar Chaturvedi, Anu Sharma, Shashi Bhushan Lal, Deepa Bhatt, Priyanka Balley and Girish Kumar Jha. The Halophile Protein Database 2.0: A Comprehensive Resource of Chemical and Physical Properties of Halophilic Proteins}.

Prakash Kumar

- Best Oral Presentation Award in the 74th Annual Conference of the Indian Society of Agricultural Statistics on 'Harnessing Statistics and Artificial Intelligence for Sustainable and Smart Agriculture' organized by the Department of Agricultural Statistics, N. M. College of Agriculture, Navsari Agricultural University, Navsari, Gujarat during February 02-04, 2024 for presenting the paper: {Prakash Kumar and Md Yeasin. Picro-DB: an extensive genomic resource portal dedicated to Picrorhiza kurroa a medicinal plan}.

Md. Yeasin

- Young scientist award 2024-25 by Agricultural Economics and Social Science Research Association (AESSRA), New Delhi in National Seminar on 'Sustainable Agriculture, Rural Development and Future Food Security in India: An Interdisciplinary Approach' held at Department of Agricultural Economics, Palli Siksha Bhavana (Institute of Agriculture),Visva Bharati during March01-02, 2024.

Bharti

- Young Achiever Award 2023 by Society for Advancement of Human and Nature (SADHNA).

Recognitions

Rajender Parsad

- Chaired Dr. C.R. Rao Memorial Session in the 74[th]Annual Conference of Indian Society of Agricultural Statistics organized at Agricultural Statistics Department, NM Agricultural College, Navsari Agricultural University, Navsari, Gujarat during February 02-04, 2024.
- Co-Chaired all the technical session (i) ATR of last TCD Meeting; (ii) Discussion on MLP Estimates for Summer and Winter Season 2023-24; (iii) Presentation of eLISS Software developed by ICAR-IASRI; (iv) Discussion on Issues related to Sampling Methodology of ISS and issues emerged due to socio-economic changes and (v) Preparatory activities involved in conducting 21st Livestock Census organized during the meeting of Technical Committee on Direction for Improvement of Livestock Statistics, DAHD, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India, New Delhi held at Udaipur on January 16, 2024.
- Panelist inConclave on 'Precision Agriculture Conclave for Public Private Partnership' organized by ICAR on March 20, 2024.
- Chief Guest during the Valedictory Session of the Anusandhan National Research Foundation (ANRF) (DST-SERB) sponsored High-End workshop (KARYASHALA) on "Hands-on training in Pre-breeding and cytogenetic approaches for crop improvement: Advancement, challenges and opportunities" organized by ICAR-NIPB, New Delhi duringMarch 04-13, 2024. (Valedictory Session was held on March 13, 2024).
- Panelist for the session on Agri-enterprenuership and Extending Research to Service organized during Precision Agriculture Conclave for Public Private Partnership organized by ICAR on March 20, 2024.

Dr. Girish Kumar Jha

- Chief Guest in State Level Workshop on Agriculture Marketing: Problems and Prospects at Krishi Vigyan Kendra, Kota (Agriculture University, Kota) onJanuary 09, 2024.
- Nominated as Section Editor, The Indian Journal of Agricultural Sciences.
- Nominated as Section Editor, The Indian Journal of Animal Sciences.

Tauqueer Ahmad and Ankur Biswas

- Nominated as a member of Evaluation Committee at zonal level (Central Zone and EastZone) for online Hackathon on Digital Crop Survey with the theme Crop Area and Yield Estimation by Digital Agriculture Division, Department of Agriculture & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India.

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

Initiated: 3
Institute Funded

1. 'Development of survey-weighted and AI-based survey-weighted impact assessment techniques' w.e.f. 03.01.2024. (Raju Kumar, Deepak Singh, Ankur Biswas, Tauqueer Ahmad)
2. 'Deep Learning-based Identification of Nutrient Deficiencies and Weeds in Crops' w.e.f. 03.01.2024. (ICAR-IASRI: Sapna Nigam, Madhu, Akshay Dheeraj and ICAR-IARI: Vaibhav Kumar Singh; ICAR-DWR: V.K. Choudhary)

Outside Funded

3. 'Natural Grassland Ecosystem Monitoring System for Peninsular and Trans Himalayan India to Sustain Pastoral Communities' w.e.f. 01.03.2024 under National Agricultural Science Fund (NASF). (ICAR-IASRI: Ashraful Haque; ICAR-IGFRI: Avijit Ghosh; GBPNHE: A.K. Gupta; ICAR-CCARI: Bappa Das. **(IASRI: 10.50 Lakhs)**

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Sl. No.	Details	Registration Number	Granted and (Received Date)
1.	BSCM2TDb: Buffalo Subclinical Mastitis Methylo Transcriptome Database	SW-18056/2024	08.01.2024 (12.01.2024)
2.	SIReDAM: Systematic Information Resources For Dairy Animal Management	SW-17701/2023	07.12.2023 (12.01.2024)
3.	SCMVTDB: Small Cardamom Mosaic Virus Transcriptome Database	SW-17951/2023	26.12.2023 (12.01.2024)
4.	PMDIncRDB: Pearl Millet IncrRNA Database	SW-17952/2023	26.12.2023 (12.01.2024)
5.	AhncRNAdb: Amaranthus hypochondriacus Non coding RNA Database	SW-17772/2023	12.12.2023 (12.01.2024)
6.	webGRC: Web Generation of Generalized Row Column Designs	SW-17982/2023	27.12.2024 (06.03.2024)

7.	CerealESTDdb: Design and development of software for abiotic stress-response annotated ESTs in major cereal crops	SW-18351/2024	26.02.2024 (06.03.2024)
8.	NaturePred: A tool for predicting class of natural products using advanced artificial intelligence techniques	SW-18278/2024	13.02.2024 (06.03.2024)
9.	IGST: Informative Gene Selection Tool	SW-18244/2024	07.02.2024 (06.03.2024)
10.	Sweep Discovery Tool	SW-18237/2024	22.02.2024 (06.03.2024)
11.	Online System of Identifying and Counting Spikes in Wheat Plant	SW-18195/2024	30.01.2024 (06.03.2024)
12.	BtChiLCVdb: Bemisia tabaci Asia II 1 transcriptome database in response to chilli leaf curl virus	SW-17957/2023	26.12.2023 (06.03.2024)
13.	WDRoTDB: Wheat Drought Root Transcriptome Database	SW-18106/2024	16.01.2024 (06.03.2024)

PERSONNEL

Congratulations on your Promotion/ New Assignment/ New Joining:

Name	Designation	Effective date
Dr. Jaiprakash Bisen	Scientist	01.01.2024: Joined Institute from ICAR-National Rice Research Institute, Cuttack
Sh. Ratan Singh	UDC	19.03.2024: Permanent absorption
Sh. Dinesh	UDC	19.03.2024: Permanent absorption
Sh. Vipin Dagar	UDC	19.03.2024: Permanent absorption

Wish you a Happy and Healthy Retired Life

Name	Designation	Effective date
Sh. O.P. Tiwari	LDC	31.01.2024
Sh. Devendra Kumar	CTO	31.03.2024

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