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IARI NEWS

News Index

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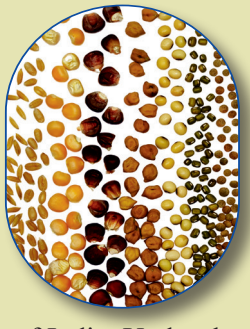
Towards Transforming Seed Systems for Sustainable Agriculture: National Mission on High Yielding Seeds



'Seed system' includes breeding, production and distribution that enable the timely access to improved high yielding seeds for the farmers. An effective 'seed system' should sustainably enable farmers to have access to the quality seeds of their choice, at right time and at the right price. Strengthening the 'seed system' is central to the newly approved National Mission on High Yielding Seeds (NMHYS) by the Government of India. Under the NMHYS during 2025-30, ICAR would (i) establish regional service labs for genotyping and phenotyping, (ii) develop high yielding, quality, resistant to pests and climate resilience cultivars, and (iii) create of state of art infrastructure for seed production and testing for expediting the delivery of seeds of improved cultivars with special emphasis on pulses, oilseeds, maize for bioethanol and selected vegetable crops. NMHYS envisages to scale up >100 improved crop cultivars developed by ICAR led National Agricultural Research System (NARS) to be commercially available for cultivation by the farmers of the country.

From Director's Desk

This quarter marked many important events that contributed to the overall progress of the Institute. In our ongoing commitment to developing high-yielding crop varieties to strengthen national food security, our research also focused on enhancing the nutritional quality of crops. Biofortified wheat varieties with enhanced iron/zinc or protein content, maize with enriched α-tocopherol, provitamin A, lysine and tryptophan, mustard with low erucic acid and soybean with lower anti-nutritional factors were released during this period. A speedy seed viability kit for rapid detection of viable seed lots was developed. A robust method for quantifying the pesticide residues in mango fruit drink was optimized. Our initiatives in promoting green technologies in agriculture resulted in identifying cyanobacterial formulations for protected cultivation of spinach, corn-starch-based biofilms and a green nanosensor for detecting formaldehyde in fruits and vegetables.

The Institute celebrated its 63rd Convocation, graced by the Hon'ble Union Minister of Agriculture & Farmers' Welfare and Rural Development, Shri Shivraj Singh Chouhan, as the Chief Guest. A total of 415 students were awarded degrees in the Convocation. The participation of students in cultural and literary events enriched the academic environment of the campus. Demonstrating our commitment to social responsibility, we organized educational lectures and guided tours for school children from rural areas.

The Pusa *Krishi Mela*, held under the theme *"Unnat Krishi–Viksit Bharat"*, witnessed enthusiastic

participation from farmers across the country. The Institute proudly honoured Fellow Farmers and Innovative Farmers during the event. Our Campuses at Jharkhand, Assam and also the regional stations actively represented IARI in events conducted across various regions.

During this quarter, two International workshops were conducted to enhance stakeholder capacity and promote exchange of knowledge. Several training programmes and capacity-building initiatives were organized for both farmers and students. A number of open field days for *rabi* crops served as a platform for interdisciplinary discussions and idea exchange amongst scientists from various disciplines of IARI. The Institute also observed International Women's Day and World Water Day through thematic lectures and related activities. The scientists secured commendable externally funded research grants and made significant progress in commercializing IARI technologies to private partners.

I am sure that the information included in the newsletter would be useful to the farmers and stakeholders. I wish to congratulate all the scientists and staff of Publication Unit for bringing out the IARI News in time.

Ch. Srinivasa Rao
Director, ICAR-IARI

Nourishing Tomorrow: Biofortified Crops for a Healthier Future

The School of Crop Improvement focuses on developing biofortified cultivars with enhanced nutrient profiles and reduced anti nutritional factors, along with higher productivity. In *rabi* crops, HI 1665 (bread wheat) and HI 8840 (durum wheat) with high iron, zinc; HD 3390 and HD 3410 (bread wheat) with high protein; Pusa Biofortified maize Hybrid 5 enriched with four nutrients namely, α-tocopherol (21.60 ppm) provitamin A (6.22 ppm), high lysine (4.93%) and tryptophan (1.01%); Pusa Mustard 35 and Pusa Mustard 36 (double zero mustard varieties); Pusa 21, soybean variety with low Kunitz Trypsin Inhibitor (anti nutritional factor) were released.

Speedy Seed Viability Kit™

Seed viability is typically assessed through a time consuming germination test. A new rapid colorimetric test kit has been developed based on the principle that respiring viable seeds release CO_2 at a higher rate than non-viable ones. The kit includes an indicator that changes colour in response to pH shifts caused by the CO_2 released by the viable seeds. The kit includes an indicator concentrate sufficient for testing 300 samples, a dropper bottle, seed holders and 100 transparent, airtight incubation tubes. Viable seeds turn the indicator from blue to yellow/green while it remains blue in non-viable seeds.

(Yalamalle VR, Mishra GP, Naik M, Vijay, D, Tomar BS, Jat GS and Kumar R, Division of Seed Science & Technology) (vishwanath@iari.res.in)

Colour reaction for detection of viable and non- viable seed by Speedy Seed Kit

Herb of the Sun- New Marigold Variety Identified

Af/w-1 (Pusa Shobha)

It belongs to African marigold group which flowers in 105-115 days after sowing. Plants are medium statured (45-55 cm) and floriferous, producing 30-40 compact, attractive, large (8-9 cm) and orange coloured flowers. It is sown in October and blooms profusely in February - March. It is suitable for garden or loose flower purposes.

Flower of Selection Af/w-1

(Singh K P, Panwar S, Dey R B, Namita, Kumar P, Singh M and Kumar K, Division of Floriculture & Landscaping), (kpsingh@iari.res.in)

Colour Diversity in MAGIC Lines of Carrot and Radish

The Multi-parent Advanced Generation Inter-Cross (MAGIC) population in carrot and radish breeding led to the identification of promising lines with superior traits. These lines exhibit enhanced colour diversity, improved nutritional content and better adaptability to different environmental conditions.

Diversity in radish and carrot lines

(Selvakumar R, CPCT)
(selvakumar@iari.res.in)

Cyanobacteria as a Nutri-fertigation Strategy for Spinach

Carrier-based formulations of cyanobacteria namely, *Anabaena laxa* C11, *Nostoc carneum* BF2 and *Anabaena laxa* RPAN8 were used as seed coating followed by drench application at different growth stages in spinach (cv. Pusa All Green), grown under shade net cultivation. All formulations especially, *Anabaena laxa* C11All showed a significant increase in pigment content, leaf C-N assimilation, yield and quality in terms of ascorbic acid, antioxidants and β carotene, highlighting its role as environment-friendly organic option for boosting spinach quality under off-season protected cultivation.

Seed treatment and drench application of Cyanobacterium-based formulation in spinach

(Radha Prasanna,
Division of Microbiology)
(radhapr@iari.res.in)

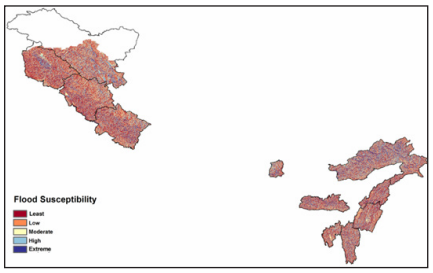
Method for the Determination of 103 Pesticides in Mango Fruit Drink

A robust method for the identification and quantification of 103 pesticides in a mango fruit drink was developed using LC-ESI-MS/MS-based. Variations in QuEChERS extraction (without buffer, citrate, and/or acetate buffered) coupled with dispersive clean-up combinations showed matrix enhancement for 77 pesticides with a global uncertainty of 4.72–23.89%.

(Banerjee T,
Division of Agricultural Chemicals)
(tirthankar@iari.res.in)

Flood Hazard Mapping of Indian Himalayan Region

The mapping of flood susceptible croplands and plantation areas in the Indian Himalayan Region, carried out under the National Mission for Sustaining Himalayan Ecosystem-Taskforce-Agriculture, showed approximately 9% of the total croplands and 12% of the total plantations in the region under very high flood susceptibility. The states of Uttarakhand, Jammu & Kashmir and Himachal Pradesh had more flood susceptible zones.



Flood-hazard map of the Indian Himalayan Region

(Koley S and Naresh Kumar S,
Division of Environmental Sciences)
(naresh@iari.res.in)

Emerging Threat: *Pantoea Agglomerans* Causing Shot Hole, Canker and Gummosis in Indian Stone Fruit Orchards

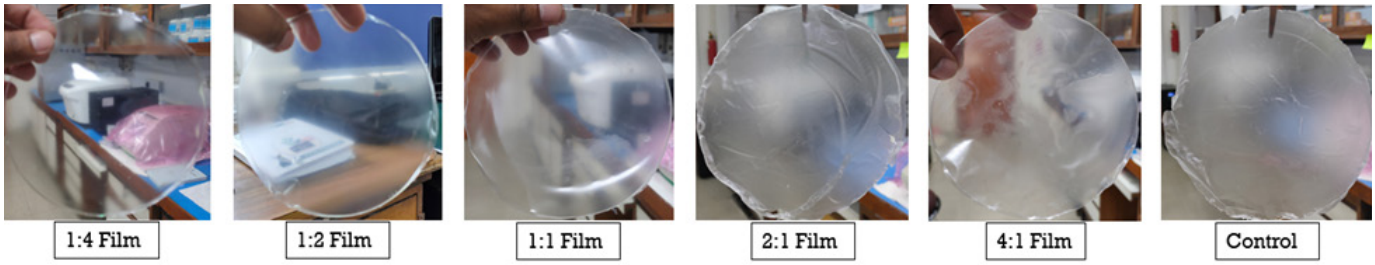
Peach and plum (stone fruit crops) orchards showed 51.25-88.95% incidence of shot holes, cankers and gummosis caused by *Pantoea agglomerans*, marking the first report of this pathogen affecting stone fruits in India.

A: Canker and Gummosis symptoms in peach cultivar 'Red Haven'; **B**: Canker and Gummosis symptoms in plum cultivar 'Black Amber'

(Sharma S, Tomar M and Watpade S,
IARI-Regional Station, Shimla)
(watpade.santosh@iari.res.in)

Corn-starch based Biopolymeric Biofilms: A Sustainable Alternative to Conventional Plastics

Corn starch-based biopolymeric biofilm have been developed as a sustainable alternative to conventional plastics for food packaging, decorative items and edible plastics for sweets. These biofilms exhibit strong mechanical properties, with an elongation at break (eB) of 5.06% and a tensile strength (σM) of 27.80 MPa, comparable to low-density polyethylene (LDPE).



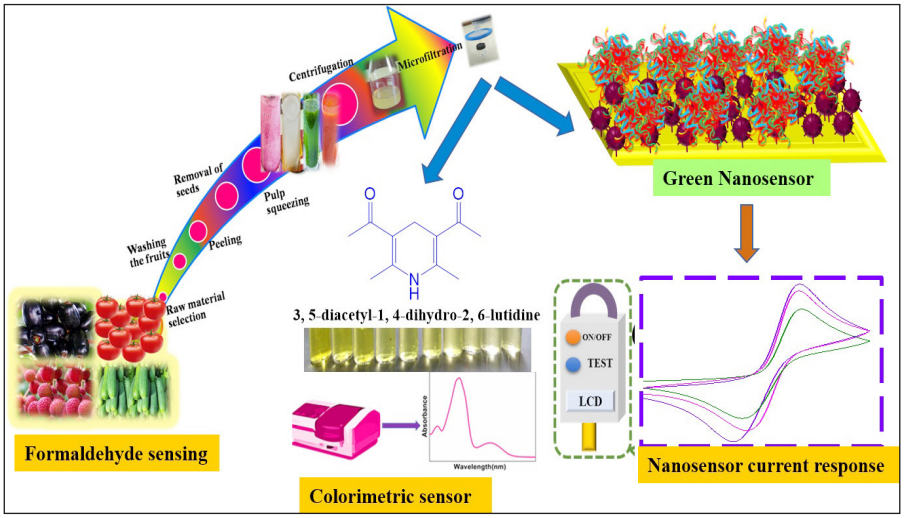
Corn starch –based biofilms with strong mechanical properties

(Yadava P, Division of Plant Physiology)
(Pranjal@iari.res.in)

Green Nanosensor for Precise Detection of Formaldehyde in Fruits and Vegetables Extract

Formaldehyde found in air, water and food, when inhaled or consumed has carcinogenic effect on human health. A low cost and eco-friendly formaldehyde nanosensor based on green magnetite nanoparticles was developed using mango leaves. The green nanosensor demonstrated good sensitivity (193.4 µA $mg^{-1}Lcm^{-2}$) in linearity range 0.03-0.5 mg/L with low threshold detection limit (0.05 mg/L). The recovery rates was more than 93% in sample extracts for formaldehyde detection. The comparison of the nanosensor for detection of formaldehyde with the colorimetric sensor revealed that the green nanosensor reproducibility (RSD=1.8%) is better than colorimetric sensor (RSD=3.23%).

(Kundu M, Krishnan P, Prasad S, Chawla G, Division of Physics)
(monika@iari.res.in)



Flowchart for development of green nanosensor

63rd Convocation Ceremony

The 63rd Convocation of The Graduate School, ICAR-IARI, New Delhi was held on March 22, 2025, at the Bharat Ratna C. Subramanium Auditorium, NASC Complex, New Delhi. Shri Shivraj Singh Chouhan, Hon'ble Union Minister of Agriculture & Farmers' Welfare and Rural Development, was the Chief Guest and delivered the Convocation Address. The event was graced by Shri Bhagirath Choudhary and Shri Ram Nath Thakur, Hon'ble Union Ministers of State, as Guests of Honour. Dr. Ch. Srinivasa Rao, Director and Vice Chancellor, ICAR-IARI, New Delhi, declared the convocation open and presented the annual achievements of the Institute. A total of 415 students (M.Sc.: 226; M.Tech.: 10; & Ph.D.: 179), including two International students received their post-graduate and doctoral degrees. Various awards were conferred, including the Best Student Awards and prestigious medals for research excellence. The Hon'ble Union Minister released new crop varieties, "Rapid Seed Viability Testing Kit" and three key publications, including the Annual Report (2023-2024) of The Graduate School, IARI, *Pusa*

Convocation Address by Shri Shivraj Singh Chouhan, Hon'ble Union Minister of Agriculture & Farmers' Welfare and Rural Development

State minister of Agriculture & Farmers' Welfare presenting the merit medal to the student

Krishiksha Magazine, "Advances in Agricultural Engineering Vol-I". In his address, he congratulated the graduating students and awardees for their academic and research excellence. He appreciated IARI's significant role in advancing agricultural technology and contributing to India's emergence as a global agricultural leader. He emphasized the need to promote entrepreneurship, innovation in agri-implements and climate-resilient crop varieties. Dr. Anupama Singh, Joint Director (Education) & Dean, presented the Dean's Report containing brief about the students research achievements.

The IARI Best Student of the Year Award-2024 and NABARD-Professor VL Chopra Gold Medal-2024 was awarded to Mr. Rudra Gouda and the best M.Sc. student award was presented to Ms. Sneha Bharadwaj. Dr. Vignesh Muthusamy, Senior Scientist, Division of Genetics received VI Dr. H.K. Jain Memorial Young Scientist Award, Dr. Gyan Prakash Mishra, Principal Scientist & Head, Division of Seed Science & Technology, the XXVIII Hooker Award for the biennium 2022-23 and Dr. Girijesh Singh Mahra, Scientist, Division of Agricultural Extension, the IV NABARD Researcher of the year award.

Felicitation of the awardees

After the Convocation ceremony, the Director felicitated all the student and faculty awardees in a special felicitation ceremony held at Prof. M.S. Swamninathan Library Conference Hall, ICAR-IARI, New Delhi.

55th Lal Bahadur Shastri Memorial Lecture

Dr. Rajesh S. Gokhale, Secretary, Department of Biotechnology, Govt. of India, New Delhi delivered the 55th Lal Bahadur Shastri Memorial Lecture on March 21, 2025 on the topic "The BioE3 Policy: Biotechnology for Economy, Environment and Employment - Driving Bio-Innovation in Bharat". He highlighted the crucial role of biotechnology, precision agriculture and biological innovations in achieving sustainable development. The lecture emphasized the necessity of policy reforms, enhanced investment in research and strengthened collaborative efforts to ensure that technological progress translates into societal benefits. The ceremony was presided over by Dr. Himanshu Pathak, Director General, ICRISAT & Former Secretary, DARE & Director General, ICAR, New Delhi.

Dr. Rajesh S. Gokhale, Secretary, Department of Biotechnology, GoI, speaker of 55th Lal Bahadur Shastri Memorial lecture with dignitaries

Events Organized by the IARI Alumni Association (IAA)

As part of its commitment towards academic excellence, the IAA organized the following lectures in a distinguished lecture series featuring internationally renowned scientists and academicians.

- Prof. Dharmendra Saraswat, Professor, Deptt. of Agricultural and Biological Engineering, Purdue University, USA on the topic "Large Language Models (LLMs) and the Future of Education and Extension" on January 21, 2025 in hybrid mode.

- Prof. Prabhu Pingali, Director, Tata-Cornell Institute, Cornell University, Ithaca, USA on the topic "Managing India's Food Systems Transformation Top Policy Priorities" on March 12, 2025 in hybrid Mode

- A Round table Consultation with agro-industries and entrepreneurs on "Industry-Academic Partnership in making ICAR-IARI a Global Hub" on March 22, 2025.

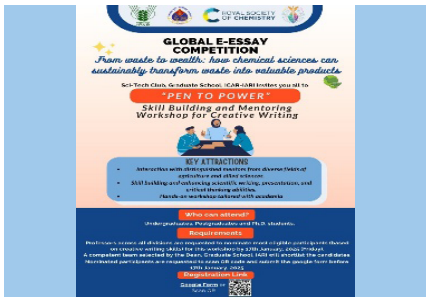
Activities Organized by the IARI Students Club

Math Quiz: Prime Time

On January 25, 2025, the Sci-Tech Club of IARI conducted a virtual mathematics quiz designed to challenge students' mathematical skills and serve as a qualifier for the prestigious Al-Khwarizmi International Mathematical Olympiad (AKhIMO) in Uzbekistan. The winners of the quiz emerged from the B.Tech. (Agricultural Engineering) program.

PEN to POWER: Skill Development Workshop

"PEN to POWER" was a skill development workshop held on January 25, 2025, aimed at preparing students for the Royal Society of Chemistry Global e-essay Competition. Through interactive sessions and hands-on activities. It offered a dynamic platform to enhance creative writing, communication and critical thinking skills.



Message to Raman: Essay Writing Competition

An e-essay writing competition held on February 22, 2025 unleashed creativity amongst students as they reflected the transformative advancements in modern technology.

Strokes of Science - An Art Competition

An art competition held on February 22, 2025 to display the imaginative brilliance of the students about their vision for future encapsulated in the evocative theme of *Viksit Bharat*.

Exploring Corporate Opportunities for Agricultural Students

Dr. K.S. Thyagarajan, Head-Corporate Affairs & Sustainability (Agri), PI Industries Ltd. delivered an informative lecture on January 07, 2025 to guide the students about the evolving career opportunities for agricultural graduates in the corporate world. Stepping into the corporate sector, Dr. Gunturi Alekya, Ph.D. (Agronomy) was selected as Production Merchandising Member in Fast Retailing (India) Management Consulting Private Limited.

Dr. Gunturi Alekya secured a job in Corporate Sector

EXTENSION

Pusa *Krishi Vigyan Mela*-2025

The ICAR-IARI organized the Pusa *Krishi Vigyan Mela* from February 22-24, 2025, under the theme "*Unnat Krishi-Viksit Bharat*." The event attracted farmers, entrepreneurs, policy-makers, scientists and students from across India and featured over 245 stalls showcasing products and services of public/private organizations and farm entrepreneurs, live demonstrations and exhibitions of crop varieties and technologies, farmers-scientists interactions, on-spot advisories, as well as sale of seeds and products.

The *Mela* was inaugurated by the Hon'ble Union Minister of Agriculture & Farmers' Welfare and Rural Development, Shri Shivraj Singh Chouhan, along with Union Minister of State, Shri Ramnath Thakur, Dr. Himanshu Pathak, Director General (ICAR), Dr. Ch. Srinivasa Rao, Director (ICAR-IARI) and other esteemed dignitaries. The Hon'ble Union Minister encouraged the farmers to take the path of "Agripreneurs" and praised IARI for its advancement in seed development. He highlighted the innovative modern *Krishi Chaupal* initiative launched through Doordarshan and urged scientists to enhance the transfer of innovations to farmers' fields. He also emphasized enhancing oilseed and pulse production, strengthening Farmer Producer Organizations (FPOs) and promoting micro-irrigation and water conservation.

Six IARI Fellow Farmers and thirty-five IARI Innovative Farmers were honoured, who shared their success stories of innovations and income enhancement during the Innovative Farmers' Meet.

IARI Fellow and Innovative Farmers

Visit to Hydroponics demonstration system by Shri Shivraj Singh Chouhan, Hon'ble Union Minister of Agiculture & Farmers' Welfare and Rural Development

Inauguration of Pusa *Krishi Vigyan Mela*- 2025

Participation of IARI at Different Agriculture/ Horticulture Events

- ICAR-IARI Regional Station, Karnal stall at National Dairy *Mela* and Agri Expo 2025 held during February 27-March 01, 2025.

- Division of Floriculture and Landscaping participated in DDA Flower Festival "Palash -2025" at Smriti Van, Mayur Vihar, New Delhi from February 28-March 02, 2025.

Organisation of Field Days

Theme of Field Day	Division	Location	Date	No. of Participants
Farmers' participatory seed production under the concept of seed village	Agricultural Extension in collaboration with ICAR-Farmer First Program	Dadhota village cluster of Palwal District of Haryana	January 09, 2025	50
Improved wheat variety HD 3406 demonstration under "Agricultural Extension for Nutrition and Health (AE4NH)-Strategies and Models"	Agricultural Extension	Jahari village, Sonipat, Haryana	February 28, 2025	25
Front-line demonstration on mustard varieties	KVK Gurugram	Village Raiseena, Tirpari, Tajnagar and Maujabad	March 12, 2025, March 19, 2025, March 20, 2025	186

Training Programs

Divisions/Units/KVK	No. of Trainings	Title of Training Programs
Agricultural Physics	01	• Technological Innovations for Transforming Agriculture: The Role of Agrophysics
Agronomy	02	• Organic Farming for Women Farmers • Precision Farming: Resource Efficiency and Environmental Sustainability
Biochemistry	01	• Emerging Innovations in Biochemistry and Biotechnology for Holistic Development of Agriculture
CATAT	03	• Protected Cultivation of High-value Crops under Changing Climate • Processing and Scientific Cultivation of Maize, Baby Corn and Sweet corn • Organic Farming of Vegetable and Fruit Crops
CPCT	01	• Production of Quality Planting Materials for Horticultural Crops under Protected Conditions
Economics	01	• Foundations of Computable General Equilibrium (CGE) Modelling for Economic Policy Analysis in South Asia

Engineering	01	• Modern Tools and Technologies for Improving Livelihood of NEH Farmers
Extension	02	• Extension Approaches and Initiatives for Enhancing Farmers' Income through Nutri-preneurship • Climate Resilient Agricultural Practices
Food Science and Postharvest Technology	01	• Recent Advances in Food Processing Technologies for Agri-Horti Produce
Fruits and Horticultural Technology	01	• Technical Education and Practical Training through Skill Development in Horticulture
Genetics	02	• Ameliorating Quality and Productivity of Oilseed and Pulses through Classical, Modern and Disruptive Technologies • Genetic and Genomic Approaches for Improvement of Stress Resilience and Nutritional Quality in Crops
RS, Indore	01	• New Wheat Varieties and Wheat Production Technologies
KVK, Gurugram	05	• Integrated Pest Management in Cole crops • Pest Management for Cucurbits • Integrated Pest Management in Tomato & Chilli Crops • Integrated Pest Management for Cucurbits • Integrated Pest Management in Mustard
Microbiology & CCUBGA	01	• Cultivation and Processing of Spirulina Biomass Towards Developing Value-added Product
Nematology	02	• Identification and Diagnosis of Plant-parasitic Nematodes and Nematode Diseases of Crops • Field Diagnosis and Management of Plant Parasitic Nematodes
Plant Pathology	02	• Integrating Genomics in Plant Pathology: New Frontiers in Disease Management • Advances in Detection & Management of Emerging Plant Diseases of National Importance
Plant Physiology	03	• Non-Invasive Sensor-Based High-Throughput Phenotyping Approaches for Developing Climate-Resilient Crops • Genome Editing in Plants – Advanced Tools and Techniques
Seed Science & Technology	02	• Seed Quality Testing by Conventional and Advanced Technologies • Protected Cultivation of Vegetable Crops
Soil Science & Agricultural Chemistry	01	• Soil Health-Measure, Monitor and Manage for Ensuring Food Security and Climate Change Mitigation
ZTM & BPD Unit	03	• Skill Development in Mushroom Cultivation Technology • Fostering Entrepreneurship for Varietal & Hybrid Vegetable Seed Production • Innovation & Entrepreneurship

Gates Foundation sponsored Workshops on "Genome Editing in Plants – Advanced Tools and Techniques" organized by Centre of Excellence on Genome Editing at Division of Plant Physiology, ICAR-IARI, New Delhi during March 03-07, 2025 and March 10-14, 2025

International Training on "Foundations of Computable General Equilibrium (CGE) Modelling for Economic Policy Analysis in South Asia" co-organized by Division of Agricultural Economics, ICAR-IARI and International Food Policy Research Institute (IFPRI) and the South Asian Network on Economic Modelling (SANEM) from March 17 to 21, 2025

Division of Food Science and Postharvest Technology organized an ICAR-sponsored 21-day Winter School on "Recent Advances in Food Processing Technologies for Agri-Horti Produce" on January 16, 2025

National Science Day

National Science Day was celebrated on February 28, 2025 at NRL Auditorium, ICAR-IARI, with the participation of students from schools of rural areas.

Dr. Ch. Srinivasa Rao, Director, ICAR-IARI highlighted the nation's remarkable transformation from food scarcity to self-sufficiency and asked students to pursue bold scientific aspirations and contribute to national progress by drawing inspiration from the vision of Dr. A.P.J. Abdul Kalam.

The students were taken on a guided visit to the Discovery Centre, Insect & SciTech Club Exhibition by undergraduate students, Integrated Farming System, Drone Display and CPCT.

International Women's Day

A training-cum-field visit was organised to celebrate International Women's Day on March 08, 2025 for women farmers from Mathura and Rudraprayag, under the projects on **"***Unnat Bharat Abhiyan"* and "New Extension Methodologies & Approaches".

Women-centric events held to celebrate International Women's Day

Participation of school children on National Science Day

Dr. R.N. Padaria, Joint Director (Extension), deliberated on women's empowerment through technology and institutional innovations and stressed upon capacity building, networking, innovation application and girl child education for promoting gender equity in agriculture.

A brainstorming workshop was also organized jointly by WTC, ICAR-IARI and RPCAU, Pusa Bihar on "Accelerating Women Empowerment through Sustainable and Climate Resilient Water Management Technologies and Policies" where the revival of traditional water harvesting structures for ensuring sustainable water management and research; policy support for sustainable and climate-resilient water management for the prosperity of rural women empowerment was discussed.

World Water Day

Water Technology Centre organized World Water Day programme on the theme *i.e.* 'Glacier Preservation' on March 22, 2025. Dr. A.K. Singh, Former DDG (NRM), ICAR and Vice Chancellor, RVSKVV, Gwalior graced the occasion as the Chief Guest. He explained the impact of increased rate of melting of glaciers on the rise in the level of sea water and the urgent need to adopt climate-resilient water management practices. He also stressed the importance of advanced technologies for efficient and sustainable utilization of groundwater resources in coastal and inland areas, enhancing the area under micro-irrigation and water quality management.

Dignitaries during the celebration of World Water Day

CAPACITY BUILDING

Industry-Academia Meet

Division of Agricultural Chemicals organised industry-academia meet with Tata Rallis India Ltd and PI Industries on February 12 and 18, 2025, respectively to explore possible collaborations.

Agri India Meet 5.0

The fifth edition of the Agri India Meet (AIM 5.0) on the theme **"**Revolutionizing Agri-Commerce: Leveraging Digital Platforms for Inclusive Growth" was held on February 13, 2025. The panelists shared insights into innovative strategies and emerging digital trends that are revolutionizing agri-commerce, focusing on how digital platforms are transforming the agri-tech startup space and unlocking inclusive growth to expand market access for all stakeholders.

Meeting Between UPL and ICAR-IARI

The UPL and ICAR-IARI teams interacted to explore collaborations for technology development and its transfer to the farmers' fields on February 13, 2025. Dr. Ch. Srinivasa Rao, Director, ICAR-IARI, highlighted IARI's focus on research, education and extension, emphasizing placement prospects for students in agri-industries and potential collaborative opportunities with UPL in emerging research areas.

Brainstorming Session

A one-day brainstorming session on "Onion Hybrids- Breeding and Molecular Approaches", was organized by the Indian Society of Alliums, ICAR-IARI, Regional Station Pune and ICAR-Directorate of Onion and Garlic Research, Rajgurunagar, Pune, at ICAR-ATARI Pune on March 17, 2025. This event was organised to provide a platform for researchers,

private industry, students, farmers, agri-preneurs and development departments to discuss the potential and challenges in the development of onion hybrids.

Smart Village Center Inaugurated at Mandola, Sonipat

On February 16, 2025 RuTaG smart village center was inaugurated at Mandola Village of Sonipat by Sh. Ajay Sood, Chief Scientific Advisor, Government of India. The smart village will be facilitated for perfect convergence of agri-technologies through different Government schemes for better delivery at farmer doorsteps.

ICAR-IARI JHARKHAND HIGHLIGHTS

Identification of Potential Crop Zones in Jharkhand to Boost Agricultural Productivity

A collaborative study in association with ICAR-NBSSLUP, Nagpur was conducted to identify potential districts in Jharkhand for cultivating *rabi* maize, wheat, pigeon pea, lentil, potato and guava. Using relative spread index (RSI) and relative yield index (RYI), suitable zones for each crop were identified, which will support land use planning and enhance productivity of these crops.

Seeds and Chicks Distribution to the Farmers

Seeds of wheat, mustard, lentil, chickpea and vegetables were distributed to farmers of Jharkhand under SCSP scheme. Also, chicks of Vanraja breed poultry were distributed among scheduled caste beneficiaries of 21 villages of Hazaribag district, Jharkhand, for improvement in backyard poultry farming and livelihood.

Seed distribution under SCSP scheme

Distribution of chicks under SCSP scheme

Abhayudya-Annual Sports and Games Meet Students

A 3-day Annual Sports and Games Meet, "*Abhayudya*" was held from February 19-21, 2025 at IARI-Jharkhand for the UG and PG students. A total of 27 events across men's and women's categories saw enthusiastic participation from all batches.

ICAR-IARI ASSAM HIGHLIGHTS

Inauguration of Dhansiri Residential Complex

Dr. Himanshu Pathak, former Secretary (DARE) and Director General (ICAR), virtually inaugurated the Dhansiri Residential Complex at ICAR-IARI, Assam, in the esteemed presence of Dr. Ch. Srinivasa Rao, Director and Vice-Chancellor, ICAR-IARI on January 28, 2025.

Inauguration of Residential Complex at IARI, Assam

Installation of Solar Fish Dryer

The solar dryer facility was installed at the premises, with the support of ICAR-CIFT, Kochi under their NEH Scheme. The facility is a low-cost equipment with solar panels and a cabinet where fresh fish can be gradually dried.

Fish drying facility at IARI Assam

Republic Day Celebration

The Republic Day celebration was organized at IARI, Assam Campus on January 26, 2025. Dr. Ch. Srinivasa Rao, Director & Vice-Chancellor, ICAR-IARI, New Delhi, hoisted the national flag and addressed the scientists, students and other staff members of the Campus. Subsequently, a cultural program showcasing the rich diversity of India and a demonstration on the Indian freedom movement was presented.

Republic day celebration at IARI, Assam

Trainings

Training/Activity	Duration
• Brainstorming Session with NABARD for Promotion of Agriculture and Allied Sector	January 20, 2025
• Winter School on "Optimizing Natural Resources through New Age Technologies for Smart Agriculture"	February 05-25, 2025
• Master Trainer Certification Programme on "Millet-Based Value-Added Product Development"	March 17-23, 2025
• Training Programme on "Millet Cultivation and Processing"	March 20-26, 2025
• *Kisan Mela* organized at Gogamukh, Assam, in collaboration with Indian Institute of Millet Research, Hyderabad	March 21, 2025
• Field Day-cum-Demonstration on "Biofertilizer Application and Organic Farming" • Demonstration-cum-Training Programme on "Eri Spinning Machine"	March 24, 2025
• Flower Show-cum-Field Day	March 27, 2025

Interstate Exposure Visit of Farmers

ICAR-IARI Assam coordinated an Interstate exposure visit of farmers in collaboration with College of Agriculture, Central Agricultural University, Pasighat, Arunachal Pradesh on March 13, 2024. It was attended by 13 female tribal farmers who were taught means to enhance their income through value addition of agricultural produce.

Interstate visit of farmers

AWARDS, RESEARCH GRANTS, PUBLICATIONS AND VISITS

Awards and Honours

- Dr. Ch. Srinivasa Rao, Director, ICAR-IARI was presented the prestigious Dr. NS Randhawa Memorial award of NAAS at XVII Agricultural Science Congress Pantnagar, Uttarakhand.

- Dr. Ch. Srinivasa Rao, Director, ICAR-IARI selected as Covener, Agricultural section, NASI, Prayagraj, U.P.
- Dr. Ch. Srinivasa Rao, Director, ICAR-IARI selected as member of National Adaptation Committee, Ministry of Environment, Forestry and Climate Change, Government of India.
- Dr. Viswanathan C., Joint Director (Research), ICAR-IARI, was presented the NAAS recognition award (Crop Science) at XVII Agricultural Science Congress, Pantnagar, Uttarakhand.
- Dr. Gyan Prakash Mishra, Head of Division of Seed Science and Technology, ICAR-IARI, New Delhi was presented the NAAS recognition award (Crop Science) at XVII Agricultural Science Congress, Pantnagar, Uttarakhand.

- Dr. Supradip Saha, Principal Scientist, Division of Agricultural Chemicals, was awarded the NAAS Recognition Award (Plant Protection) at XVII Agricultural Science Congress, Pantnagar, Uttarakhand.
- Dr. Kanhaiya Singh, Principal Scientist, Division of Fruit Science & Horticulture Technology, received the Best Paper Award and Dr. N.V. Singh, Senior Scientist, D.P. Ghosh Young Scientist Award, from the Indian Academy of Horticultural Sciences.
- Dr. Ranjeet Ranjan Kumar, Senior Scientist, Division of Biochemistry, ICAR-IARI, was elected as "Fellow" of Bihar Agriculture Science Academy (BASA) for the Year-2025.
- Dr. Reeta Bhatia Dey, Principal Scientist, Division of Floriculture and Landscaping, received IAHS Fellowship in Floriculture-2024 from Indian Academy of Horticultural Sciences.
- Dr. Namita, Principal Scientist, Division of Floriculture and Landscaping, received IAHS Fellowship in Floriculture-2024 from Indian Academy of Horticultural Sciences.

Research Grants

Externally Funded Projects Sanctioned and Implemented (>10 lakhs)

Title	Amount (in lakhs)	Duration (Year)	Funding Agency	Principal Investigator
RNA based bio-pesticides for sustainable crop protection	143.01	January 03, 2025 to January 02, 2028	DBT-Indo-Australian	Dr. Amalendu Gosh, SS, Division of Plant Pathology

Development of process machines for effective drying and utilization of mango kernel (Contract Research)	10.075	January 06, 2025 to January 05, 2026	Kinjal Food Products	Dr. Arun Kumar T.V., SS, Division of Agricultural Engineering
Evaluating the impact of BioStimuli on yield improvement and carbon footprints in Wheat and Canola Mustard Crops (Contract Research)	34.18	January 09, 2025 to January 08, 2026	String Bio Private Limited	Dr. Sanjay Singh Rathore, Head, Division of Agronomy
Reference genome, cleistogamy, plant type, water logging tolerance and protein content under ICAR-Network Project on Translational Genomics in Crop Plants (TGCP)	10.35	January 10, 2025 to March 31, 2026	ICAR	Dr. Kumar Durgesh, SS, Division of Genetics
Terminal heat tolerance from cv.WH730, drought tolerance and quality from cv. C 3067 under ICAR-Network Project on Translational Genomics in Crop Plants (TGCP)	10.35	January 10, 2025 to March 31, 2026	ICAR	Dr. P.K. Singh, PS, Division of Genetics
Unlocking the power of Apivectoring: Precision biocontol and enhanced crop pollination through synergistic ecosystem services	23.5	January 13, 2025 to January 12, 2028	National Bee Board, NBHM	Dr. Sachin Suroshe, P S, Division of Entomology
Evaluating Nano-DAP (Enriched) for Enhanced Maize Productivity and Profitability: Insights and Field Trial (Contract Research)	21.00	January 14, 2025 to January 13, 2026	IFFCO	Dr. Pravin Kumar Upadhyay, S, Division of Agronomy
Development of facilities at ICAR-IARI for improvement of field and oilseed crops (CSR Funding)	50	January 27, 2025 to June 26, 2025	Corteva Agrisciences Seeds Private Limited	Dr. Gopala Krishnan S., Head Division of Genetics
Unraveling the multi-targeted curative potential of indigenous medicinal herbs and their phytochemicals against Friedreich's Ataxia : An integrated approach	50.79	February 12, 2025 to February 11, 2028	ICMR	Dr. Prachi Yadav, SS, Division of Genetics
Kisan Sarathi 2.0: Enhancement, Operation, Maintenance and Support Project	38.6	February 27, 2025 to March 31, 2027	ICAR and Ministry of Electronics & Information Technology (MeitY)	Dr. Amrender Kumar, Incharge, AKMU
Bio-efficacy, crop phytotoxicity, persistence and residue of imazethapyr (10% SL) in herbicide tolerant wheat (HTW) variety and its effect on succeeding crop	28.29	March 10, 2025 to March 09, 2026	Mayhco Private Limited	Dr. T.K. Das, PS, Division of Agronomy
Development of Advanced infrastructure for multiplication and protection of quality planting material of horticulture crops for augmented and uninterrupted supply to farmers of Haryana	250	March 10, 2025 to March 09, 2026	RKVY-RAFTAAR	Dr. Shiv Kumar Yadav, PS, IARI RS, Karnal
Functional Genomics of chickpea to enhance drought tolerance	51.7	March 12, 2025 to March 11, 2028	DBT-Indo-Australian	Dr. C. Bhardwaj, PS, Division of Genetics

All India Network Project on Biotech Crops-Creation of Field Testing Centre (Component 8)	92	March 19, 2025 to March 31, 2026	ICAR	Dr. C. Viswanathan, Joint Director (Research)
Dose calibration of the Gromer nano DAP (2:5:0) in wheat crop	14.1	March 21, 2025 To March 20, 2026	Coromandel Intermnational Limited	Dr. Y. S. Shivay, PS, Division of Agronomy

Publications with NAAS rating >10.0

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- Mishra S J, Gopinath I, Muthusamy V, Zunjare R U, Chand G, Venkatesh Arun K T, Devi E L, Konsam S, Talukder Z A, Kumar J, Hossain F. 2025. Unraveling the interactive effect of opaque2 and waxy1 genes on kernel nutritional qualities and physical properties in maize (*Zea mays* L.). *Scientific Reports* 15. doi: 10.1038/s41598-025-87666-5
- Paul K V, Zunjare R U, Hossain F, Muthusamy V, Mishra S J, Katral A and Kumar P. 2025. Analysis of folate (vitamin B9) composition and accumulation pattern in developing kernels of specialty and biofortified maize genotypes. *Journal of Food Composition and Analysis* 141. doi: 10.1016/j.jfca.2025.107259
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OTHER ACTIVITIES

Technology Commercialization

Under the Lab to Land Initiative, from January to March 2025, 19 technologies developed by ICAR-IARI were commercialized to 12 industry partners, resulting in a total revenue generation of ₹ 3,068,800.

Speedy Seed Viability Kit™, a colorimetric seed viability detection kit was licensed to Vfarmz Supply Chain Pvt. Ltd, Bengaluru and Divine Dough, a pearl millet flour enriched with high quality protein, resistant starch and micronutrients (iron & Zinc) with low glycemic index to Melwach Enterprises for commercialization.

MoU signed for Speedy Seed Viability Kit™

MoU signed for Divine Dough

IP Management

During January-March, 2025 the ZTM & BPD Unit filed two patents and one copyright, the details of which are provided below

Name of Innovation	Division	Status
Multimodal Drone assisted spray formulation	Agricultural Chemicals	Filed
System And Method for Testing Seed Viability and Vigour	Seed Science & Technology	Filed
Indian Plusiinae: a Taxonomic Database For Looper Moths	Entomology	Filed

ITMC Meeting

During January-March 2025, two ITMC meetings were held on January 03 and March 06, 2025 at ZTM & BPD unit, ICAR-IARI, during which 18 technologies were approved for IP protection and 21 technologies for commercialization to be taken forward.

INCUBATION ACTIVITIES

Launched 'Pusa Krishi Grant-in-aid Accelerator Program'

Pusa Krishi, in collaboration with HDFC Bank, launched its Grant-in-Aid Accelerator Program on January 20, 2025. The program aims to empower high-potential agritech startups by providing financial support, expert mentorship and valuable networking opportunities to accelerate innovation in the agricultural sector. Out of 656 applications received, 12 startups were selected by an expert committee for further evaluation. After a rigorous review, five startups were eventually chosen for the Cohort 2025, securing the grant to fuel their growth.

Startups Participation at Pusa *Krishi Vigyan Mela* 2025

A total of 30 innovative startups incubated at Pusa *Krishi* had the opportunity to showcase their groundbreaking products at the Pusa *Krishi Vigyan Mela* 2025. These startups highlighted their cutting-edge solutions across various sectors, ranging from agri-tech to sustainable farming practices, demonstrating their potential to drive transformation in the agriculture industry.

SHITIJ 2024-25: One-on-One Mentoring Session

As part of SHITIJ 2024, our year-long incubation program for early-stage startups, a Startup Primer with Ms. Malvika R. Harita, Communication Evangelist and Brand Strategist was held on January 15-16, 2025. The primer offered invaluable insights into crafting effective brand communication and developing strategies that drive startup growth.

Internship Programme

A total of 19 interns from various colleges, universities, and institutions joined different divisions at IARI during the period from January to March 2025. The total revenue generated from this internship program amounts to ₹ 5.39 lakh, inclusive of 18% GST.

Shri Shivraj Singh Chouhan, Hon'ble Union Minister of Agiculture & Farmers' Welfare interacting with startups at Pusa *Krishi Vigyan Mela*

MoU Between Vegetable Science and Seed Companies

MoU was signed with five seed companies (Namdeo Umaji on January 07, 2025, Nakshtra Seeds and Devdhruv Seeds on January 08, 2025, Bapna Seeds on March 06, 2025 & Utpann Seeds on March 18, 2025) and Premium onion growers farmers producers company.

Research Advisory Committee Meeting

The Research Advisory Committee (RAC) meeting was held from March 12-13, 2025 under the Chairmanship of Prof. Sudhir K. Sopory, Emeritus Senior Scientist, International Centre for Genetic Engineering and Biotechnology. The Director, ICAR-IARI, highlighted the Institute's contributions to agricultural transformation through advanced technologies and improved crop varieties, its important contribution in export earnings from Basmati rice production and the Prime Minister's recent dedication of 109 varieties, including 23 from IARI. He outlined eight priority areas, including seed expansion, pulses, oilseeds, biodiversity, and startups, and emphasized the active role of IARI's regional campuses. Dr. D.K. Yadava, DDG (Crop Science), praised IARI's landmark varieties and called for focus on national priorities such as genetic enhancement, climate-resilient crops and precision agriculture. Dr. C. Viswanathan, Joint Director (Research) reported the release of 27 new crop varieties, ₹497.57 lakh revenue from 294

Research Advisory Committee meeting

licenses and over 480 high-impact publications. The Chairman stressed environmentally responsible technology development, strategic data use and a transdisciplinary approach incorporating farmers' feedback. The RAC members called for strengthening basic science, promoting biofortified foods and focusing on pulses, oilseeds and socio-economic research.

Faculty Visits Abroad

- Dr. S. Naresh Kumar, Head, Division of Environmental Sciences attended the Indo-German Scientific Committee meeting as an Expert member at the Indo-German Science and Technology Centre (IGSTC), Bonn, Germany during 19-20 February 2025.
- Dr. Ranjan Bhattacharya, Principal Scientist, Division of Environmental Sciences attended the twenty-second working session of the Intergovernmental Technical Panel on Soils at Rome, Italy during March 04-06, 2025.
- Dr. Niveta Jain, Principal Scientist, Division of Environmental Sciences presented the paper "Climate change adaptation and mitigation activities in agriculture in India" in the Capacity Development Workshop on Carbon Credit Methodology for Biochar and other Carbon Dioxide Removal at Bangkok, Thailand during February 26-27, 2025.

National & International Visits at IARI

A delegation from the Netherlands, including Ms. Bernice Bockting (Export Partner), Mr. Robertus Cornelis Johannes (CEO, Horti XS), and Mr. Jorik Bremer (Director Sales, Hudson River Biotechnology) on January 07, 2025

A BASF foreign delegation visited ICAR-IARI, New Delhi, on February 06, 2025, led by Mr. Livio Tedeschi, President, BASF SE, Germany

Argentina delegation led by HE Mr. Raul Jalil, Governor of Catamarca, visited IARI on February 25, 2025

National & International Visits at IARI

HE Mr. Justin Tokely, President of the National Assembly of Madagascar, along with Members of Parliament, visited ICAR-IARI on March 13, 2025

Professor Jonathan Fleming, Senior Lecturer, Massachusetts Institute of Technology (MIT) Sloan School of Management, USA visited Drone Robotic and Machine Learning Centre, IARI and interacted with NAMO Drone Didis on March 01, 2025

A delegation from the Federal Ministry of Food and Agriculture (BMEL), Germany, led by Ms. Silvia Bender, State Secretary, visited the Indian Agricultural Research Institute (IARI) on March 18, 2025

Mr. Bill Gates, Chairman, Bill & Melinda Gates Foundation visited IARI to watch live demonstration of Drone Technology by NAMO Drone Didis from Bihar at IARI Research Farm on March 17, 2025

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