

- 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...***

**T**his 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.

The Institute developed (i) web-enabled prediction tool SVM-Root for the computational prediction of the root-associated proteins; (ii) DBPMod web server, designed to facilitate the detection of DNA-binding proteins (DBPs) across various model organisms. To address the challenges posed by the selection of suitable forecasting models and the determination of appropriate combination of weights, a novel framework called 'OptiSembleForecasting' has been created using optimization-based ensemble techniques and made available as an R-package. Food Loss Index (FLI) estimates for India and has been calculated using 12 commodities using the FAO methodology and the data generated through three post-harvest losses surveys conducted during 2005-07, 2012-14 and 2020-21 and all the 45 commodities common to all the three surveys. Steps of year wise decrement method has been suggested for imputing the index during intervening years.



On the occasion of celebrations of Annual Day, Dr. Himanshu Pathak, Honourable Secretary, DARE and Director General, ICAR was the Chief Guest; Dr. R.C. Agrawal, DDG (Agricultural Education), ICAR & ND (NAHEP), Guest of Honour and distinguished speaker Dr. Santanu Chaudhury, Director, IIT Jodhpur delivered 33rd Nehru Memorial Lecture on 'Artificial Intelligence in Agriculture'. The celebrations started with planting the saplings of Rudraksh by the Chief Guest. Four publications viz. 'Agricultural Research Data Book (ARDB) 2023; Technical Bulletins on 'Evaluation of Comprehensive Scheme for Cost of Cultivation of Principal Crops (CS Scheme)'; 'Evaluation of Improvement of Agricultural Statistics (IAS) Scheme' and Brochure on 'Augmented Reality/Virtual Reality' were released on the occasion.

Sixteen technologies developed at the Institute were awarded certificates during ICAR Foundation and Technology Day function held during July 16-18, 2023. The staff and students of the Institute also celebrated Independence Day and Teachers Day. Hindi Pakhwada was organized during September 14-29, 2023. 32<sup>nd</sup> Dr. Daroga Singh Memorial lecture was delivered by Dr. (Mrs.) Pankaj Mittal, General Secretary, Association of Indian Universities. An online workshop on 'Celebrating Statistics in Memory of Professor CR Rao' was organized on his birthday on September 10, 2023. The Director's Interview on Role of ICAR-IASRI in the Service of the Nation was broadcasted in Kisan Samachar on DD KISAN Channel. A medicinal garden has also been initiated in the institute campus on August 14, 2023 as part of celebrations of Meri Maati, Mera Desh during August 13-15, 2023.

A total of 46 Research Papers, 06 Book Chapters; 05 Popular Articles; 02 Technical Bulletins; 03 Database /Packages and 03 R Packages were published. The Institute initiated 06 new research projects and 03 research projects were completed. and received 05 copyrights. Through 03 training programmes and one workshop, trained 360 personnel and 42 participated in Hindi Workshop. A total of 6519 participated attended sensitization training programmes on virtual relativity modules, blended learning platform, Agri-Diksha Channel and Academic Management System.

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.

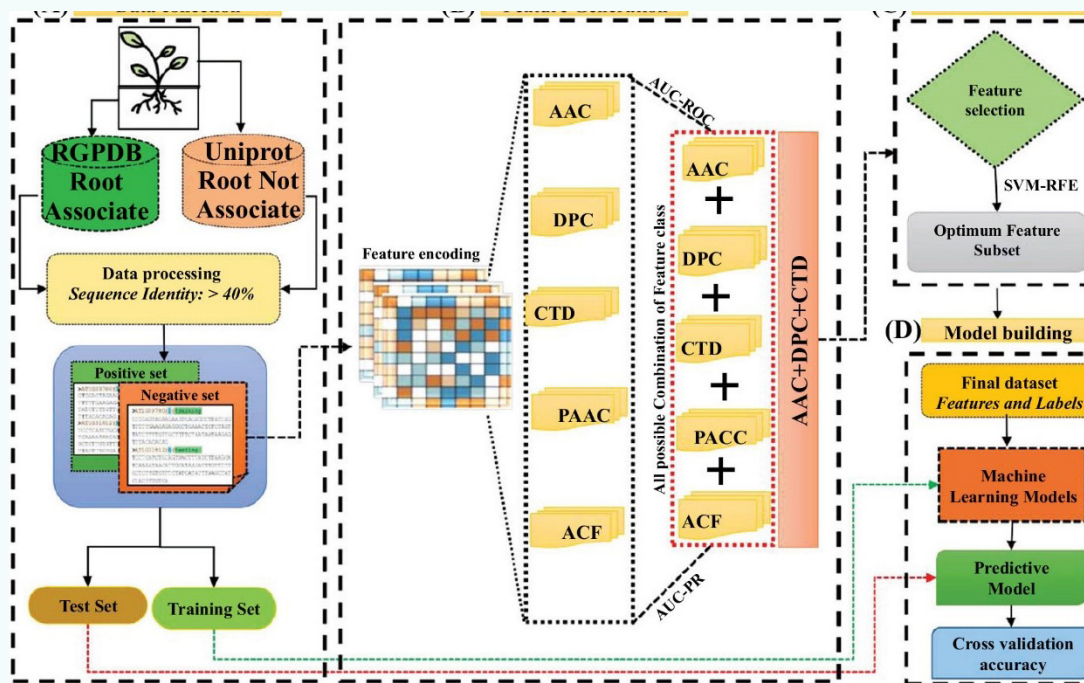


(Rajender Parsad)

## RESEARCH ACHIEVEMENTS

### SVM-Root: Identification of root-associated proteins in plants by employing the support vector machine with sequence-derived features.

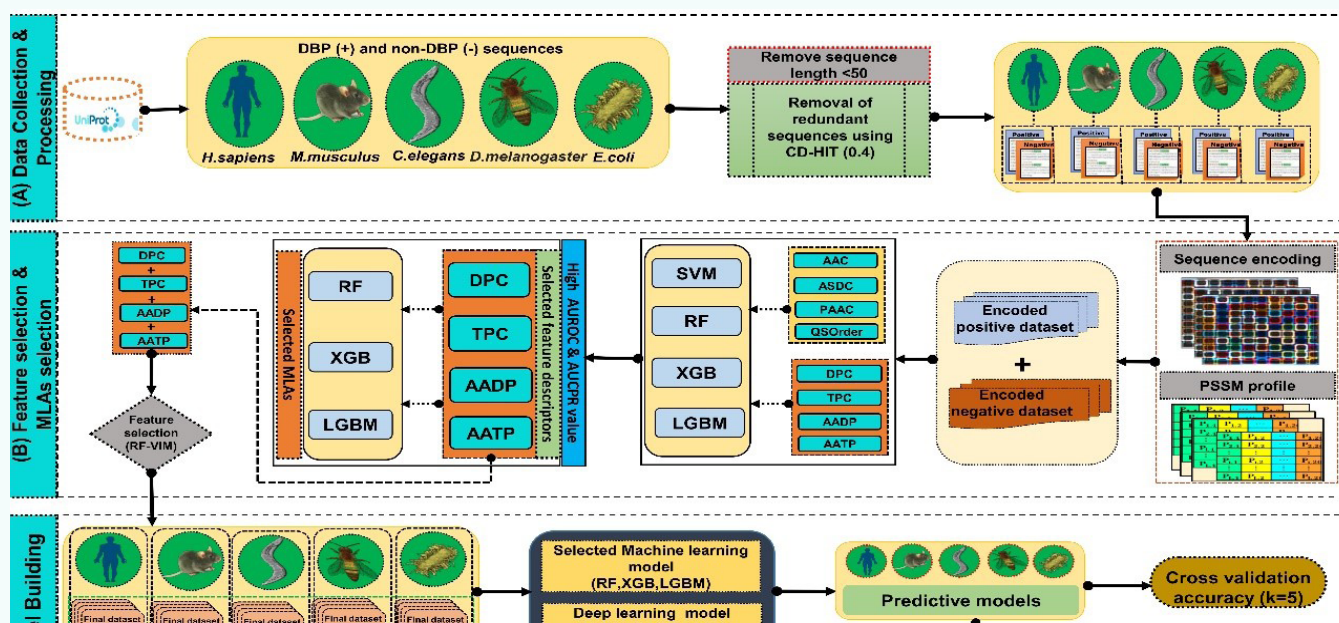
Root is a desirable trait for modern plant breeding programs, as the roots play a pivotal role in the growth and development of plants. Therefore, the identification of the genes governing the root traits is an essential research component. With regard to the identification of root-associated genes/proteins, the existing wet-lab experiments are resource intensive and time consuming, whereas the gene expression studies are species-specific. As an alternative, a machine learning-based computational method for the identification of root-associated proteins has been developed. The problem was formulated as a binary classification, where the root-associated proteins and non-root-associated proteins constituted the two classes. Four different machine learning algorithms such as support vector machine (SVM), extreme gradient boosting, random forest, and adaptive boosting were employed for the classification of proteins of the two classes. Different sequence-derived features such as amino acid composition (AAC), Dipeptide composition (DPC), Composition, Transition, and Distribution (CTD), Pseudo Amino Acid Composition (PAAC), and Autocorrelation Function (ACF) were used as input for the learning algorithms. The SVM achieved higher accuracy with the 250 selected features of AAC+DPC+CTD. Specifically, the SVM with the selected features achieved overall accuracies of 0.74, 0.73, and 0.73 evaluated with single 5-fold cross-validation (5F-CV), repeated 5F-CV, and independent test set, respectively. A web-enabled prediction tool SVM-Root (<https://iasri-sg.icar.gov.in/svmroot/>) has been developed for the computational prediction of the root-associated proteins. The proposed model is believed to supplement the existing experimental methods and high throughput GWAS and transcriptome studies.



### DBPMod: A supervised learning model for computational recognition of DNA binding proteins in model organisms

DNA-binding proteins (DBPs) play a critical role in many biological processes, including gene expression, DNA replication, recombination, and repair. Understanding the molecular mechanisms underlying these processes depends on the precise identification of DBPs. In recent times, several computational methods have been developed to identify DBPs. However, due to the generic nature of the models, these models are unable to identify species-

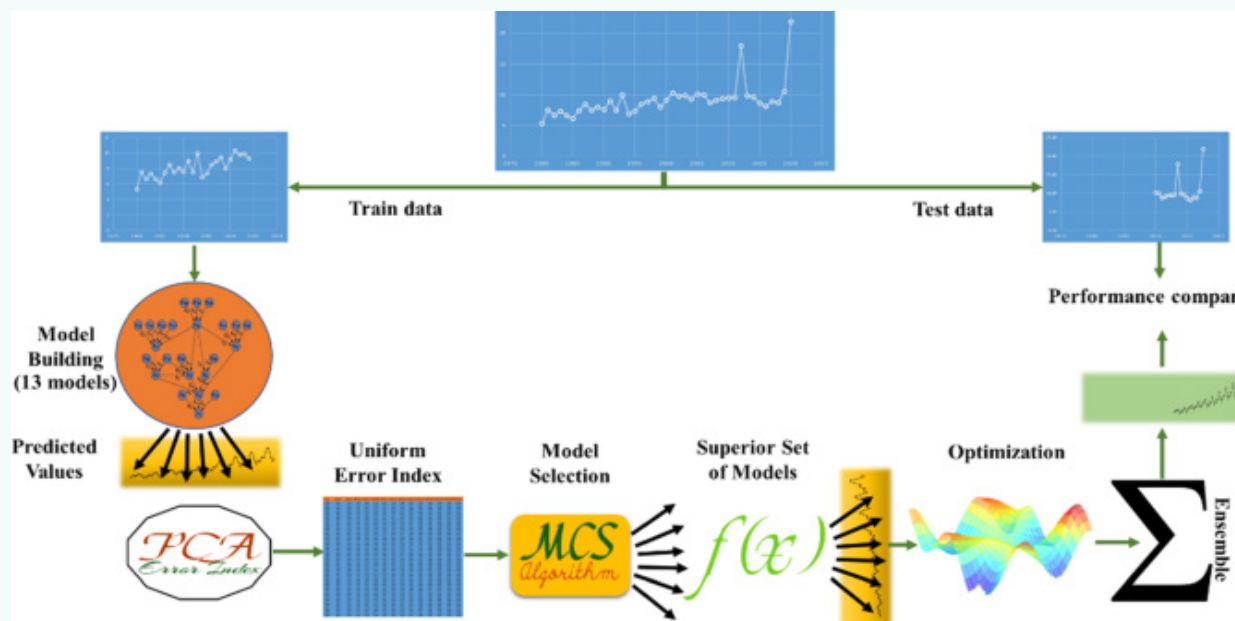
specific DBPs with a fair accuracy. The computational method “DBPMod” has been developed, which makes use of a machine learning approach to identify species-specific DBPs. For prediction, both shallow learning algorithms and deep learning models have been used, with shallow learning models achieving higher accuracy. Additionally, the evolutionary features outperformed sequence-derived features in terms of accuracy. Five model organisms, including *C.elegans*, *D. melanogaster*, *E. coli*, *H. sapiens*, and *M. musculus*, were used to assess the performance of DBPMod. Five-fold cross validation and independent test set analyses were used to evaluate the prediction accuracy in terms of auROC and auPRC, which was found to be ~89-92% and ~89-95% respectively. The comparative results demonstrate that the DBPMod outperforms 12 existing state-of-the-art computational approaches in identifying the DBPs for all five model organisms. The web server of DBPMod has been established to make it easier for researchers to detect DBPs and is publicly available at <https://iasri-sg.icar.gov.in/dbpmod/> as an invaluable tool for discovering DBPs, supplementing the current experimental and computational models.



### Optimization-based ensemble forecasting using MCS algorithm and PCA-based error index (OptiSembleForecasting)

Ensemble forecasts from multiple models have gained enormous popularity as it provides more efficient forecast as compared to the individual counterpart. The linear weighted combination method is most widely utilized for its simplicity and efficiency. Despite serious efforts by various researchers, two considerable challenges still exist: (1) Systematic and robust techniques for selecting suitable forecasting models and (2) Techniques to find appropriate combination weights. To address these challenges, a novel framework for optimization-based ensemble technique, ‘OptiSembleForecasting’ has been developed. The three components of the proposed framework are (a) Principal Component Analysis-based error index, (b) Model Confidence Set algorithm and (c) Optimization techniques. A total of thirteen forecasting models consisting of five deep learning, five machine learning and three stochastic models and twenty optimization techniques have been implemented in the proposed framework. To examine the effectiveness of the proposed technique, wholesale price of three commodities (TOP: Tomato, Onion, and Potato) each with two major markets in India has been considered. The empirical evaluation of the predictive accuracy of different models with that of the proposed techniques has been carried out by means of root mean square error (RMSE) and mean absolute percentage error (MAPE). The findings of this study demonstrated the superiority of the proposed algorithm in comparison to existing models.





## Food Loss Index (FLI)

Compiled Food Loss Index (FLI) for India and Food Loss percentage under the project entitled Study on reviewing the Food Loss Index (FLI) estimates for India and preparing assessment report for inclusion of the SDG Indicator 12.3.1 in the National Indicator Framework of India funded by Food and Agriculture Organization of the United Nations (FAO), Rome through FAO-India using the FAO methodology and the data generated through three post-harvest losses surveys conducted during 2005-07, 2012-14 and 2020-21. The statistics has been calculated using 12 commodities as per procedure of FAO and all the 45 commodities common to all the three surveys. Steps of year wise decrement method has been suggested for imputing the index during intervening years. Some suggestions of weighting the imported quantities only for storage losses has been suggested. The FLI report has been accepted by FAO.

## Database/Web-Application/Python Library developed:03

- **OptiSembleForecasting:** Optimization based Ensemble Forecasting using MCS algorithm and PCA based error index available at <https://cran.r-project.org/package=OptiSembleForecasting>.
- **VMDML:** Variational Mode Decomposition Based Machine Learning Models. This package featured with four different variant of Variational Mode decomposition based univariate models namely VMDARIMA, VMDRE, VMDSVR and VMDTDNN is available at <https://cran.r-project.org/web/packages/VMDML/index.html>.
- **Tri.Hierarchical.IBDs:** (Tri- Hierarchical Incomplete Block Designs). It generates tri-hierarchical designs with six component designs under certain parameter restrictions is available at <https://CRAN.R-project.org/package=Tri.Hierarchical.IBDs>.

## Other

ICAR-IASRI in collaboration with ICAR-NBPGR undertook a study to get an insight into the transcript diversity of pectoralis major muscles of Kadaknath and broiler chicken. RNA sequencing-based expression profiles from pectoralis major muscles of black meat (Kadaknath) and white meat (broiler) chicken were compared to identify differentially expressed genes. A total of 156 genes were up regulated with log<sub>2</sub> fold change  $\geq \pm 2.0$  in Kadaknath and 68 genes were down regulated in comparison to broiler. Significantly enriched biological functions of up-regulated

genes in Kadaknath were skeletal muscle cell differentiation, regulation of response to reactive oxygen, positive regulation of fat cell differentiation and melanosome. Significant ontology terms up-regulated in broiler included DNA replication origin binding, G-protein coupled receptor signaling pathway and chemokine activity. Highly inter-connected differentially expressed genes in Kadaknath (ATFs, C/EPDs) were observed to be important regulators of cellular adaptive functions, while in broiler, the hub genes were involved in cell cycle progression and DNA replication.

S.No.	Name of the Technologies/Products	Developers	
		Lead	Associates
1	Krishi Vigyan Kendra Knowledge Network Portal (KVK Portal) & KVK Mobile App. (2022)	Alka Arora	Sudeep Marwaha, A.K. Choubey, S.N. Islam, Soumen Pal, Ajit, Ranjit Kumar Paul, Sanchita Naha, P. Adhiguru
2	AI-DISC (Artificial Intelligence based Disease Identification Systems for Crops). (2022)	Sudeep Marwaha	R.C. Agrawal, Rajender Parsad, Ramasubramanian V., Alka Arora, Anshu Bharadwaj, Ajit, Shashi Dahiya, S.N. Islam, Chandan Kumar Deb, Md. Ashrafal Haque, Sapna Nigam, Mrinmoy Ray, Achal Lama, Soumen Pal, Rajni Jain, Sujay Rakshit, P. Lakshmi Soujanya, Sumit Kumar Aggarwal, K.S. Hooda, Brajesh Lall, Lokesh Gupta, Kalpit Dipakkumar Shah, Prasannakumar M.K., V.S. Acharya, Abhishek Shukla, Ladhu Ram Choudhary, Palash Deb Nath, Shubha Trivedi, Mehraj UI Din Shah, Ravinder Singh Rana, Subrata Dutta and Vaibhav Kumar Singh
3	End-to-End solution: e Livestock Integrated Sample Survey (eLISS) Web Portal & App. (2021)	Prachi Misra Sahoo	Tauqueer Ahmad, Anil Rai, Ankur Biswas and Chirag Vasudev
4	Prediction server for discovery of DNA and RNA-binding proteins in plant. (2022)	Upendra Kumar Pradhan	Prabina Kumar Meher, Sanchita Naha, Ajit, Soumen Pal and Rajender Parsad
5	ICAR-Technology Repository Ver 1.0 and ICAR Technologies Mobile App. (2021)	Rajender Parsad	Appavoo Dhandapani, Mukesh Kumar and Anshu Bharadwaj
6	KCC-CHAKSHU: Collated Historically Aggregated Knowledge-based system with Hypertext User-interface. (2022)	Samarth Godara	Madhu, Sanchita Naha, J.P.S. Dabas, Rajender Parsad, Sudeep, R.S. Bana, Raju Kumar, Gograj Singh Jat, Abimanyu Jhahria, Shashi Dahiya, Anshu Bharadwaj, Deepak Singh, Shbana Begam and Jatin Bedi

7	Prediction server for discovery of abiotic stress-responsive non-coding RNAs. (2022)	Prabina Kumar Meher	Upendra Kumar Pradhan, Sanchita Naha, Atmakuri Ramakrishna Rao, Ajit and Soumen Pal
8	Prediction server for multiple localization of coding and non-coding RNAs. (2021)	Prabina Kumar Meher	Atmakuri Ramakrishna Rao
8	Web generation of generalized row-column designs (webGRC). (2022)	Anindita Datta	Seema Jaggi, Cini Varghese, Eldho Varghese, Arpan Bhowmik and Mohd Harun
9	Sampling methodology for agriculture census. (2021)	Tauqueer Ahmad	Prachi Misra Sahoo, Anil Rai and Ankur Biswas
10	Sampling methodologies for food loss measurement in horticultural crops, livestock and fish. (2020)	Tauqueer Ahmad	Anil Rai, Prachi Misra Sahoo and Ankur Biswas
11	Web enabled phytochemical knowledge-based system for crop protection. (2021)	Sukanta Dash	Anupama Singh, Anil Kumar, Anirban Datta, Suman Manna, Abhishek Mandal, Rajesh Kumar, Aditi Kundu, Neeraj Patanjali, R. Roy Burman, Supradip Saha, G.A. Rajanna, V. Shanmugam, Ramesh K Yadav and Bhagyashri S
12	Software for identification of circadian genes in plants. (2021)	Prabina Kumar Meher	Tanmaya Kumar Sahu
13	An information system to support therapeutic management of foot and mouth disease of cattle. (2021)	Tanmaya Kumar Sahu (Outside IASRI)	Prabina Kumar Meher and Atmakuri Ramakrishna Rao
14	Abiotic stress-responsive genes, gene ontology and metabolic pathways of major cereal crops. (2020)	Sanjeev Kumar	Ani Rai, K.K. Chaturvedi, S.B. Lal, Md. Samir Farooqi, D.C. Mishra, Jyotika Bhati, Arijit Saha, Pankaj Kumar Pandey and Anuj Kumar
15.	Abiotic stress-responsive genes, gene ontology and metabolic pathways of major cereal crops. (2020)	Sanjeev Kumar	Ani Rai, K.K. Chaturvedi, S.B. Lal, Md. Samir Farooqi, D.C. Mishra, Jyotika Bhati, Arijit Saha, Pankaj Kumar Pandey and Anuj Kumar
16	Web application for trait specific gene selection. (2021)	Md. Samir Farooqi	D.C. Mishra, K.K. Chaturvedi and Sudhir Srivastava

## PANORAMA OF ACTIVITIES

- Greetings were exchanged on Institute Annual Day on July 02, 2023. The formal function was held on July 03, 2023. Dr. Himanshu Pathak, Secretary, DARE & Director General, ICAR was the Chief Guest; Dr. R.C. Agrawal, DDG (Agricultural Education), ICAR & ND (NAHEP), Guest of Honour and distinguished speaker Dr. Santanu Chaudhury, Director, IIT Jodhpur delivered 33<sup>rd</sup> Nehru Memorial Lecture on 'Artificial Intelligence in Agriculture'. The celebrations started with planting the saplings of Rudraksh by the Chief Guest. The dignitaries lit the lamp and after that IASRI song was played, this started the formal annual day function of the Institute.









Dr. Rajender Parsad, Director of the Institute delivered welcome address and presented the activities and accomplishments of the institute. He also gave a glimpse of major achievements, honours & awards, collaborations & linkages, statistical methodologies and their impact, human resource development, products, digital initiatives, etc. of the Institute. The crisp yet elaborative presentation covering all the aspects of the Institute was well appreciated by Secretary DARE and Director General, ICAR and others. The dignitaries had all applauded the Institute for its achievements and ongoing efforts. Chief Guest, Dr. Himanshu Pathak, Secretary, DARE & Director General, ICAR delivered Presidential address and congratulated the entire IASRI fraternity on the occasion of the Annual day and also appreciated the efforts of past and present IASRIans for it. He also mentioned that the Institute which is contributed significantly to the system immensely in the area of Statistical Sciences and e-Governance activities. He also described following three points need to be done on Annual day: (i) exchange of the pleasantries among the colleagues and fraternity, (ii) present and discuss what has been done so far and (iii) think upon what to do in the future to make the Institute progress further. He also emphasized about the importance of quality data, correct data and authenticated data for well informed decisions.



A distinguished speaker Dr. Santanu Chaudhary, Director, Indian Institute of Technology, Jodhpur delivered the 33<sup>rd</sup> Nehru Memorial Lecture on Artificial Intelligence in Agriculture. Guest of Honour and Distinguished IASRI alumni Dr. R.C. Agrawal, DDG (Agricultural Education), ICAR & National Director (NAHEP), in his remarks, not only mentioned about the glorious past of IASRI but also shed light on the contributions and importance of the Institute at present not only for ICAR but for entire NARES. He called IASRI as the “heart of entire ICAR and NARES”. Following four publications were also released on this occasion: (i) Agricultural Research Data Book (ARDB) 2023; (ii) Technical Bulletin on 'Evaluation of Comprehensive Scheme for Cost of Cultivation of Principal Crops (CS Scheme)'; (iii) Technical Bulletin on 'Evaluation of Improvement of Agricultural Statistics (IAS) Scheme' and (iv) Brochure on 'Augmented Reality/Virtual Reality' Authors of the paper publishing the research paper with 10+ Impact factor in which IASRI as lead were awarded appreciation certificate. Students also prepared beautiful rangoli during celebrations. Dr. Sudeep, Principal Scientist and Incharge, Training Administration Cell proposed the formal vote of thanks.

## Independence Day Celebrations

The Institute celebrated the 77<sup>th</sup> Independence Day on August 15, 2023. Dr. Rajender Parsad, Director, ICAR-IASRI hoisted the flag in the Institute Campus and addressed the staff and students. A cultural programme was organized by the students, staff members and children of staff members on the occasion. The staff and students of the Institute also took PanchPran Pledge on this Day





## Swachhata Campaign at ICAR-IASRI

- As a part of swachhata campaign 'Plastic free India' awareness lesson was shared with all the ICAR-IASRI members through mail on September 28,,2023.

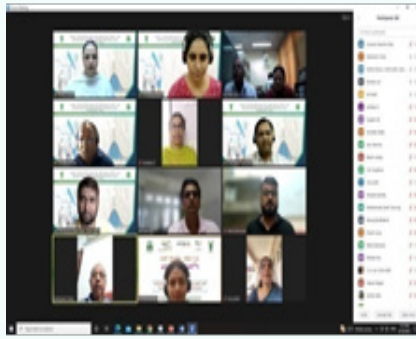
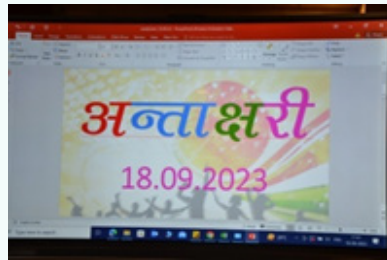
## हिन्दी पखवाड़ा

### वर्ष 2023 के दौरान संस्थान में आयोजित हिन्दी पखवाड़ा की रिपोर्ट

संस्थान में 14 से 29 सितम्बर, 2023 के दौरान हिन्दी पखवाड़े का आयोजन किया गया। इस वर्ष हिन्दी पखवाड़े का शुभारम्भ अर्थात उदघाटन हिन्दी दिवस एवं तृतीय अखिल भारतीय राजभाषा सम्मेलन के अवसर पर 14 सितम्बर, 2023 को पुणे (महाराष्ट्र) में श्री अजय कुमार मिश्रा, माननीय गृह राज्य मंत्री जी द्वारा किया गया था। हिन्दी पखवाड़े का आयोजन एवं इससे संबन्धित प्रतियोगिताएं संस्थान में दिनांक 14 से 29 सितम्बर, 2023 के दौरान आयोजित की गयीं। दिनांक 14 सितम्बर, 2023 को काव्य-पाठ प्रतियोगिता का आयोजन किया गया। हिन्दी पखवाड़ा के दौरान डॉ दरोगा सिंह स्मृति व्याख्यान के साथ-साथ वैज्ञानिक प्रभागों में हिन्दी में सर्वाधिक वैज्ञानिक कार्य करने के लिए प्रभागीय चल-शील्ड, डिजिटल हिन्दी शोध-पत्र प्रस्तुतिकरण प्रतियोगिता (वैज्ञानिक वर्ग के कर्मियों के लिए), डिजिटल हिन्दी पोस्टर प्रस्तुति प्रतियोगिता (प्रशासनिक वर्ग के कर्मियों के लिए), हिन्दी श्रुतलेख प्रतियोगिता, हिंदीतर कर्मियों के लिए शब्दार्थ लेखन प्रतियोगिता, अंताक्षरी प्रतियोगिता तथा प्रश्न-मंच प्रतियोगिता भी आयोजित की गईं। सभी प्रतियोगिताओं में संस्थान के विभिन्न वर्ग के कर्मियों ने बढ़-चढ़कर हिस्सा लिया। संस्थान में प्रत्येक वर्ष हिन्दी दिवस के अवसर पर डॉ दरोगा सिंह स्मृति व्याख्यान का आयोजन किया जाता है। इस वर्ष इस कड़ी का **बत्तीसवाँ व्याख्यान** भारतीय विश्वविद्यालय संघ की महासचिव, डॉ.(श्रीमती) पंकज मित्तल द्वारा दिया गया और इस कार्यक्रम की अध्यक्षता संस्थान के निदेशक महोदय द्वारा की गई। दिनांक 29 सितम्बर, 2023 को हिन्दी पखवाड़ा के समापन समारोह के अवसर पर इस दौरान आयोजित प्रतियोगिताओं के सफल प्रतियोगियों के साथ-साथ वर्ष 2022-23 के लिए सरकारी काम-काज मूल रूप से हिन्दी में करने के लिए प्रोत्साहन योजना के अंतर्गत भी नकद पुरस्कारों की घोषणा की गयी। इसके अतिरिक्त इस अवसर पर अक्टूबर 2022 से अगस्त 2023 तक की अवधि के दौरान संस्थान में आयोजित हिन्दी कार्यशालाओं के वक्ताओं को प्रशस्ति-पत्र प्रदान किए जाने की भी घोषणा की गयी ।







## Teacher's Day

- The Institute celebrated Teacher's Day on September 05, 2023 in Hybrid mode. Dr. Pranesh Kumar, Professor (Statistics), Department of Mathematics & Statistics, University of Northern British Columbia, Prince George, Canada was honored on this occasion. Also, he delivered the Teachers' day Lecture. Dr. Rajender Parsad, Director, ICAR-IASRI presided over the function. Students organized cultural program and decorated with beautiful Rangolis.

ICAR- Indian Agricultural Statistics Research Institute

YOU ARE CORDIALLY INVITED FOR

**TEACHER'S DAY**  
Celebration

On  
Tuesday, Sept.05, 2023 at 10.00 AM

Inspiring Teacher

**Dr. Pranesh Kumar**  
Professor (Statistics)  
Department of Mathematics & Statistics  
University of Northern British Columbia,  
Canada

Joining Link:  
<http://surf.li/ktvzi>  
Meeting ID: 854 7697 1828  
Passcode: 613163

R.S.V.P.  
Dr. Rajender Parsad  
Director, ICAR-IASRI

Phone: 011-25841479  
Email: [director.iasri@icar.gov.in](mailto:director.iasri@icar.gov.in)  
Website: <https://iasri.icar.gov.in/>



ICAR- Indian Agricultural Statistics Research Institute

YOU ARE CORDIALLY INVITED FOR

**TEACHER'S DAY**  
Celebration

On  
Tuesday, Sept.05, 2023 at 10.00 AM

Inspiring Teacher

**Dr. Pranesh Kumar**  
Professor (Statistics)  
Department of Mathematics & Statistics  
University of Northern British Columbia,  
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R.S.V.P.  
Dr. Rajender Parsad  
Director, ICAR-IASRI

Phone: 011-25841479  
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## WORKSHOPS/WEBINARS/ MEETINGS ETC. ORGANIZED

### Workshop: Celebrating Statistics in Memory of Professor CR Rao

Online workshop on 'Celebrating Statistics in Memory of Professor CR Rao' was organized on his birthday on September 10, 2023. The workshop was chaired by Dr. R.C. Agrawal, DDG (Agricultural Education), ICAR, New Delhi. Speakers in the workshop were (i) Dr. Saumyadipta Pyne, Professor, Department of Statistics and Applied Probability, University of California, Santa Barbara, USA delivered a talk on 'Rao's Weighted Distributions for Modeling the Dynamics of Wildfires and Air Pollution'; (ii) Dr. TJ Rao, Retired Professor, Indian Statistical Institute, Kolkata delivered a talk on 'Remembering Professor CR Rao'; (iii) Dr. N Balakrishna, Visiting Professor, IIT, Tirupati delivered a talk on 'Models for Count time series' and (iv) Dr. Rajender Parsad, Director, ICAR-IASRI, New Delhi delivered a talk on 'Professor CR Rao Influence on Designing of Experiments with a special reference to Agricultural Sciences'.

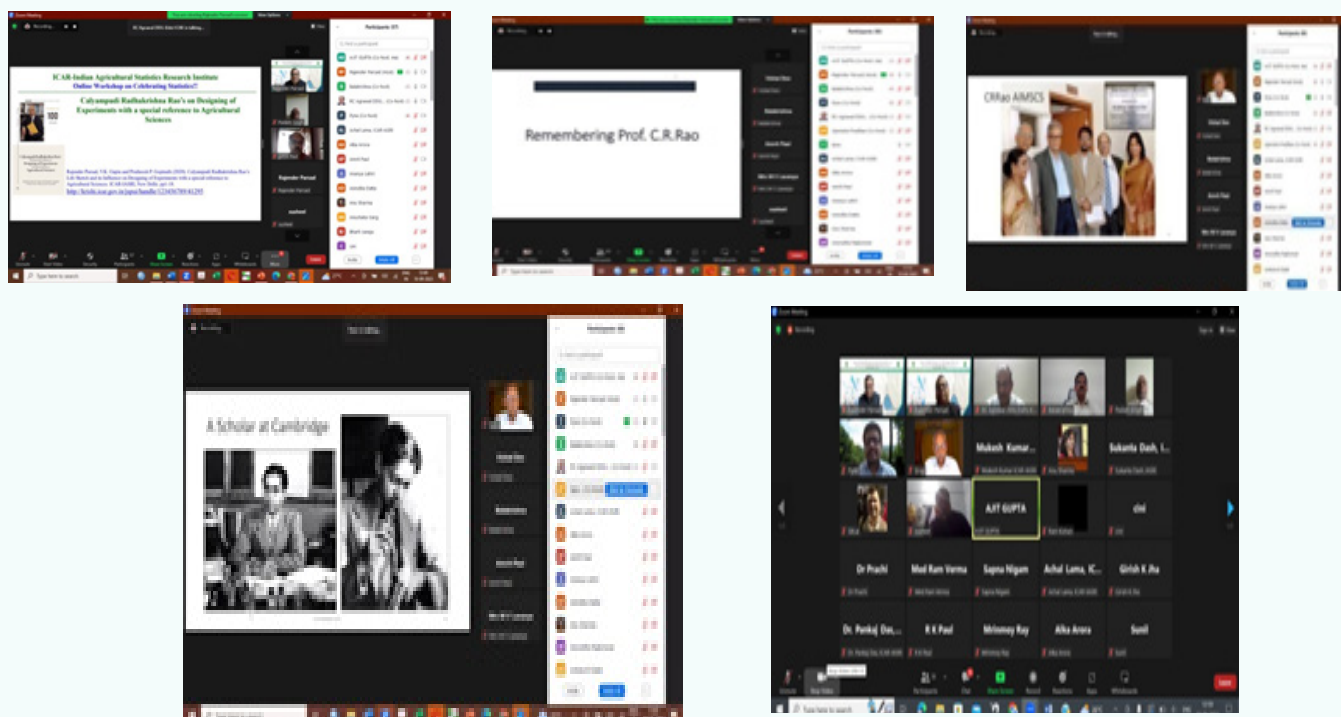
Floral Tribute to Professor C.R. Rao: 10.09.1920-22.08.2023

"If chance is the antithesis of law, then we need to discover the laws of chance" - C. R. Rao

"All knowledge is, in final analysis, history. All sciences are, in the abstract, mathematics. All judgements are, in their rationale, statistics" - C. R. Rao

"Statistics is not a discipline like physics, chemistry or biology where we study a subject to solve problems in the same subject. We study statistics with the main aim of solving problems in other disciplines." ...CR Rao





### Seminars Delivered

A total of 34 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	4
	New Project Proposal	4
Student	Course	7
	ORW	4
	Thesis	15
<b>Total</b>		<b>34</b>

### Others

#### Role of ICAR-IASRI: Director's Interview on DD KISAN

- Dr Rajender Parsad, Director, ICAR-IASRI gave an Interview on Role of ICAR-IASRI in the Service of the Nation to the DD KISAN Channel that was broadcasted in Kisan Samachar on August 16 and August 17, 2023. <https://youtu.be/CFPswTtI038>





- ICAR-IASRI showcased state-of-the-art Virtual Reality technology which has introduced a new dimension for the agricultural community, KISAN SARATHI, KISAAN 2.0, AI-DISC, KVK Portal and KVK App in the exhibition held at residence of Honourable Minister of Agriculture and Farmers Welfare on August 15, 2023. (Guidance: Rajender Parsad and Nodal Officer: Sudeep Marwah)
- A medicinal garden has also been initiated in the Institute Campus on August 14, 2023 as part of celebrations of “Meri Maati, Mera Desh” during August 13-15, 2023.
- Institute participated in the 95<sup>th</sup> ICAR Foundation day and Technology Day celebrations organized at Dr. C. Subramaniam Auditorium of NASC Complex, New Delhi during August 16-18, 2023.

## PUBLICATIONS

### Research Papers

1. Ahlawat S, Arora R, Sharma R, Chhabra P, Kumar A, Kaur M, Lal SB, Mishra DC, Farooqi MS and Srivastava S (2023). Revelation of genes associated with energy generating metabolic pathways in the fighter type Aseel chicken of India through skeletal muscle transcriptome sequencing. *Animal Biotechnology*, **34(9)**, 4989-5000. <https://doi.org/10.1080/10495398.2023.2219718>
2. Basak P, Ray M, Sinha K and Anuja AR (2023). Prediction of urban unemployment rate in India during Grey Model. *Journal of Indian Society of Agricultural Statistics*, **77(3)**, 243–248
3. Bhardwaj A, Tando, G, Pal Y, Sharma NK, Nayan V, Soni S, Iquebal MA, Jaiswal S, Legha RA, Talluri TR, Bhattacharya TK, Kumar D, Rai A and Tripathi BN (2023). Genome-wide SNP based genomic diversity and runs of homozygosity for selection signatures in Equine breeds. *MDPI Genes*, **14(8)**, 1623. <https://doi.org/10.3390/genes14081623>
4. Bharti, Aditya K and Devi S (2023). Marketing analysis of apple crop in High Hills of Himachal Pradesh. *Current Science*, **125(5)**, 530-535.
5. Biswas A, Aditya K and Sud UC (2023). Product type calibration estimator with inversely related PSU level auxiliary variable under two stage sampling. *Journal of the Indian Society of Agricultural Statistics*, **77(2)**, 171–176. <https://krishi.icar.gov.in/jspui/handle/123456789/80862>
6. Biswas A, Kumar R, Singh D and Basak P (2023). Calibration estimation approach for population ratio under adaptive cluster sampling. *Journal of Indian Society of Agricultural Statistics*, **77(2)**, 177–183. <https://krishi.icar.gov.in/jspui/handle/123456789/80863>
7. Chandra T, Jaiswal S, Iquebal MA, Singh R, Gautam RK, Rai A and Kumar D (2023). Revitalizing miRNAs mediated beneficial agronomic traits improvement in rice. *Plant Physiology and Biochemistry Journal*, **202**, 107933. <https://doi.org/10.1016/j.plaphy.2023.107933>
8. Chaturvedi K, Kumar U, Sane A, Singh P, Kumar P and Tripathi PC (2023). Exploring the genetic diversity of Aegle marmelos (L.) *Correa populations in India*. *Plant Genetic Resources: Characterization and Utilization*, **21(2)**, 107-114. <https://doi.org/10.1017/S1479262123000485>; <https://krishi.icar.gov.in/jspui/handle/123456789/82101>
9. Das A, Munshi AD, Raju D, Kumar S, Singh D, Talukdar A, Hongal D, Iquebal MA, Bhattacharya RC, Ghannoum O, Behera TK and Dey SS (2023). Key physiological traits for drought tolerance identified through phenotyping a large set of slicing cucumber (*Cucumis sativus* L.) genotypes under field and water-stress conditions. *Genetic Resources and Crop Evolution*. <https://doi.org/10.1007/s10722-023-01737-y>

10. Das P, Chandra T, Negi A, Jaiswal S, Iquebal MA, Rai A and Kumar D(2023). A comprehensive review on genomic resources in medicinally and industrially important major spices for future breeding programs: status, utility and challenges. *Current Research in Food Science*, **7**, 100579. <https://doi.org/10.1016/j.crfs.2023.100579>
11. Das P, Grover M, Mishra DC, Guha MS, Kumar S, Chaturvedi KK, Bhardwaj SC, Singh AK and Rai A (2023). Genome-wide identification and characterization of Puccinia striiformis-responsive lncRNAs in Triticum aestivum. *Frontiers in Plant Science*, section Plant Bioinformatics, **14**, 1120898. <https://doi.org/10.3389/fpls.2023.1120898>
12. Gole P, Bedi P, Marwaha S, Haque MA and Deb CK (2023). TrIncNet: a lightweight vision transformer network for identification of plant diseases. *Frontiers in Plant Science*, **14**, 1221557. <https://doi.org/10.3389/fpls.2023.1221557>; <https://krishi.icar.gov.in/jspui/handle/123456789/82018>
13. Harisha R, Singh SK, Ahlawat AK, Narwal S, Jaiswal JP, Singh JB, Kumar RR et al. (2023). Elucidating the effects on polyphenol oxidase activity and allelic variation of polyphenol oxidase genes on dough and whole wheat-derived product color parameters. *International Journal of Food Properties*, **26(2)**, 2716–2731. <https://doi.org/10.1080/10942912.2023.2252196>
14. Irshad M, Kumar M, Ray M, Sattar A Paswan S and Minnatullah (2023). Effect of meteorological elements on Sugarcane wilt in Bihar. *International Journal of Statistics and Applied Mathematics*, **8(4)**, 128-133.
15. Jaiswal R, Jha GK, Kumar RR and Lama A (2023). Agricultural price forecasting using NARX model: A case study of soybean oil. *Current Science*, **125(1)**, 79-84. <https://doi.org/10.18520/cs/v125/i1/79-84>
16. Janani R, Sharma BB, ShriDhar, Arora Ajay, Choudhary, H, Yadav, RK, Singh, D, Singh, D, Solanke, AU and Kumar, P (2023). Physiological and biochemical responses of garden pea genotypes under reproductive stage heat stress. *Genetic Resources and Crop Evolution*, **71**. <https://doi.org/10.1007/s10722-023-01684-8>; <https://krishi.icar.gov.in/jspui/handle/123456789/82685>
17. Kashyap A, Kumari S, Garg P, Kushwaha R, Tripathi S, Sharma J, Gupta NC, Kumar Rajeev Ranjan, Vishwakarma H, Bhattacharya R, Yadav R, Rana JC and Rao, M (2023). Morpho-biochemical responses of brassica coenospecies to glyphosate exposure at pre- and post-emergence stages. *Agronomy*, **13**, 1831. <https://doi.org/10.3390/agronomy13071831>
18. Kumar D, Ramkumar MK, Dutta B, Kumar A, Pandey R, Jain PK, Gaikwad K, Mishra DC, Chaturvedi KK, Rai A, Solanke AU and Sevanthi AM (2023). Integration of miRNA dynamics and drought tolerant QTLs in rice reveals the role of miR2919 in drought stress response. *BMC Genomics*, **24**, 526. <https://doi.org/10.1186/s12864-023-09609-6>.
19. Kumar K, Parihar CM, Nayak HS, Godara S, Avinash G, Patra K, Sena DR, Reddy KS, Das TK, Jat SL, Ghatala MK, Singh U and Sharawat YS (2023). Enhancing maize yield in a conservation agriculture-based maize (Zea mays)-wheat (Triticum aestivum) system through efficient nitrogen management. *The Indian Journal of Agricultural Sciences*, **93(4)**, 420-424. <https://doi.org/10.56093/ijas.v93i4.133484>
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22. Meena SN, Sharma SK, Singh P, Ram A, Meena BP, Jain D, Singh D, Debnath S, Yadav S, Dhakad U, Verma P, Meena JK and Nandan S (2023). Tillage-based nutrient management practices for sustaining productivity and soil health in the soybean wheat cropping system in vertisols of the Indian semi-arid tropics. *Frontiers in Sustainable Food Systems*, **7**, 1234344. <https://doi.org/10.3389/fsufs.2023.1234344>; <https://krishi.icar.gov.in/jspui/handle/123456789/81884>
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- regression forest and digital soil mapping technique in the Thar Desert Regions of India. *Communications in Soil Science and Plant Analysis*, **54(21)**, 2977-2994. <https://doi.org/10.1080/00103624.2023.2253840>; <https://krishi.icar.gov.in/jspui/handle/123456789/82099>
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  27. Pradhan UK, Meher PK, Sanchita N, Sharma NK, Agarwal A, Gupta A and Parsad Rajender (2023). DBPMod: a supervised learning model for computational recognition of DNA-binding proteins in model organisms. *Briefing in Functional Genomics*, elad039. <https://doi.org/10.1093/bfpg/elad039>; <https://krishi.icar.gov.in/jspui/handle/123456789/81076>
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  29. Prema P, Bangar YC, Sharma VB, Kumar S, Kumar D and Verma MR (2023). Estimating heterogeneity and pooled prevalence of classical swine fever in pigs in India: A Meta-analysis. *Indian Journal of Animal Research*, **57(9)**, 1221-1226.
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  32. Saha A, Singh KN, Gurung B, Lama A, Rathod S and Shekhawat R (2023). Robust estimation of single exponential smoothing through Kalman filter: an application to agricultural and allied commodities. *Journal of Indian Society of Agricultural Statistics*, **77(2)**, 201-207.
  33. Sarkar KA, Jaggi S, Bhowmik A, Varghese E, Varghese C, Datta A, and Dalal A (2022). Trend resistant general efficiency balanced block designs for two disjoint sets of treatments. *REVSTAT-Statistical Journal*. <https://revstat.ine.pt/index.php/REVSTAT/article/view/506>, <http://krishi.icar.gov.in/jspui/handle/123456789/79407>
  34. Singh AK, Sethi S, Asrey and Kumar R (2023). Influence of hot water treatment on nutritional quality attributes of cold stored apple (*Malus domestica*). *Indian Journal of Agricultural Sciences*, **93(9)**, 1025-1031.
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  37. Sonkusale L, Chaturvedi KK, Sharma A, Lama A, Farooqi MS, Lal SB, Joshi P, Mishra DC and Kumar M (2023). Evaluating text preprocessing methods for discovering quality topics to improve the information retrieval mechanism. *ACTA Scientific Computer Sciences*, **5(9)**, 03-08.
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  40. Upadhyay D, Budhlakoti N, Mishra DC, Kumari J, Gahlaut V, Chaudhary N, Padaria JC, Sareen S and Kumar S (2023). Characterization of stress-induced changes in morphological, physiological and biochemical properties of Indian bread wheat (*Triticum aestivum* L.) under deficit irrigation. *Genetic Resources and Crop Evolution*, **70**, 2353-2366. <https://doi.org/10.1007/s10722-023-01693-7>
  41. Upadhyay PK, Singh VK, Rajanna GA, Dwivedi BS, Dey A, Singh RK, Rathore SS, Shekhawat K, Babu S, Singh T, Kumar Y, Singh C, Rangot M, Kumar A, Sarkar S, Dash S and Rawat S (2023). Unveiling the combined effect of nano fertilizers and conventional fertilizers on crop productivity, profitability, and soil well-being. *Frontiers in Sustainable Food Systems*, **7**, 1260178. <https://doi.org/10.3389/fsufs.2023.1260178>, <http://krishi.icar.gov.in/jspui/handle/123456789/80562>
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  44. Yadav KK, Dash S, Mandal BN and Parsad Rajender (2023). Row-column Designs for Two Level Factorial Experiments. *Journal of Indian Society of Agricultural Statistics*, **77(2)**, 233-236. <http://krishi.icar.gov.in/jspui/handle/123456789/80562>
  45. Yadav R, Jaiswal S, Singhal T, Mahto RK, Verma SB, Yadav RK and Kumar R (2023). Potentials of genotypes, morpho-physio-biochemical traits, and growing media on shelf life and future prospects of gene editing in tomatoes. *Frontiers in Genome Editing*, **5**, 1203485. <https://doi.org/10.3389/fged.2023.1203485>, <https://www.frontiersin.org/articles/10.3389/fged.2023.1203485/full>
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### Book Chapters

- Das R and Mishra DC (2023). Revolutionize One Health Through Quantum Computing. In: *Biotechnological Interventions Augmenting Livestock Health and Production*. Eds. C.S. Mukhopadhyay, R.K. Choudhary, H. Panwar and Y.S. Malik. Livestock Diseases and Management. Springer, Cham. ISBN 978-981-99-2208-6. [https://doi.org/10.1007/978-981-99-2209-3\\_23](https://doi.org/10.1007/978-981-99-2209-3_23).
- Jaiswar A, Rai N, Arora D, Malhotra M, Jaiswal S and Iquebal MA (2023). Recent Advances in Genomics, Genetic Resources of Watermelon. In: *The Watermelon Genome*. Eds. S.K. Dutta, P. Nimmakayala, U.K. Reddy. Compendium of Plant Genomes. Springer, Cham. ISBN 978-3-031-34715-3. [https://doi.org/10.1007/978-3-031-34716-0\\_8](https://doi.org/10.1007/978-3-031-34716-0_8)
- Malhotra M, Jaiswar A, Shukla A, Rai N, Bedi A, Iquebal MA, Jaiswal S, Kumar D and Rai A (2023) Application of AI/ML Approaches for Livestock Improvement and Management. In: *Biotechnological Interventions Augmenting Livestock Health and Production*. Eds. Mukhopadhyay, R.K. Choudhary, H. Panwar and Y.S. Malik. Springer, Cham. ISBN 978-981-99-2208-6. <https://doi.org/10.1007/978-981-99-2209-3>

- Singh K, Iquebal MA, Jaiswal S, Rai A, Kumar D (2023). Computational Genomics Approaches for Livestock Improvement and Management In: *Biotechnological Interventions Augmenting Livestock Health and Production*. Eds. C.S. Mukhopadhyay, R.K. Choudhary, H. Panwar and Y.S. Malik. Springer, Cham. ISBN 978-981-99-2208-6. <https://doi.org/10.1007/978-981-99-2209-3>
- Varshney N, Ahmad T, Biswas A, Shrivastava A and Garde Y (2023). Adaptive Rectangular Sampling. In: *Research Trends in Mathematics and Statistics*. Eds. A.K. Bharti and V.K. Tripathi. AkiNik Publications, New Delhi, pp 119-138. ISBN 978-93-5570-213-5.
- Varshney N, Ahmad T, Biswas A, Shrivastava A and Garde Y (2023). Resampling Methods of Variance Estimation in Two-Phase Sampling. In: *Research Trends in Mathematics and Statistics*. Eds. A.K. Bharti and V.K. Tripathi. AkiNik Publications, New Delhi, pp 139-160. ISBN 978-93-5570-213-5.

### Popular Articles

- Banerjee R (2023). Integration of Agricultural Surveys: A Novel Approach to Improve Data Quality and Usability. Times of Agriculture-July Issue, 58-60. <https://timesofagriculture.in/3d-flip-book/hydroponics-farming-july-issue-to-a-magazine/>
- Himanshu Shekhar Chaurasia and Sneha Murmu (2023). The role of artificial intelligence in image classification for agriculture. *Krishi Science (KS-2900)*, 4(7), 09-13. ISSN:2583-4150
- Madhu, Nigam A and Dheeraj A (2023) Artificial Intelligence in Agriculture: From Silicon to Soil. *Food and Scientific Reports*, 4(6), 27-32.
- Mamta, Nidhi, Das R and Paul D (2023). Exploring Metagenomics for Gene Discovery and Potency of Growth-promoting Microbes in Agriculture. *Food and Scientific Reports*, 4(9), 17-23. e-ISSN 2582-5437.
- Pandey B, Murmu S and Saxena A (2023). Application of Data Science and Artificial Intelligence in Precision Livestock Farming: Application of Big data and AI in precision livestock. *Just Agriculture (e-magazine)*. <https://justagriculture.in/2023/july/publications.html>.

### Compiled/Edited Books Published

- Agricultural Research Data Book 2023, ICAR-IASRI Publication (Compiled and Edited: Sahoo PM, Ahmad T, Biswas A, Singh D, Kumar R and Banerjee R.)

### Technical Bulletin Published

- Ahmad T, Sahoo PM, Biswas A, Kumar R, Aditya K, Kumari V and Basak P (2023). Evaluation of Improvement of Agricultural Statistics Scheme. I.A.S.R.I./T.B.-01/2023. ICAR-IASRI, New Delhi.
- Ahmad T, Sahoo PM, Biswas A, Kumar R and Singh D (2023). Evaluation of Comprehensive Scheme for studying Cost of Cultivation of Principal Crops. I.A.S.R.I./T.B.-02/2023. ICAR-IASRI, New Delhi.

## PAPERS PRESENTED/LECTURES DELIVERED

### Paper presented /Invited talk delivered in Conferences

- International Conference on Current Advances in Agriculture, Animal Husbandry and Allied Sciences 'CAAAS-2023' during July 10-11, 2023
  - Sneha Murmu. A machine learning architecture for prediction of protein-protein interactions between plants and pathogens. (Oral Presentation)
- 8th National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (NCVPRIPG 2023) at IIT Jodhpur, India during July 21-23, 2023
  - Chandan Kumar Deb\*, Madhurima Das, Mahesh Kumar, Sudhir Kumar, Md. Ashraf Haque, Alka Arora,

- Chandan Kumar Deb\*, Madhurima Das, Mahesh Kumar, Sudhir Kumar, Md. Ashraful Haque, Alka Arora, Sudeep Marwaha, Biswabiplab Singh, Dhandapani Raju and Viswanathan Chinnusamy). MuSiCv1.0 : a software solution for automated mustard siliqua count using YOLOv5.
- CSISA-ICAR- KVK Workshop organized by Division of Agricultural Extension, ICAR-IARI, New Delhi at NASC Complex on September 27, 2023
  - Rajender Parsad\*, R.K. Malik, Alka Arora and Soumen Paul. Analytics and dashboard of MEL data. (Invited Talk)
- National Symposium on Crop Health Management: Safeguarding Crop through Diagnostics and Innovations organized by ICAR-Vivekananda Parvatiya Krishi Anusandhan Sansthan, Almora, Uttarakhand during September 29-30, 2023
  - Samarth Godara\*, Rajender Parsad, Shruti Godara, Sudeep Marwaha. Revitalizing Punjab Agriculture: A decade of farmer query calls analysis for sustainable crop health management. (oral online presentation in Session on V Secondary agriculture and agri-preneurship development opportunities in crop health management)
  - Sudeep Marwaha\*, R.C. Agrawal, Rajender Parsad, Ramasubramanian V., Alka Arora, Anshu Bharadwaj, Ajit, Shashi Dahiya, S.N. Islam, Chandan Kumar Deb, Md. Ashraful Haque, Sapna Nigam, Mrinmoy Ray, Achal Lama, Soumen Pal, Rajni Jain, Sujay Rakshit, P. Lakshmi Soujanya, Sumit Kumar Aggarwal, K.S. Hooda, Brajesh Lall, Lokesh Gupta, Kalpit Dipakkumar Shah, Prasannakumar M.K., V.S. Acharya, Abhishek Shukla, Ladhu Ram Choudhary, Palash Deb Nath, Shubha Trivedi, Mehraj UI Din Shah, Ravinder Singh Rana, Subrata Dutta and Vaibhav Kumar Singh. AI-DISC (Artificial Intelligence Based Disease Identification System for Crops) Mobile Application: a step towards intelligent crop health management. (online presentation in session on Novel approaches for Crop Health Management)
- 6<sup>th</sup> CWSS International Conference on Agricultural Innovations for Sustainable Development Goals with Special Focus on Natural Farming organized at Farmers' Academy & Convention Centre, BCKV, Kalyani, Nadia, West Bengal during September 30-October 02, 2023
  - Ritwika Das\*. CNN\_FunBAR: deep learning technique for fungi taxonomic classification based on DNA barcode sequences. (Oral presentation)
  - Bappa Saha, Ankur Biswas\*, Tauqueer Ahmad, Prachi Misra Sahoo, Kaustav Aditya and Nobin Chandra Paul. Dr. Ankur Biswas. Geographically weighted regression based model-calibration approach under two stage sampling design. (Contributed paper)
- International Conference on Statistical Theory and its Application organized at Department of Statistics, Bharathiar University, Coimbatore, Tamil Nadu during September 01-02, 2023
  - Surya Prakash Tripathi\*, Kaustav Aditya, Ankur Biswas and Tauqueer Ahmad. Population total estimation in two stage sampling with known study variable variance utilizing two auxiliary calibration.

### Lecture Delivered (Outside institute)

- 'Experimental designs for higher order crosses' on July 01, 2023 in the session Design of Experiments organized in the International Webinar on "Recent Trends in Theory and Applications" organized by Department of Statistics, School of Physical and Mathematical Sciences, University of Kerala in collaboration with Indian Society for Probability and Statistics and Kerala Statistical Association during June 29 to July 02, 2023 on National Statistics Day Celebrations 2023. (Mohd Harun).



- DST-SERB Sponsored High end workshop on 'Phenomics, the Next Generation Phenotyping, the trait dissection and crop improvement' organised by Nanaji Deshmukh Plant Phenomics Center, Division of Plant Physiology, ICAR- IARI, New Delhi during July 10-19, 2023
  - 'GWAS analysis and linkage QTL mapping using phenotype and genotypic data' on July 14, 2023.(Sarika) (Invited lecture)
  - 'Basics of Linux for image data archiving and use of phenome resource data bases and open access software for precision plant phenotyping'on July 13, 2023. (Anu Sharma).
- DST-SERB sponsored high-end workshop on Multivariate Statistical Machine Learning Methods for Modeling Agricultural Data organized during at ICAR-IIRR, Hyderabad during July 24 to August 04, 2023.
  - (i) Incomplete block design and (ii) Data dimension reduction techniques on July 27-28, 2023. (Susheel Kumar Sarkar)
  - (i) 'Growth models' and (ii)'LASSO techniques' on July 26-27, 2023. (Bishal Gurung)
  - 'Cointegration Analysiswith hands-on-session' on August 02, 2023. (Kanchan Sinha)
- 10-days workshop/training sponsored by DST-SERB on Hands-on Training in Molecular Markers and Tissue Culture Assisted Plant Breeding organized by the Division of Genetics, Indian Agricultural Research Institute, New Delhi from July 24 - August 02, 2023
  - 'Molecular markers and crop improvement' on August 01, 2023. (Mir Asif Iquebal)
- Refresher course on Computer Application and Data Analysis organized by Directorate of Human Resource Management, CCSHAU, Hisar from July 14 to August 03, 2023
  - (i) Working with data and statistical analysis basics using R, Advanced statistical techniques in R and (ii)
- NAHEP Sponsored Training Programme on Analytical Techniques for Empowering Social Science Research organized by Division of Agricultural Economics, ICAR-IARI, New Delhi during August 07-18, 2023.
  - (i) 'Introduction to time series analysis and application of forecasting methods in social science research' and (ii) 'Hands-on exercise on ARIMA and GARCH models' on August 14, 2023. (Achal Lama)
  - 'Application of cointegration in social science research' on August 14, 2023.(Rajeev Ranjan Kumar). (Invited Talk).
  - (i) 'Basic statistics methods and sampling techniques for social sciences' on August 07, 2023 and (ii) 'Application of artificial intelligence and machine learning techniques in social science research' on August 16, 2023. (Girish Kumar Jha)
- Training programme on Statistical Tools Using R Programme organized at Dr. Rajendra Prasad Central Agricultural University, Pusa, Bihar during August 18-20, 2023
  - (i) 'An overview of R software' on August 18, 2023 and (ii) 'Fundamentals of Design of Experiments' on August 20, 2023. (Raju Kumar)
- Summer School Training Program on Application of Artificial Intelligence in Agriculture jointly organized by the School of Agriculture, Galgotias University, and ICAR-Central Institute of Temperate Horticulture during August 08-19, 2023
  - 'Crop yield prediction using machine learning techniques in Agriculture' on August 11, 2023. (Pankaj Das)

- ‘Deep Learning Techniques in Disease Identification’ on August 14, 2023. (Md. Ashraful Haque) (Invited Talk)
- Six days training workshop on Enhancing Pedagogical Competencies for Agricultural Education organized by the National Academy of Agricultural Sciences at NASC complex, New Delhi during July 31, 2023 to August 5, 2023
  - ‘E-Learning course content creation’ on August 03, 2023. (Shashi Dahiya).
  - ‘Blended Learning Platform’ on August 03, 2023. (Alka Arora)
- Institute under the Ministry of Food Processing (Government of India), INI- National Institute of Food Technology & Entrepreneurship Management, Kundli, NCR-Delhi
  - ‘National Education Policy in light of NAAC and NIRF Ranking’ on August 17, 2023. (Dinesh Kumar)

## PARTICIPATION

### International Conference/Workshop/Symposium etc.

- 6<sup>th</sup> CWSS International Conference on “Agricultural Innovations for Sustainable Development Goals with Special Focus on Natural Farming” organized at Farmers’ Academy & Convention Centre (FACC), BCKV, Kalyani, Nadia, West Bengal, India during September 30-October 02, 2023. (Ankur Biswas)

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

- Eighth National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics held at IIT Jodhpur, Rajasthan during July 21-23, 2023. (Chandan Kumar Deb)
- Global Food Regulators Summit during July 20-21, 2023 at New Delhi. The Summit was in the form of a two-days’ international conference. (Deepak Singh)
- eHRMS 2.0 demonstration cum training in online mode conducted by DoPT, Government of India on July 05, 2023. (Mukesh Kumar, K. K. Chaturvedi, S.B. Lal, Sanjeev Kumar)
- FSSAI Global Food Regulators Summit organized by Ministry of Health and Family Welfare, Government of India during July 20-21, 2023. (Dinesh Kumar and Deepak Singh)
- 26<sup>th</sup> National Conference on e- Governance ‘Theme- Viksit Bharat- Empowering Citizens’ was organized by Government of India, Department of Administrative Reforms and Public Grievances & Ministry of Electronics and Information Technology, Department of Information Technology in collaboration with Government of Madhya Pradesh of Bhopal & Indore at Indore, Madhya Pradesh during August 24-25, 2023. (Mukesh Kumar)
- CSISA-ICAR- KVK Workshop organized by Division of Agricultural Extension, ICAR-IARI, New Delhi at NASC Complex on September 27, 2023. (Rajender Parsad)
- Chintan Shivir on Agriculture organized by DA&FW, MoAFW, New Delhi during July 07-08, 2023 and participated in discussion on Digital Agriculture. (Rajender Parsad)

## HUMAN RESOURCE DEVELOPMENT

### Training Programmes/Workshops Organized: (402 participants)

S.No.	Title	Venue	Period	No. of Participants
<b>Training Programme</b>				
1	Analysis of Agricultural Data using Statistical and Data Mining Techniques (Coordinators: ICAR-IASRI:Sudeep Marwaha, Shashi Dahiya and Mrinmoy Ray and RVSKVV: SS Tomar, VB Singh, Shashi Yadav, Nisha Singh, Ankita Sahu, Purnima Singh)	ICAR-IASRI, New Delhi in collaboration with RVSKVV, Gwalior (Online)	July 11-20, 2023	226
2	Data Analysis and Interpretation Sponsored by NSSTA, MoSPI. (Coordinators: Ajit, Ankur Biswas and Prabina Kumar Meher)	ICAR-IASRI, New Delhi	July 24 – August 4, 2023	27
3	Data Science in Agriculture (Coordinators: Rajender Parsad, Alka Arora, Chandan Deb, Sapna Nigam, Mrinmay Ray and Upendra Kumar Pradhan)	ICAR-IASRI, New Delhi	September 04-15, 2023	88
<b>Workshop</b>				
4	R and Statistical Analysis under ICAR-BMGF collaborative project Application of Next-Generation Breeding, Genotyping, and Digitalization Approaches for Improving the Genetic Gain in Indian Staple Crops (Coordinator: Susheel Sarkar)	ICAR-IASRI, New Delhi	July 19-21, 2023	19
<b>हिन्दी कार्यशाला</b>				
5	कृषि आंकड़ों के विश्लेषण हेतु सांख्यिकीय सॉफ्टवेर का अनुप्रयोग (संयोजक: पंकज दास, राहुल बनर्जी एवं भारती)	भाकृअनुप-भाकृसांसं, नई दिल्ली	सितम्बर 06-13, 2023	42

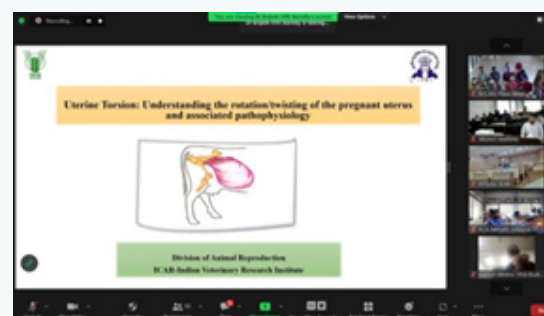
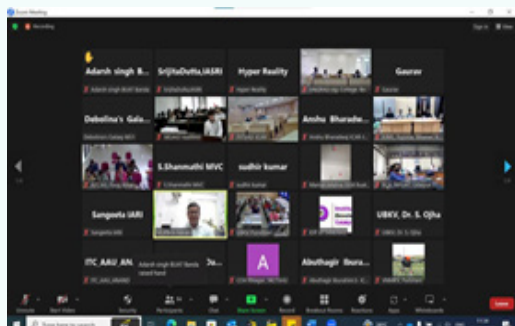
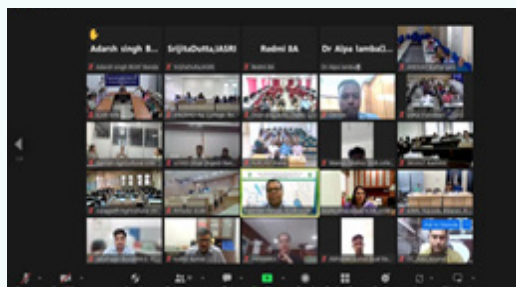
\*NSSTA: National Statistical Systems Training Academy  
MOSPI: Ministry of Statistics and Programme Implementation



## Sensitization Workshop/Trainings

### • Virtual Reality Modules: 2819 Participants

Introduction to Virtual Reality Modules” during (i) July 05-07, 2023: Participants 1537 (ii) For students of Agricultural Universities from August 23-25, 2023. In the inaugural session, the Director of ICAR-IASRI encouraged students to bring forth innovative ideas for the development of VR Introduction modules. Participants: 1282 (Conveners: Sudeep Marwaha and Anshu Bharadwaj).



### • Blended Learning Programmes: 21 (Participants:2441)

(i) Dau Shri Vasudev Chandrakar Kamdhenu Vishwavidyalaya, Durg during July 24-25, 2023: Participants 22 (Sudeep Marwaha); (ii) IGKV, Raipur during July 27-28, 2023: Participants 43 (Sudeep Marwaha); (iii) On boarding meet for Nominated SpoCs of Blended Learning Platform during August 02-04, 2023: Participants 122 (iv) ICAR-IARI, New Delhi: Participants 94 (Sudeep Marwaha); (v) ICAR-NDRI, Karnal on August 23, 2023: Participants 388 (Sudeep Marwah and Shashi); (vi) GADVASU, Ludhiana on August 25, 2023: Participants 51 (Sudeep Marwaha); (vii) RVSKVV, Gwalior on August 28, 2023: (Sudeep Marwaha); (viii) Rani Kakshmi Bai Central Agricultural University, Jhansi on September 06, 2023: Participants 74 (Alka Arora and Soumen Pal); (ix) PJTSAU on September 11, 2023: participants 138 (Ramasubramaniam V.); (x) PV Narsimha Rao Telangana Veterinary University, Telangana on September 12, 2023: Participants 57 (Ramasubramaniam V.); (xi) Shri Konda Laxman Telangana State Horticultural University, Telangana on September 13, 2023: Participants 208 (Ramasubramaniam V.); (xii) Acharya N.G. Ranga Agricultural University on September 15, 2023: Participants 126 (Ashraful Haque); (xiii) ICAR-IVRI, Izatnagar on September 15, 2023: Participants 331; (xiv) Uttar Banga Krishi Viswavidyalaya, West Bengal on September 15, 2023: Participants 44; (xv) Bihar Agricultural University, Bihar on September 19, 2023: Participants 139 (SN Islam); (xvi) SVVU, AP: Participants 170 (Ashraful Haque); (xvii) UAS, Bengaluru on September 20, 2023 : Participants 98 (Alka Arora); (xviii) BASU, Bihar on September

20, 2023: Participants 117 (SN Islam); (xix) SKUAST, Jammu on September 21, 2023: Participants 92 (Sudeep Marwaha); (xx) NAU, Navsari on September 22, 2023: Participants 81 (Anshu Bharadwaj); (xxi) SVPA&T, Meerut on September 26, 2023: Participants 46 (Sudeep Marwaha)



**Review Workshop on Agri-DIKSHA Web Education Channel : 517 Participants**

(i) July 27, 2023: Participants 203 (Sudeep Marwaha and Anshu Bharadwaj) and (ii) September 27, 2023: Participants 314 (Anshu Bharadwaj)

**Demonstration training session on AMS:382 Participants**

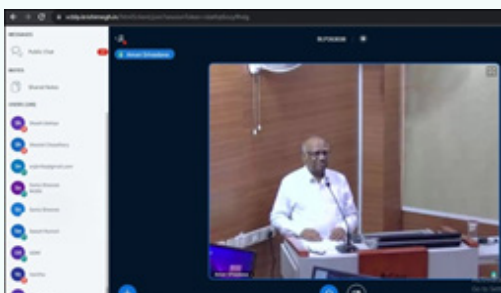
(i) Vishwa Bharti, West Bengal on July 06, 2023: Participants 11 (Sudeep Marwaha); (ii) MPKV, Rahuri AMS was launched on July 24-26, 2023: Participants 98 (Alka Arora); (iii) Dr. YSR Horticultural University on July 27, 2023: Participants 68 (Sudeep Marwaha); (iv) ICAR-IARI, New Delhi: August 11, 2023: Participants 113 (Sudeep Marwaha); (v) SKUAST, Jammu: September 21, 2023: Participants 92 (Sudeep Marwaha).



AMS was launched by Chief Guest Dr. P.G. Patil, Honourable, Vice Chancellor, MPKV, Rahuri and Dr. R.C. Agrawal, DDG (Agricultural Education) and National Director (NAHEP), ICAR, New Delhi in presence of Dr. S.A. Ranpise, Dean (FAO and Director of Instruction, MPKV; Dr. Rajender Parsad, Director, ICAR-IASRI, New Delhi



Academic Management System at SKAUST Jammu was launched by Lt. Governor Shri Manoj Sinha in the Silver Jubilee Foundation Day Function of SKAUST Jammu



Dr. Padam Singh (Former Additional Director General, ICMR) during the inaugural function of the training programme on Data Science in Agriculture during September 04- 15, 2023



Dr. Dalip Singh, Deputy Director General and Agriculture Census Commissioner, MoA&FW, Government of India: Valedictory function of the training programme on Data Analysis and Interpretation during July 24 - August 04, 2023



### Internship Programme

- Conducted the five-month attachment training to Ms. Rashi Rathore, B. Tech. (Biotech.) Id. No. 4536/19, Division of Microbial & Environmental Biotechnology, College of Biotechnology, Sardar Vallabhbhai Patel University of Agriculture & Technology, Meerut 250110 (U.P.) under supervision of Prakash Kumar on 'Basics of Computational Biology and Bioinformatics, RNA-Seq Analysis and GWAS Study'.

### CONSULTANCY/ADVISORY SERVICES PROVIDED

- Prakash Kumar advised (i) Dr. Brij Bihari Sharma, Scientist (Senior Scale), Division of Vegetable Science, ICAR-IARI, New Delhi for the molecular diversity analysis of data; (ii) Dr. Kanupriya, Senior Scientist, Division of Fruit Crops, ICAR-IIHR, Bengaluru for data analysis like Analysis of Variance, Principal Component Analysis, Clustering and Correlation analysis for lasora data (2 seasons data for 16 trees); (iii) Sh. Ankit Kumar Sinha, M.Sc. student, ICAR-IARI, Jharkhand for path coefficient analysis dataset; (iv) Dr. Pritee Singh, Scientist (Plant Biochemistry), Division of Basic Sciences, ICAR-IIHR, Bengaluru to analyze the various stress conditions were induced on kalmegh plants at distinct growth stages, namely vegetative, flowering, and fruiting, each lasting for different durations. The objective was to enhance the levels of andrographolide, a significant secondary metabolite, while minimizing any impact on the plant's dry biomass along with soil moisture data collected on various days throughout the stress experiment; (v) Ms. D. Meghana, M.Sc. student, Vegetable Science, ICAR-IARI, Jharkhand for data analysis involving path and divergence assessments using morphological data, with a focus on pod yield as the dependent variable; (vi) Sh. Sparsh Nathoo, Ph.D. student at ICAR-IARI, Department of Vegetable Science, ICAR-IARI, New Delhi to analyze the correlations between genotypic and phenotypic factors affecting the quality attributes within a set of 55 distinct okra genotypes. The study encompassed a genotypic path-coefficient analysis, which revealed both direct (on the diagonal) and indirect (off-diagonal) impacts of these quality attributes on the yield per plant of okra. Additionally, the study incorporated ANOVA, cluster analysis, and principal component analysis (PCA) techniques to evaluate the quality traits across the 55 okra genotypes; (vii) Dr. Kanupriya, Senior Scientist, Division of Fruit Crops, ICAR-IIHR, Bengaluru on data analysis for the raw data for jamun. It has both quantitative and qualitative traits for 2 years. ANOVA and analysis such as correlation, cluster, PCA, biplot has been done and qualitative data in analysis has been also done and (viii) S. Bhargav Kiran, Ph.D. student, Vegetable science, ICAR-IARI, New Delhi on data analysis getting interactions effect of field experimental data.
- Kaustav Aditya advised (i) Ms. Sonali Mallik, Ph.D. student, Agricultural Extension, ICAR-IARI, New Delhi on data analysis using survey weighted structural equation modeling, random forest, Xgboost and CART modeling; (ii) Mr. Jayakishore, M.Sc. student, Soil Science, ICAR-IARI, New Delhi on analysis of data using split plot design for her thesis work; (iii) Er. Gurpreet Singh, Department of Agricultural Engineering, CSK HPKV, Palampur for analysis of biogas plants data using random forest technique on 21.09.2003 and (iv) Dr. V.K. Bhargava, Project Coordinator, AICRP on EAAI on development of data collection Application.
- Raju Kumar advised (i) Sh. Ajit Kumar Singh, Ph.D. Student, ICAR-IARI, New Delhi on the analysis of the effect of different chemical treatments on degradation of pesticides residue as well as changes in the quality parameters of apple; (ii) Ms. Nabanita Roy, M.Sc. Student, Division of Vegetable Science, ICAR-IASRI for analysis of molecular diversity and nutritional profiling of Garden pea (*Pisum sativum* var. hortense).
- Bharti advised (i) Ms. Pooja Chauhan, Research Scholar, Guru Nanak Dev University, Punjab on correlation analysis and Principal Component Analysis; (ii) Dr. Kanica Upadhyay, Assistant Professor, College of

Horticulture and Forestry, Jhalawar and Vijay Kumar, Ph.D. Student, Agricultural Chemicals, ICAR-IARI, New Delhi on analysis of variance technique; (iii) Deepthi Koppala, Ph.D. Student, Floriculture and Landscaping, ICAR-IARI, New Delhi on pairwise comparison of treatments.

- Pankaj Das advised (i) Dr. J.S. Brar, Principal Scientist, PAU, Punjab for energy optimization in horticultural crops using data envelopment analysis and developed R code; (ii) Dr. Manashi Barman, ADA, Dhupguri, West Bengal for her thesis problem characterization of soil rhizobium species in meta-analysis and phylogenetic analysis and developed a R code.
- Rahul Banerjee advised (i) Dr. Nitin Varshney, Assistant Professor, NAU, Navsari regarding analysis of Multistate Markov Model; (ii) Dr. Sonu S Nair, Ph.D. Scholar, Division of Veterinary Microbiology, ICAR-IVRI, Izatnagar, UP in Cluster analysis and preparation of dendrogram.
- Tauqueer Ahmad advised Joint Director, Directorate of Economics and Statistics, Odisha regarding issues related to estimation of area and production of minor crops in Odisha.
- M.A. Iquebal advised Dr. (Ms.) Nirupama Singh, Senior Scientist, ICAR-IARI, New Delhi regarding protein modelling and simulation work.
- Sarika advised Dr. Archana Suman, Principal Scientist, ICAR-IARI, New Delhi regarding metagenome data analysis

## AWARDS AND RECOGNITIONS

### Awards

#### Sudeep Marwaha

- Best Oral Presentation Award in the DST-SERB sponsored National Symposium on Crop Health Management: Safeguarding Crop through Diagnostics and Innovations organized by ICAR-VPKAS, Almora during September 29-30, 2023 for presenting the paper: {Sudeep Marwaha\*, R.C Agrawal, Rajender Parsad, Ramasubramanian V., Alka Arora, Anshu Bharadwaj, Ajit, Shashi Dahiya, S.N. Islam, Chandan Kumar Deb, Md. Ashraful Haque, Sapna Nigam, Mrinmoy Ray, Achal Lama, Soumen Pal, Rajni Jain, Sujay Rakshit, P. Lakshmi Soujanya, Sumit Kumar Aggarwal, K.S. Hooda, Brejesh Lall, Lokesh Gupta, Kalpit Dipakkumar Shah, Prasannakumar MK, V.S. Acharya, Abhishek Shukla, Ladhu Ram Choudhary, Palash Deb Nath, Shubha Trivedi, Mehraj Ul Din Shah, Ravinder Singh Rana, Subrata Dutta and Vaibhav Kumar Singh . AI-DISC (Artificial Intelligence Based Disease Identification System for Crops) Mobile Application: A Step towards Intelligent Crop Health Management}.V., Alka Arora, Anshu Bharadwaj, Ajit, Shashi Dahiya, S.N. Islam, Chandan Kumar Deb, Md. Ashraful Haque, Sapna Nigam, Mrinmoy Ray, Achal Lama, Soumen Pal, Rajni Jain, Sujay Rakshit, P. Lakshmi Soujanya, Sumit Kumar Aggarwal, K.S. Hooda, Brejesh Lall, Lokesh Gupta, Kalpit Dipakkumar Shah, Prasannakumar MK, V.S. Acharya, Abhishek Shukla, Ladhu Ram Choudhary, Palash Deb Nath, Shubha Trivedi, Mehraj Ul Din Shah, Ravinder Singh Rana, Subrata Dutta and Vaibhav Kumar Singh . AI-DISC (Artificial Intelligence Based Disease Identification System for Crops) Mobile Application: A Step towards Intelligent Crop Health Management}.

#### Samarth Godara

- Best Oral Presentation Award in National Symposium on Crop Health Management: Safeguarding Crop through Diagnostics and Innovations organized by ICAR-Vivekananda Parvatiya Krishi Anusandhan Sansthan, Almora, Uttarakh on September 30, 2023 for presenting the paper: {Samarth Godara\*, Rajender Parsad, Shruti Godara, Sudeep Marwaha. Revitalizing Punjab Agriculture: A Decade of Farmer Query Calls Analysis for Sustainable Crop Health Management}

## Recognitions

### Rajender Parsad

- Nominated Member, Expert Committee on Revisiting Survey Design, constituted by National Statistical Commission, Ministry of Statistics and Programme Implementation, Govt. of India.
- Member, Technical Committee constituted for third party evaluation of crop cutting experiments, Agricultural Statistics Division, Department of Agriculture and Farmers Welfare, Ministry of Agriculture and Farmers Welfare, Govt. of India from July 26, 2023
- Chairman, SubGroup constituted consisting of officials from AS, ES(E), NSO(FOD) to recommend the methodology and sample size for conduct of CCE by third party and other technical aspects pertaining to its implementation on August 04, 2023
- Chief Guest , Valedictory session of the training programme on Analysis of Agricultural Data using Statistical and Data Mining Techniques organized jointly by Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior and ICAR-IASRI, New Delhi during July 11-20, 2023.
- Nominated Member, Expert Committee on Revisiting Survey Design, constituted by National Statistical Commission, Ministry of Statistics and Programme Implementation, Govt. of India.
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- Guest of Honour, Inaugural Function of the Sensitization cum Training Workshop on Operationalization of AMS and other activities of NAHEP Component -2 organized by ICAR-IASRI, New Delhi at MPKV, Rahuri during July 24-26, 2023.
- Panelist, ICAR-Industry Interface organized by Agricultural Education Division ICAR on July 18, 2023
- Letter of Appreciation from CEO, PMFBY & Joint Secretary (Credit), Ministry of Agriculture & Farmers Welfare, Government of India for outstanding contribution in the compilation of the YES-TECH Manual 2023 for the implementation of Yield Estimation system based on technology under PMFBY
- Panelist during Interaction Meet of Directors with the 113th FOCARS Batch of ARS Scientists at ICAR-NAARM, Hyderabad on August 05, 2023

### Tauqueer Ahmad

- Member, Standing Committee on Statistics (SCoS) by Ministry of Statistics & Programme Implementation (MoSPI), Government of India for the next two years w.e.f. July 13, 2023.

### Sudeep Marwaha

- Member, National Steering Committee (AgriEnIcs), acted as Advisory Committee member in International Conference on Systems and Technologies for Smart Agriculture (ICSTA 2023) organized by Centre for Development of Advanced Computing (C-DAC) Kolkata, in association with the University of Calcutta.



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

### Initiated: 06

1. 'Genomic selection accuracy for key quality traits in potato (*Solanum Tuberosum* L.)' w.e.f. July 17, 2023. (PI: ICAR-CPRI: SalejSood, Co-PIs: Vijai Kishor Gupta, Bandana Kaundal; Co-PI: ICAR-IASRI: P.K. Meher)
2. 'Global Challenges Research Fund (GCRF) South Asian nitrogen hub. (Collaborative Projects-International)' w.e.f. August 03, 2023 (PI: ICAR-IARI: Arti Bhatia; Co-PI: Girish Kumar Jha)
3. 'Statistical analysis and online solution of neutrosophic data derived from designed experiments' w.e.f. August 07, 2023. (PI: Cini Varghese; Co-PI: Sukanta Dash, Susheel Kumar Sarkar, Anindita Datta, Md. Harun)
4. 'Development of methodology for CCE on squash and methodological improvement for CCE on Cashewnut, Pineapple and Arecanut etc. in Meghalaya' w.e.f. July 26, 2023. (PI: Tauqueer Ahmad; Co-PI: Prachi Misra Sahoo, Ankur Biswas, Rahul Banerjee and Bharti)
5. 'Development of improved attention based deep learning network for analysis of agricultural image dataset' w.e.f. August 10, 2023. (PI: Ashraful Haque; Co-PI: Chandan Kumar Deb, Akshay Dheeraj)
6. 'Development of artificial intelligence based model and tools for genomic studies' w.e.f. September 11, 2023. (PI: ICAR-NIPB: Shbana Begam; Co-PI: Samarth Godara)

### Completed: 03

1. 'A Study on domain calibration estimators under two stage sampling design' on September 17, 2023. (Kaustav Aditya, Vandita Kumari (till 16.10.2021), Hukum Chandra (till 26.04.2021), Pankaj Das, Raju Kumar (since 23.11.2021))
2. 'Development of an intelligent system for determining pig liveweight' on September 17, 2023. (ICAR-IVRI: Ayon Tarafdar, Triveni Dutt, Gyanendra K. Gaur, Rupasi Tiwari, Anuj Chauhan, Mukesh Singh, ICAR-IASRI: Chandan Kumar Deb, Ashraful Haque, Samarth Godara)
3. 'Identification and functional characterization of the key resistance/susceptible determinants for Sclerotinia stem rot disease in oilseed Brassica' on September 04, 2023. (ICAR-NIPB: Navin Chandra Gupta, Mahesh Rao, Ramcharan Bhattacharya, ICAR-IASRI: Dwijesh Chandra Mishra)

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Title	Registration Number	Granted (Received) Date
Agricultural Universities Ranking System – AURS	SW-17092/2023	14.08.2023 (13.09.2023)
Krishi Vigyan Kendra Knowledge Network Portal - KVK Portal	SW-17093/2023	14.08.2023 (13.09.2023)
BlackP2MSATDb: Black Pepper Polymorphic Microsatellite Database	SW-16210/2023	13.05.2023 (13.09.2023)
BPDRTDb: Black Pepper Drought Transcriptome Database	SW-16204/2023	12.05.2023 (13.09.2023)
Clusterbean SNPs and INDELS Repository (CbSIR)	SW-16175/2023	04.07.2023 (13.09.2023)

## PERSONNEL

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

Name	Designation	Effective date
Dr. K.N. Singh	Head, Forecasting and Agricultural Systems Modelling	05.07.2023
Dr. Girish Kumar Jha	Head, Division of Agricultural Bioinformatics	05.07.2023
Dr. Tauqueer Ahmad	Head, Division of Sample Surveys	05.07.2023
Dr. Sudeep	Head, Division of Computer Applications	05.07.2023
Dr. Med Ram Verma	Head, Division of Design of Experiments	11.07.2023

### Wish you a Happy and Healthy Retired Life

Name	Designation	Effective date
Sh. Diwan Singh Rawat	Coupon Clerk	31.08.2023
Sh. Dilip Ghanshyam Khapekar	Administrative Officer	01.09.2023
Sh. Kuldeep Kumar Hans	Assistant Administrative Officer	30.09.2023

### Transfer/ Resignation/Deputation

Name	Designation	Effective date
Dr. Ramasubramanian V.	Head of Division	12.07.2023, joined ICAR-NAARM, Hyderabad
Sh. Ratan Singh	UDC	23.06.2025, Extended Deputation at ICAR-IASRI
Sh. Dinesh Kumar	UDC	23.06.2025, Extended Deputation at ICAR-IASRI
Sh. Hitesh Kumar	LDC	01.08.2023, Relieved to join as UDC at National Consumer Disputes Redressed Commission, New Delhi
Dr. Bishal Gurung	Senior Scientist	18.08.2023, Relieved to join as Professor (Statistics) in North-Eastern Hill University, Shillong, Meghalaya
Sh. Manoj Kumar	T-9 (Hindi Translator)	27.09.2023, Relieved to join ICAR-DKMA, New Delhi

### Obituary:

ICAR-IASRI family deeply mourns sad demise of the following personnel and prays the Almighty for peace to the departed soul and his family.

Name	Designation	Date
Sh. Roop Singh	Driver	07.09.2023



# Azadi Ka Amrit Mahotsav

**Compiled and Edited By**

Rajender Parsad and Ajit

**Technical & Secretarial Assistance:**

Neha Narang, Sunita, Anil Kumar and V.P. Singh

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