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# ICAR-IASRI NEWS

APRIL - JUNE 2021



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

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

Virtual Classroom and Agri-DIKSHA Web Education Channel, the new paradigm of digital learning in agricultural education system has been established at 18 Agricultural Universities/ Institutions across India under the aegis of National Agricultural Higher Education Project. Virtual classroom is an online space that simulates a live classroom for students and Faculty members. This was inaugurated by Hon'ble Union Minister for Agriculture & Farmers Welfare, Govt. of India on April 16, 2021.

In the field of design of experiments, heuristic algorithm for obtaining weighted A-optimal balanced treatment incomplete block (BTIB) designs for making test versus test and tests versus control comparisons have been developed.

A workflow based Variety Information System has been developed for all varieties developed by crop and horticultural sciences.

A Multi-Branch Ferns (MBFerns): a novel machine-learning algorithm; Web-SpikeSegNet: Online System of Identifying and Counting Spikes in Wheat Plant, LrSATDb: transcriptome database of seasonality associated genes of Carp fish, Rohu, WBMSTDb: Water Buffalo (Bubalus bubalis) Mastitis Database and WBMSTDb-Web-Resource Comprehensive transcriptome profling of the grass halophyte *Urochondra setulosa* have been developed.

An R Package 'grapesAgri1 1.1.0 as a Collection of Shiny Apps for simple Agricultural Research Data Analysis has been developed.

During the reported period, 37 Research Papers, 02 Book Chapters and one R-Package were published. A Brainstorming Workshop on "Mainstreaming of Agriculture as a subject in School Curriculum" on June 16, 2021 and 15$^{th}$ National Statistics Day on June 29, 2021 were organized.

The scientists of the Institute brought recognitions to the Institute by way of serving as Expert Members in various high level committees, delivering invited talks in prestigious forums. Several training programmes were conducted via online mode and many lectures have been delivered by the Scientists in various online training programmes.

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

## Weighted A-Optimal Balanced Treatment Incomplete Block Designs

A heuristic algorithm for obtaining weighted A-optimal balanced treatment incomplete block (BTIB) designs for making test versus test and tests versus control comparisons has been developed. The proposed algorithm is implemented using R language. The proposed algorithm has been used to obtain weighted A-optimal BTIB designs in a restricted parametric range. A total of 369 weighted A-optimal BTIB designs are obtained in the restricted parametric range.

## Multi-Branch Ferns (MBFerns): A Novel Machine-Learning Algorithm

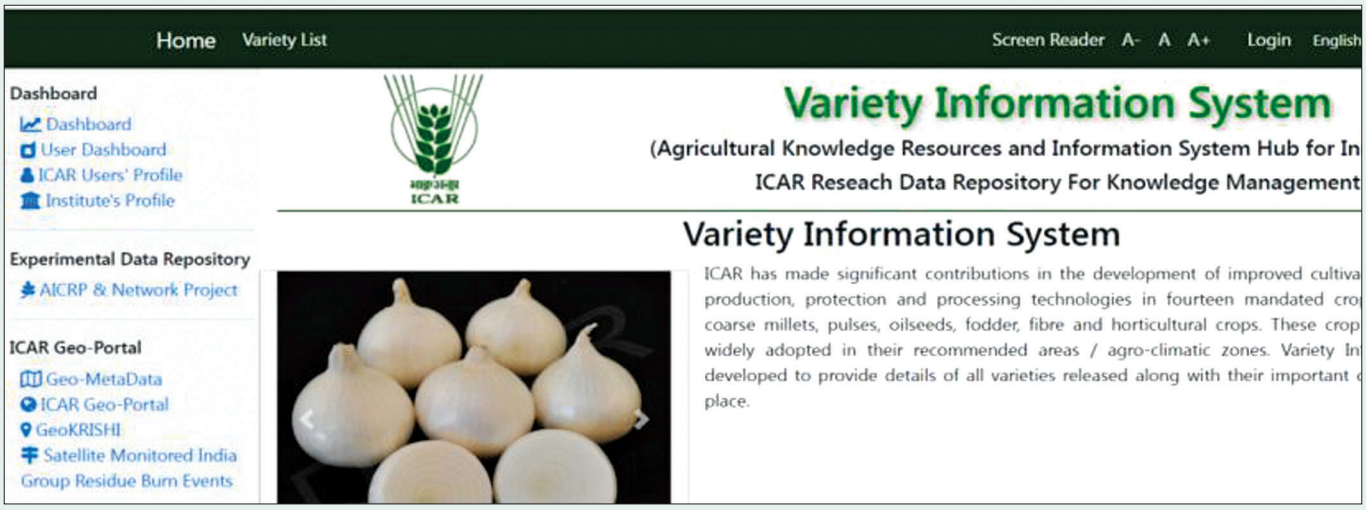
Developed, a novel machine-learning algorithm called Multi-Branch Ferns (MBFerns) to build multi-branch ferns (multi-branch decision tree) and to generate key features from training dataset employing Naïve Bayesian probabilistic model as classifier. The proposed algorithm performs well for general classification problems and extracting actionable knowledge from training data.

## Web-SpikeSegNet: Online System of Identifying and Counting Spikes in Wheat Plant

Computer vision with deep learning is emerging as a significant approach for non-invasive and non-destructive plant phenotyping. Spikes are the reproductive organs of wheat plants. ICAR-IASRI in association with IIT, Mandi, ICAR-IARI and other partners developed an online platform **Web-SpikeSegNet (http://spikesegnet.iasri.res.in/)** based on a deep-learning framework for spike detection and counting from the wheat plant's visual images and digital image analysis. As spike detection and counting in wheat phenotyping are closely related to the yield, **Web-SpikeSegNet** is a significant step forward in the field of wheat crop yield phenotyping and can be extended to the other cereal crops.

## Variety Information System

Workflow based application of variety information system (https://krishi.icar.gov.in/varietytech/) has been opened for data entry. Variety Information System is developed to provide details of all varieties released along with their important characteristics at one place.




## LrSATDb: Transcriptome Database of Seasonality Associated Genes of Carp Fish, Rohu

ICAR-IASRI in association with ICAR-CIFA, Bhubaneswar developed a transcriptome database of seasonality associated genes of Carp fish, Rohu (*Labeo rohita Ham*) named as LrSATDb. This genomic resource contains candidate genes and regulating pathways along with putative SSR and SNP markers and is freely accessible for non-commercial use at http://webtom.cabgrid.res.in/lrsatdb/. This resource can be used as research tool especially in the endeavor of optimizing reproductive efficiency and fish productivity. Further, it can also be of immense use in genome assembly and annotation of Rohu.

## WBMSTDb: Water Buffalo((*Bubalus bubalis*) Mastitis Database

ICAR-IASRI in association with ICAR-CIRB, Hisar and ICAR-NDRI, Karnal developed Water Buffalo((*Bubalus bubalis*) Mastitis Database (WBMSTDb) which is an open source and user-friendly web resource of targeted gene panels, that can be used for academic purposes in future mastitis association studies (http://webtom.cabgrid.res.in/wbmstdb/). This will help to mine variants of targeted gene panels in buffalo for mastitis resistance breeding program in India and other countries in an endeavor to ensure improved productivity and the reproductive efficiency of water buffalo.

## Sampling Methodology for 2019/20 Lao Agriculture Census - Technical Guidance [Funded by Food and Agriculture Organization of the United Nations-Laos (FAO-Laos)].

Sampling methodology for 2019/20 Lao Agriculture Census has been developed as part of a study funded by Food and Agriculture Organization of the United Nations. Estimation procedure was developed as per the proposed sampling strategy. Estimation procedure document including calculation of sample weights, effect of non-response and step by step method of calculation of estimates along with standard errors has been prepared. Remote assistance in implementing estimation procedures for variables of interest and estimation of standard errors, percent coefficient of variation and in calculation of sampling weights has been provided to the officials of Lao Statistics Bureau (LSB), Lao PDR.

## Others

- Using a combinatorial approach ICAR-IISR, Kozhikode and ICAR-IASRI profiled the berry hybrid transcriptome assembly of llumina and nanopore sequencing, the entire terpene synthase family responsible for the biosynthesis of the flavor-imparting volatiles in black pepper berries. Three important monoterpene synthases were also validated by targeted amplification, sequencing and homology modeling. This study provides the information on the terpene synthase family profile in *Piper nigrum*, which is potentially a major step for further characterization of the functional terpene synthase genes in black pepper.
- ICAR-NRRI, Cuttack and ICAR-IASRI identified a new Rice Sheath blight (ShB-tolerant) rice germplasm, CR 1014. ShB tolerance in the germplasm CR1014 should prove to be valuable in understanding molecular response to ShB infection.
- ICAR-IASRI in association with ICAR-CIRB has identified Single Nucleotide Polymorphism (SNP) related to four important traits of buffalo i.e., milk volume, age at first calving, post-partum cyclicity and feed conversion efficiency. These identified SNPs have been compiled as database called "SNPRBb". The database is accessible (http://snprbb.icar.gov.in/) through Web and can be used in molecular breeding program of buffalo species.
- CCSHAU in association with ICAR-IASRI used 96 genotypes of Cotton (*Gossypium hirsutum*) to find novel simple sequence repeat marker-based associations for lint yield contributing traits by linkage disequilibrium. 22 SSR alleles were considered as novel while the remaining marker alleles were in agreement with previous studies. Annotation of the markers with functional genes showed that the outcome of the present study will help in the genetic improvement of lint yield in crop improvement programmes using marker-assisted cotton breeding.
- ICAR-IASRI has developed a new hybrid model (NBPFCROS) based on parametric and non-parametric statistic for the identification of DE-genes (differentially expressed genes). The NBP model based on compound mixture of Poisson-Gamma distribution is used as a parametric statistic and fold change value derived using Fold Change Rank Ordering Statistics (FCROS) algorithm is used as non-parametric statistic. The performance of NBPFCROS model was compared with NBPFCROS, edgeR and DESeq2 models using synthetic and real RNA-Seq datasets and it was found that the developed model NBPFCROS is more robust as compared to the other models.
- Salt tolerant plants have recently been a source of attraction for exploring the survival and tolerance mechanisms at extreme saline conditions. ICAR-CSSRI, Karnal; ICAR-IASRI and ICAR-NRRI, Cuttack jointly offered the first report of comprehensive transcriptome profiling of the grass halophyte *Urochondra setulosa* under increasing salt concentrations. Examining non-model organisms that can survive in harsh environment can provide novel insights into the stress coping mechanisms which can be useful to develop improved agricultural crops. Additionally, this study identified potential genes involved in salt tolerance in STGs which can be used as donors for other halophytes or grasses such as cereal crops.

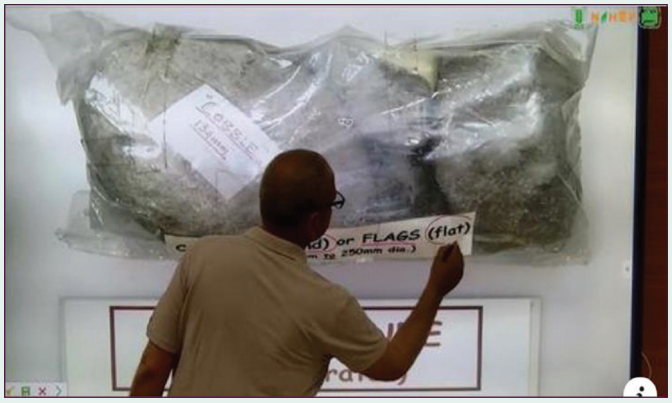
### R Packages Developed

- **'grapesAgril 1.1.0:** As Collection of Shiny Apps for simple Agricultural Research Data Analysis (https://cran.r-project.org/web/packages/grapesAgri1/index.html) has been developed (Pratheesh P. Gopinath, Rajender Parsad, Brigit Joseph, Adarsh. V.S.)

## PANORAMA OF ACTIVITIES

### Launch of Virtual Classroom & Agri-Diksha Web Education Channel

The new paradigm of digital learning in agricultural education system has been established at 18 Agricultural Universities/Institutions across India under the aegis of National Agricultural Higher Education Project. Virtual Classroom and Agri-DIKSHA (Web Education Channel) have been inaugurated by Hon'ble Union Minister for Agriculture & Farmers Welfare, Rural Development and Panchayati Raj on April 16, 2021. Virtual classroom is an online space that simulates a live classroom for students and faculties. Agri-DIKSHA web channel is an interactive portal for facilitating teachers to develop and broadcast virtual learning modules and students stand to benefit from lectures delivered through video capture, quick access to high quality video repository and anytime, anywhere accessibility through laptop or mobile. Virtual Classrooms are equipped with Digital Podium, Interactive Panel connected to the PC with options to write digitally, visualizer with optical zoom features and Tracking Camera with inbuilt Artificial Intelligence technology.




## Brainstorming Workshop on Mainstreaming of Agriculture as a subject in the School Curriculum: Part of Celebrations of Bharat ki Azadi Ka Amrut Mahotsav

An online Brainstorming Workshop on Mainstreaming of Agriculture as a subject in School Curriculum under the NAHEP Component-II on June 16, 2021 was organized. The session involved representatives from NCERT and CBSE along with students and faculties from various schools and colleges.

In line with the objectives of the National Education Policy, 2020, the new paradigm of agricultural education should take knowledge related to agriculture and its practical application to primary & secondary levels and vocational courses at higher secondary level. There is a lot of literature on the positive effects of education on agricultural productivity wherein education increases productivity by improving the decision-making ability and capability of the farmer to make informed choices and decisions concerning the selection and the combination of input for better output. Many studies also found that as educational level increases, output increases with secondary school education having the highest returns on agricultural productivity.

STEM (Science, Technology, Engineering and Mathematics) and entrepreneurship curriculums have seen a push in many schools worldwide, but a question arises as to whether agricultural education should not also be given more prominence. While agricultural programmes are widely available at the tertiary level, they are less common at the primary and secondary level of education. In the US, the National Association of Agricultural Educators note: "Agricultural education teaches students about agriculture, food and natural resources. Through these subjects, agricultural educators teach students a wide variety of skills, including science, math, communications, leadership, management and technology." Agricultural schools are available in various countries, including the US, Australia, South Korea and the UK.

Hence, with an aim to attract young talent towards agricultural higher education and improve retention within the sector, there is a need to create greater sensitization among school goers at primary, secondary and higher secondary levels about the importance and scope of agriculture and allied sectors in promoting economic growth and human

development. By combining theoretical and practical approaches, students would be exposed to the basic principles of agriculture and explain the various components of agro-based industry. It would give students an insight into the various farming activities and techniques and give a better understanding on exploring a career in each area of agriculture.

The Workshop primarily aimed at deliberating on the need to integrate agriculture with K-12 curriculum to develop students' knowledge and understanding of agricultural enterprises and the practices and skills required in producing plant and animal products.

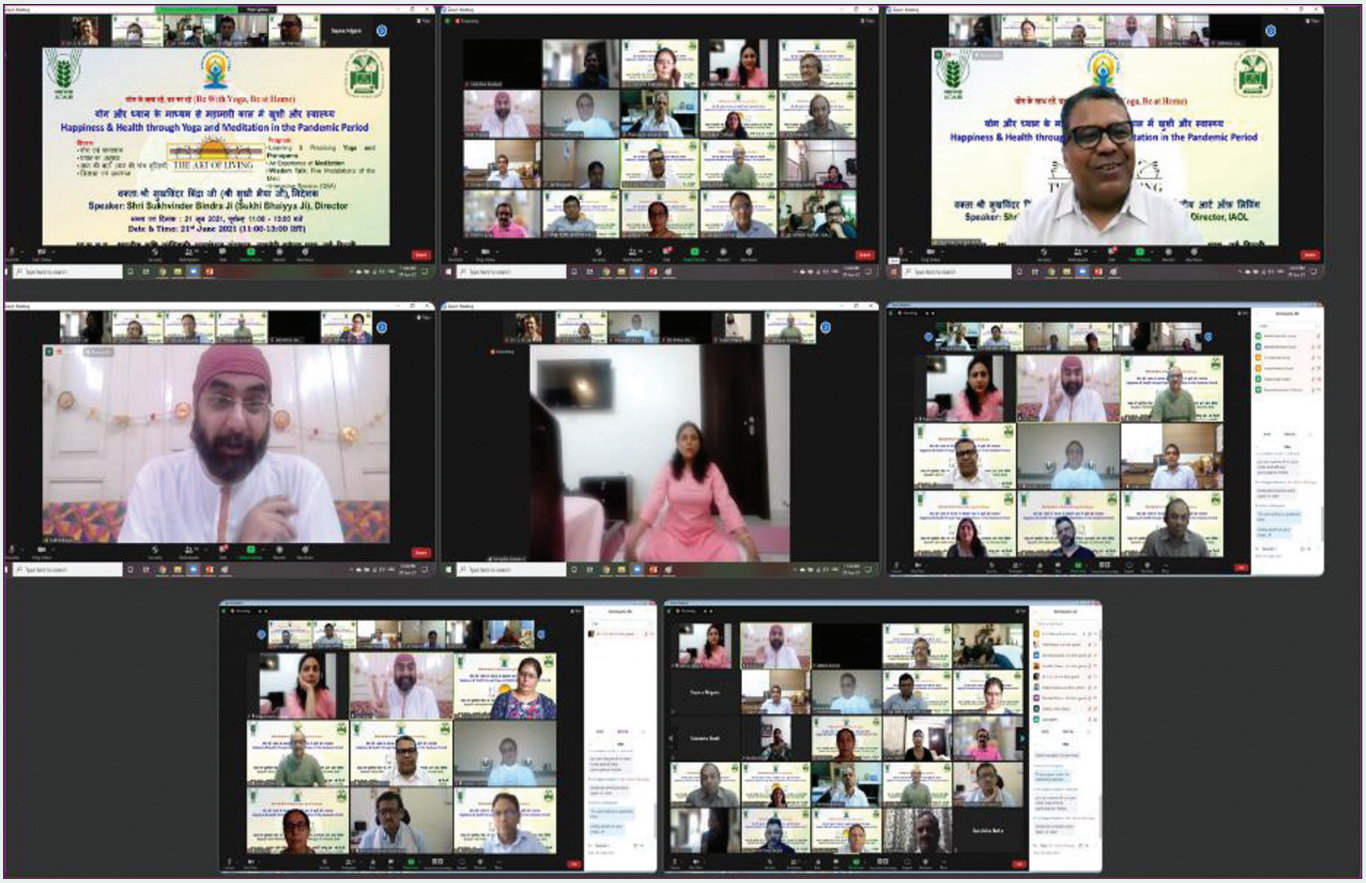
The workshop included the following objectives:

- To deliberate on the need to introduce agriculture as a subject at school level
- To discuss on how to develop and enhance competence of students at primary, secondary and higher secondary levels in agriculture
- To study the various modes and mechanisms of introducing agriculture as a subject at primary, secondary and higher secondary levels
- To discuss the framework of developing agri vocational education courses including Agriculture 4.0 technologies
- To develop capacity building programmes for teachers in order to augment subject knowledge, teaching skills and new teaching techniques to impart agri theoretical and practical education in schools
- To establish linkages between AET providers and the agricultural industry

The Workshop witnessed representation from key bodies such as CBSE, NCERT, PSS Central Institute of Vocational Education (PSSCIVE), Kendriya Vidyalaya Sangthan (KVS), National Victor School, Mayur School and Students from Agricultural Universities (BCKV, Nadia and Basu Patna). Dr. Rajender Parsad, Director, ICAR-IASRI, New Delhi and Dr. Prabaht Kumar, National Coordinator, NAHEP Component -2 also expressed their views during the workshop. The workshop was successful in laying the pathway for making agriculture an aspirational as well as an inspirational subject at school level through experiential and applied learning and vocational education and training. The event was organized by Dr. Anshu Bharadwaj and Dr. Sudeep.


## International Yoga Day

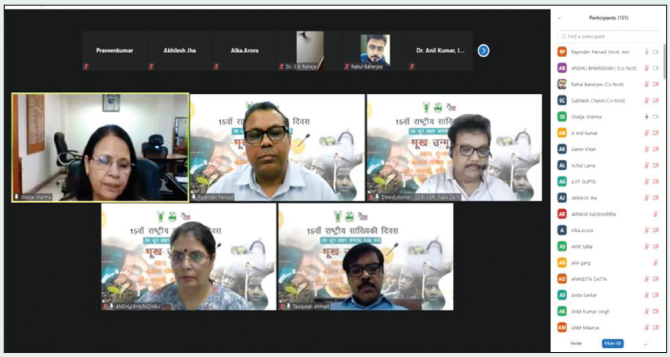
International Yoga Day was celebrated on June 21, 2021. Sh. Sukhvinder Bindra ji (Sh. Sukhi Bhaiya Ji) was the speaker and delivered talk on योग और ध्यान के माध्यम से महामारी काल में खुशी और स्वास्थ्य (Happiness & Health through Yoga and Meditation in the Pandemic Period) comprised with योग एवं प्राणायाम, ध्यान का अनुभव, ज्ञान की बात (मन की पांच वृत्तियाँ) (Learning & Practicing Yoga and Pranayama, an Experience of Meditation, Wisdom Talk: Five Modulations of the Mind). The message योग के साथ रहें, घर पर रहें **(Be With Yoga, Be at Home) has been given.** The program was also webcast through our institute's YouTube channel. The function was held online and was attended by more than 100 participants. Dr. K.K. Chaturvedi worked as Nodal Officer for this event.

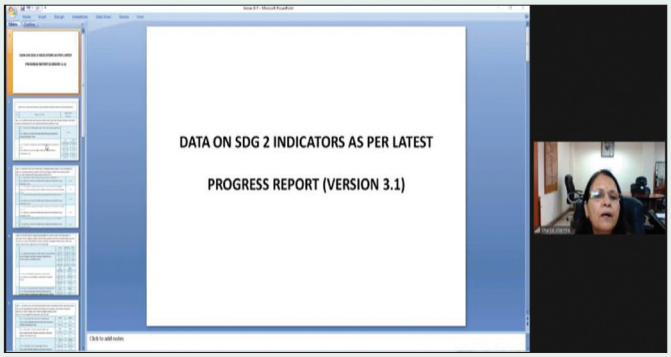


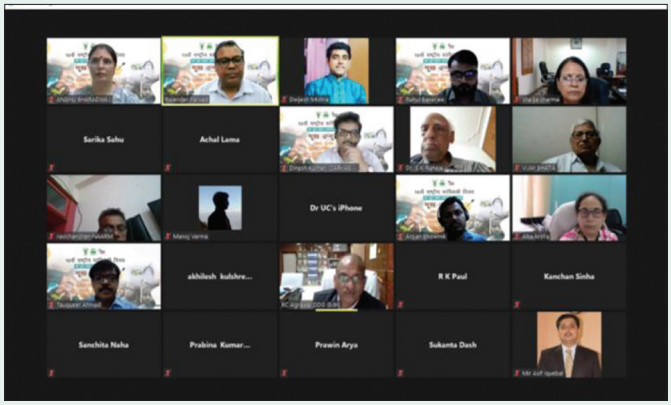

## 15th National Statistics Day

15th National Statistics Day was celebrated on June 29, 2021 on the theme **SDG 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture**). Dr. Shailja Sharma, Director General (Statistics), Ministry of Statistics and Programme Implementation, Govt. of India was the Chief Guest and delivered

a Keynote Address on **Statistics and Statisticians with Data Needs for SDG2**. Dr. R.C. Agrawal, Deputy Director General (Agricultural Education) and National Director, NAHEP was the Guest of Honour. The alumni of the Institute who have recently joined Indian Statistical Services also expressed their views on the occasion. Celebrations were attended by 160+ participants which included Former Directors of ICAR-IASRI, Superannuated faculty, faculty from different ICAR Institutes, faculty, staff and students of ICAR-IASRI.






- A Pledge ceremony "**World No-Tobacco Day"** with the theme of **"Commit to Quit"** on May 31, 2021 was observed.

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

### Meetings

- Organized and participated in meeting with DIC to discuss work plan for implementation of Kisan Sarathi on April 28, May 3, 15, 17, 27 and 28, 2021. (K.K. Chaturvedi and Sanjeev Kumar)
- Organized and Chaired the meeting with AGNI on "Implementation of artificial intelligence, machine learning, block chain and big data" on May 03, 2021. (Anil Rai)
- Organized a National Level Kritagya Agtech Hackathon Award Ceremony as an outcome of Kritigya Hackathon Portal designed and developed by ICAR-IASRI with an objective to automate end-to-end modules of National Hackathons in Agriculture used for National Level AgTech Hackathon with Chief Guest Hon'ble Sh. Narender Singh Tomar, Minister of Agriculture and Farmers Welfare and Special Guest Sh. Parshottam Rupala, Minister of State, Agriculture & Farmers Welfare and Sh. Kailash Chaudhary, Minister of State, Agriculture & Farmers Welfare on May 31, 2021. (Sudeep)


## Seminars Delivered

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

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

# PUBLICATIONS

## Research Papers

1. Afroz, S, Singh, R, Nain, MS, Mishra, JR, Kumar, P, Iquebal, MA and Khan, SA (2020). Problem tree analysis for delay in starting agribusiness by trained candidates under ACABC scheme. *Indian Journal of Extension Education*, **56 (2)**, 22-27.
2. Angadi, UB, Rai, A and Uma, G (2021). MBFerns: classification and extraction of actionable knowledge using Multi-Branch Ferns-based Naive Bayesian classifier. *Soft Computing*, **25**, 8357-8369. https://doi.org/10.1007/s00500-021-05759-5
3. Banerjee, M, Cardoso, AF, Al-Eryani, Laila, Pan, J, Kalbfleisch, TS, Srivastava, S, Rai, SN and States, JC (2021). Dynamic alteration in miRNA and mRNA expression profiles at different stages of chronic arsenic exposure-induced carcinogenesis in a human cell culture model of skin cancer. *Archives of Toxicology*. **95(7)**, 2351-2365. https://doi.org/10.1007/s00204-021-03084-2
4. Bishnoi, S, Singh, S, Singh, KN, Ray, M, Dahiya, S, Dubey, SK, Singh, A, Mishra, P, Pattanaik, B, Shankar, R, Yadav, RM, Pandey, J, Rai, V, Singh, S, Mahapatra, SK and Singh, P (2021). Development and standardization of perception scales for farmers and extensionists regarding impact of climate change on nutrition. *Journal of Community Mobilization and Sustainable Development*, **16(1)**, 234-244.

5. Biswakarma, N, Pooniya, V, Zhiipao, RR, Kumar, D, Verma, AK, Shivay, YS, Lama, A, Choudhary, AK, Meena, MC, Bana, RS, Pal, M, Das, K, Sudhishri, S, Jat, RD and Swarnalakshmi, K (2021). Five years integrated crop management in direct seeded rice–zero till wheat rotation of north-western India: Effects on soil carbon dynamics, crop yields, water productivity and economic profitability. *Agriculture, Ecosystems and Environment*, **318**, 107492. https://doi.org/10.1016/j.agee.2021.107492
6. Das, SK, Ghosh, GK, Avasthe, R, Kundu, MC, Choudhury, BU, Baruah, K and Lama, A (2021). Innovative biochar and organic manure co-composting technology for yield maximization in maize-black gram cropping system. *Biomass Conversion and Biorefinery*. https://doi.org/10.1007/s13399-021-01519-5
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9. Ekka, U, Kumar, A and Roy, HS (2021). Particulate Matter Exposure of Combine Harvester Operator during Wheat Harvesting in northern India. *Indian Journal of Agricultural Sciences*, **91(5)**, 678-682.
10. Gautam, A, Kumar, M and Kumar, R (2021). Treatment of periodontal disease using xanthan based chlorhexidine gel. *Bioinformation*, **17(2)**, 326-330.
11. George, JK, Shelvy, S, Fayad, AM, Angadi, UB, Iquebal, MA, Jaiswal, S, Rai, A and Kumar, D (2021). De novo transcriptome sequencing assisted identification of terpene synthases from black pepper (Piper nigrum) berry. *Physiology Molecular Biology of Plants*, **27**, 1153–1161. https://doi.org/10.1007/s12298-021-00986-4
12. Jaiswal, S, Jaisri, J, Kumari, J, Iquebal, MA, Nayan, V, Angadi, UB, Kumar, S, Kumar, R, Datta, TK, Rai, A and Kumar, D (2021). Genome wide prediction, mapping and development of genomic resources of Mastitis associated genes in Buffalo. *Frontiers in Veterinary Sciences*. https://www.frontiersin.org/articles/10.3389/fvets.2021.593871/abstract
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21. Mandal, BN, Parsad, R and Dash, S (2021). An algorithmic approach to the construction of weighted A-optimal balanced treatment incomplete block designs. *Statistics and Applications*, **19(1)**, 277-286. http://krishi.icar.gov.in/jspui/handle/123456789/47068

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- Nigam, Sapna, Jain, Rajni, Marwaha, Sudeep and Arora, Alka (2021). Wheat rust disease identification using deep learning. In: Book: Internet of Things and Machine Learning in Agriculture. https://doi.org/10.1515/9783110691276-012.
- Das, S and Rai, SN (2021). Statistical approach for biologically relevant gene selection from high-throughput gene expression data. In Book: Statistical Inference from High Dimensional Data, edited by Carlos Fernandez-Lozano, MDPI, 35 -57.

## PAPERS PRESENTED/LECTURES DELIVERED

### Paper presented /Invited talk delivered in Conferences

- International conference on Research Initiatives for Agriculture Biotechnology and Allied Sciences (ICRIABAS) through virtual means during April 24-25, 2021 organised by IIMT University, Meerut, UP
  - D.C. Mishra. Genomic Selection: A Step Forward to Molecular Breeding (invited talk)
- Second international conference on secure cyber computing and communications(IEEE) at NIT, Jalandhar during May 21-23, 2021
  - Madhu. Identification of paddy leaf disease(blast and brown spot) detection algorithm

### Lecture Delivered (Outside institute)

- 01 invited talk on "Data, Web Resources and Statistical Computing" on the occasion of National Statistics Day on June 29, 2021 organized by BCKV, Kalyani. (Rajender Parsad)
- Five lectures on (i) Introduction to time series models for price forecasting (ii) Linear Time Series Models: Assumptions and steps of model building (iii) Fitting and validation of models (iv) Introduction to R and (v) Fitting and validation of models using R in the workshop on "Fundamentals of Time Series Analysis: Application in Agricultural Marketing" organized by Department of Agricultural Economics of College of Agriculture, CAU, Imphal during June 22-26, 2021. (Ranjit Kumal Paul)
- Two lectures (i) R Programming and (ii) Machine learning using R on June 24, 2021 in a training programme entitled "Online Faculty Development Programme on Machine Learning '' organised by Dr. Harisingh Gour University, Sagar, Madhya Pradesh during June 21-25, 2021. (Ramasubramanian V.)
- Online Inaugural Lecture on "Overview of application of online platforms in research & development and capacity building activities" was delivered on June 25, 2021 in an online training programme on Application of Virtual Mode for Research & Development and Capacity Building Activities organized by ICAR-Indian Institute of Soil and Water Conservation (IISWC), Dehradun during June 25 - July 01, 2021. (SB Lal)
- Invited Talk on "Online Reporting Mechanism" in the Orientation Training Program for Newly Recruited Subject Matter Specialists of KVKs under ATARI Pune and Anand Agriculture University, Anand on May 04, 2021. (Alka Arora)

# PARTICIPATION

## International Conference/ Workshop/Symposium etc.

- International conference on Research Initiatives for Agriculture Biotechnology and Allied Sciences (ICRIABAS) through virtual means organized by IIMT University, Meerut, UP during April 24-25, 2021. (D.C. Mishra)
- Virtual Mode 22nd IEEE International Conference on Mobile Data Management (MDM) during June 15-18, 2021. (Sapna Nigam)

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

- Online Faculty Development Program on Blockchain Technology during March 22 - April 02, 2021. (Soumen Pal and Chandan Kumar Deb)
- High Power Committee online meeting organized by Ministry of Agriculture & Farmers Welfare, Govt. of India on April 05, 2021 to review the outcome of Pilot studies (Kharif 2018-20). (Tauqueer Ahmad)
- Online Workshop on OMICS Data Analysis-2021 during April 16-17, 2021 conducted by JIIT. (Sunil Kumar)
- Round Table Webinar on FOSS organized by Ministry of Electronics and IT, Government of India, on April 22, 2021. (Anil Rai and K.K.Chaturvedi)
- 12th Batch Generic Online Training Course in Cyber Security organized by Ministry of Electronics and Information Technology (MeitY), Government of India on April 29, 2021. (D.C. Mishra)
- Webinar on Using AI to accelerate drug development conducted by Clarivate on May 04, 2021. (P.K. Meher)
- Session for Agri Startups under Pusa Krishi Incubation Series, ICAR-IARI, Govt. of India on May 11, 2022. (Sudeep)
- Workshop on network project Market intelligence and commodity outlook in collaboration with NIAP and ICAR-IARI organized by NIAP, New Delhi during May 10-13, 2021. (Ranjit Kumar Paul - all days; Ramasubramanian V. on May 10, 2021)
- Online Training on Liferay DXP 7.2 Fundamentals during May 12-18, 2021. (Madhu, Sapna, Sanchita Naha, Samarth Godara)
- LetPub webinar on "Illustration is Key: Preparing Eye-Catching Figures for Publication" on May 21, 2021. (P.K. Meher)
- Training on Agri-Diksha Virtual Classroom under NAHEP Comp-II on May 21, 2021. (K.K. Chaturvedi, S.B.Lal, Vandita Kumari Bharti, Shashi Dahiya, Soumen Pal, Anshu Bharadwaj and D.C. Mishra)
- Online Training program organized under NAHEP Comp-II project, on operation of Virtual Classroom for the faculty members on May 21, 2021. (Mohammad Samir Farooqi)
- Meeting of committee organized for finalization of proforma for ranking of AUs on May 24, 2021. (Alka Arora)
- Working Group and Steering Committee on IDEA Chaired by Secretary DAC and organized by DAC, Ministry of Agriculture and Farmers Welfare on May 25, 2021. (Anil Rai)
- Brainstorming Workshop on Framework for strengthening Academia Industry Partnership organized by ICAR-NAARM, Hyderabad on May 31, 2021. (Ramasubramanian V.)
- Brainstorming Workshop on Mainstreaming of Agriculture as a subject of school curriculum organized at ICAR-IASRI on June 16, 2021. (Rajender Parsad, Ramasubramanian V., Sudeep, Anshu Bharadwaj, Shashi Dhaiya, Alka Arora, Ashraful Haque, Madhu, Ms. Sanchita Naha and SN Islam)
- "Signing of MoU between ICAR and DICS-Meity" program under the Chairmanship of Secretary DARE and DG ICAR on June 09, 2021. (Anil Rai)
- Online Showcasing AI START-UPS Solving Problems of Farming Systems and Future Opportunities on June 11, 2021 organized by ICAR-NIVEDI, Bangalore. (Chandan Kumar Deb, Sangeeta Ahuja and Kaustav Aditya)
- Online Webinar on Digital Economy: Expanding Footprints organized by NIXI on June 19, 2021. (Mukesh Kumar, Anshu Bharadwaj, Alka Arora and Sudeep)
- Online Workshop cum Stakeholder Consultation on National Programme on Artificial Intelligence organized by organized by Project Management Unit, Emerging Technologies Division, Ministry of Electronics & Information Technology on June 22, 2021. (Anshu Bharadwaj and Mukesh Kumar)

- Brainstorming session on "Agricultural Development Report 2020-21" organized by NIAP, New Delhi on June 22, 2021. (Rajender Parsad, K.N. Singh, Ranjit Kumar Paul and Harish Kumar H.V.)
- Online Webinar on Simplifying Finance Management: A must Know-how for everyone organized by ICAR-NIVEDI, Bengaluru on June 25, 2021. (Rahul Banerjee)
- Online National Level Monitoring Committee (NLMC) meeting under the Chairmanship of Sh. Sanjay Agrawal, Secretary, MoA&FW for Pradhan Mantri Fasal Bima Yojana (PMFBY) on June 25, 2021 organized by Credit Division, MoA&FW, Govt. of India. (Rajender Parsad and Tauqueer Ahmad)
- Webinar on Role of Rural India in Sustainable Development organized by ICAR-NDRI on June 26, 2021. (Arpan Bhowmik)
- Virtual celebration of The World Microbiome Day organized by ICAR-NBAIM on June 27, 2021. ( Ratna Prabha)
- Online meeting with FAORAP and Lao Statistics Bureau (LSB) teams under the Chairpersonship of Ms. Sangita Dubey, Regional Statistician for Asia-Pacific, Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific (FAORAP), Bangkok to discuss the revised sampling weights for the Lao PDR Agriculture Census III on June 28, 2021. (Tauqueer Ahmad, Prachi Misra Sahoo and Ankur Biswas)

# HUMAN RESOURCE DEVELOPMENT

## Training Programmes Organized

| S.No. | Title | Venue | Period | No. of Participants |
|---|---|---|---|---|
| 1 | Modular Course on Basic Statistical Methods in Agriculture for Batch of M.Sc. (Agronomy) (Course Coordinators: Seema Jaggi, Rajender Parsad, Sukanta Dash and Arpan Bhowmik) | ICAR-IASRI, New Delhi (Online) | April 05-17, 2021 | 04 |
| 2 | Hindi workshop "कृषि में सांख्यिकीय मॉडलिंग एवं पूर्वानुमान: Statistical Modelling and Forecasting in Agriculture" (Coordinators: Wasi Alam, Prawin Arya and Kanchan Sinha) | ICAR-IASRI, New Delhi (Online) | June 24-26, 2021 | 28 |

- Organized three one/half day online training sessions for AMS (Academic-Management-System) implementation at (i) KVASU, Wayanad (April 21, 2021; Participants: 65); (ii) TNAU, Coimbatore (April 22, 2021; Participants: 30) and (iii) SVVU, Tirupati & SKUAST, Jammu (April 26, 2021; Participants: 70)
- Organized four one/half day online training sessions on Agri-DIKSHA-The-Agri-Web-Education-Channel for Nodal-Officers, Master-Trainers and Faculty-Members of various Agricultural Universities on May 07, 14, 21 and 28, 2021. These sessions were attended by 500+ faculty members from more than 15 Agricultural Universities

## Professional Attachment Training Attended

1. On Image based plant disease severity estimation in wheat crop during January 04-April 04, 2021 at IIT Indore. (Sapna Nigam)
2. On Bioinformatics Aspects of genome assemblies of ICRISAT. Mandate crops: Study of heterotic pattern in pearl millet during March 01-May 31, 2021 at ICRISAT, Hyderabad. (Soumya Sharma)
3. On Sugarcane Phenology and Biomass Estimation using SAR (Sentinel-1) and Optical Data (Sentinel-2) during March 01-May 21, 2021 at Indian Institute of Remote Sensing, Indian Space Research Organization, Dehradun. (Md. Yeasin)
4. On Comparative Analysis of Smut Fungi during March 09-June 09, 2021 at CSIR-Institute of Microbial Technology, Chandigarh. (Bharti Pandey)

5. On Genome wide identification of Histone Acetyltransferase Gene Family in Chickpea and Soybean during March 10-June 09, 2021 at JNU, Delhi. (Ritwika Das)
6. On Computational Approaches to understand the Bioactivity of Natural Compound during March 27-June 27, 2021 at IIT Delhi. (Sneha Murmu)

## Consultancy/Advisory Services Provided

- Kanchan Sinha advised Dr. Shaon Kumar Das, Scientist, ICAR-Research Complex for North Eastern Region, Sikkim Centre to perform t-test and to compute descriptive statistics in his research work.
- Achal Lama advised Dr. Pradeep Mishra, Assistant Professor, JNKVV, MP for analysing sugarcane production data of South Asian region using ARIMA and Exponential smoothing models in R.
- U.K. Pradhan advised Dr. RK Jena, Scientist, ICAR-NBSSLUP, Nagpur on Digital soil mapping and Delineation of management zones for Ri-bhoi distict of Meghalaya state considering 95 soil profiles with six different depths for predictive mapping of SOC different Machine learning technique (SVR, RFR, XGBoost regression and DL-regression).
- Raju Kumar advised Dr. Krishna Prakash, Scientist (Horticulture), ICAR-IARI, Jharkhand for analysis in differences in vitro pollen germination and pollen tube growth of coconut cultivars in response to high temperature stress.
- Deepak Singh advised Dr. Pawan Singh Gurjar, Scientist, ICAR-Central Institute for Arid Horticulture for date palm morphological data.
- Arpan Bhowmik advised Dr. Soma Gupta, Scientist (Genetics and Plant Breeding), ICAR- Indian Institute of Seed Science, Kushmaur, Mau, UP on the use of pooled ANOVA for assessing the performances of ninety six lentil genotypes consisting of Indian and exotic lentil accessions with respect to grain iron and zinc content. Beside, AMMI based Stability analysis were also carried out and AMMI based stability value were also calculated (ASV). The rankings were obtained based on the ASV values. Beside, modified AMMI stability index (MASI) and modified AMMI stability value (MASV) were also calculated and the same has been compared with the ASV values. Further, genotype selection index (GSI) using MASI and MASV was calculated to identify the exotic lentil lines which are promising to be included in biofortification breeding programs once tested for their combining ability for yield and micronutrient content.
- M.A. Iquebal advised Dr. Zakir Hossain, Principal Scientist, ICAR-IARI regarding primer generation of SSR markers for validation.
- Sarika advised Dr. S. Yadava, Principal Scientist, ICAR-IARI regarding primer generation of SSR markers for validation for seed testing purpose.
- Ramasubramanian V. advised on Binomial, Z, Chisquare tests relating to socio-economic data on in-migrant workers to foundry industry in Kolhapur district to Sh. Santosh Hodage, Ph.D. student of Shivaji University, Kolhapur.
- K.K. Chaturvedi advised NRCO Sikkim regarding design, develop and hosting of website
- D.C. Mishra advised (i) Dr. Gyan Prakash Mishra, Principal Scientist, ICAR-IARI regarding miRNA identification in the lentil RNAseq data; (ii) Dr. Navin Chandra Gupta, Scientist, NIPB regarding secretome data analysis in Brassica juncea; (iii) Dr. Harshvardhan Chaudhary, Principal Scientist, ICAR-IARI regarding GWAS analysis in Musk Mellon and (iv) Dr R.S. Sengar, Professor, Sardar Vallabhbhai Patel University of Agriculture and Technology regarding insilico characterisation in sugarcane.

# AWARDS and RECOGNITIONS

## Award

### D.C. Mishra

- Received Young Professionals Award in the International Conference on Research Initiatives for Agriculture Biotechnology and Allied Sciences (ICRIABAS) organized by IIMT University, Meerut, UP during April 24-25, 2021.

## Recognitions

### Rajender Parsad

- Guest of Honour in Brainstorming workshop on mainstreaming of Agriculture as a subject in the school curriculum organized on June 16, 2021.
- Panelist during the function Release of Agricultural Development Report by ICAR- National Institute of Agricultural Economics and Policy Research on June 22, 2021.
- Member, Research Advisory Committee, for setting up institute specific annual work-plan and targets for Agro-Economic Research Centres/Units (AERCs/Us) under the AER Scheme under the aegis of DAC&FW.

### Anil Rai

- Member of Committee constituted by ICAR under the Chairmanship of Secretary ICAR to review the ASRB Score Card submitted by S.L. Mehta Committee.
- Invited Expert Workshop on Advanced technologies in Agriculture organized by TIFAC, New Delhi on June 23, 2021.

### K.K. Chaturvedi

- Member, program committee, 4th International Conference on Recent Trends in Image Processing and Pattern Recognition (RTIP2R-2021) during October 28-30, 2021 at University of Malta, Malta.
- Nominated as Institute Representative for i-STEM portal.

### D.C. Mishra

- Co-chaired the session "Agricultural Engineering, Computer & informatics: for Assistance of the Agricultural Research" in International Conference on Research Initiatives for Agriculture Biotechnology and Allied Sciences (ICRIABAS) organized by IIMT University, Meerut, UP during April 24-25, 2021.

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| S.No. | Name | Registration number | Received date |
|---|---|---|---|
| 1 | Foot and Mouth Disease Information System for Cattle | SW-14088/2021 | 08.01.2021 |
| 2 | Half-Yearly Progress Monitoring System (HYPM) | SW-14071/2021 | 07.01.2021 |
| 3 | Balanced Incomplete Latin Square Designs | SW-14124/2021 | 19.01.2021 |
| 4 | Cattle Genomic Resource Information System(CGRIS) | SW-14070/2021 | 07.01.2021 |

# PERSONNEL

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

| Name | Designation | Effective date |
|---|---|---|
| Dr. Seema Jaggi | Assistant Director General (HRD) | April 26, 2021 |
| Smt. Suman Popli | Private Secretary | April 01, 2021 |

## Transfer/ Resignation

| Name | Designation | Effective date |
|---|---|---|
| Dr. Seema Jaggi | Assistant Director General (HRD) | April 27, 2021 |

## Obituaries

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

| Name | Designation | Left for heavenly abode |
|---|---|---|
| Dr. Hukum Chandra | National Fellow | April 26, 2021 |
| Sh. R.K. Koli | Assistant Administrative Officer | April 24, 2021 |
| Sh. Basant Kumar | Assistant | May 02, 2021 |

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