Volume 01
01-02/2024 (January 2025)

Pusa Krishiksha

A Magazine of the Graduate School for Parents, Wards and Academia

In this Issue...

ICAR-Indian Agricultural Research Institute, New Delhi

From Director's Desk

I am pleased to announce the launch of Krishiksha, a platform highlighting the achievements of our students, faculty and researchers. Recently, ICAR-Indian Agricultural Research Institute (IARI) has expanded its academic reach through collaborations with sixteen ICAR institute clusters. TGS is pivotal to this visionary endeavor of Dr. Himashu Pathak, Director General, ICAR and Secretary, DARE that enables aspiring scholars to take advantage of experienced scientists in the ICAR system and join together to address the challenges and seize the opportunities present in agriculture and related sciences.

The first *Deeksharambh* program for the undergraduate students, held in October 2024, aligns with the New Education Policy and UGC guidelines. As a leader in agricultural research and education, IARI fosters innovation, scientific exploration, and interdisciplinary learning. With a strong legacy of academic excellence, our institution continues to make meaningful contributions nationally and globally. This magazine provides updates on recent happenings in the academic front, new initiatives, student engagements, faculty achievements, and international collaborations. These accomplishments reflect the unwavering dedication and intellectual rigour that define our institution.

IARI is committed to provide a holistic academic development, mentoring students industry-ready, adhering to the principles of inclusivity, multidisciplinary education, flexible and technology integrated curricula, critical thinking, and life skills. I encourage students to embrace research, innovation, and entrepreneurship to drive sustainable development and food security. The magazine also highlights upcoming opportunities that can further enhance the academic and

professional development of our scholars. The future of Indian agriculture depends on young scientists and their dedication to transformative research.

I extend my gratitude to the editorial team and our faculty, researchers, and students for their commitment to excellence. This magazine reflects IARI's dedication to academic and research excellence.

From Dean's Desk

The Graduate School (TGS) at IARI has undergone a significant transformation with the introduction of undergraduate programs. TGS is committed to providing a dynamic academic ecosystem that supports career growth through world-class faculty, modern research facilities, and residential hostels, fostering an environment for holistic student development. Our students continue to achieve remarkable success in various fields, both in India and abroad, demonstrating their potential as future leaders in agriculture and allied sciences.

This magazine aims to showcase key academic activities, research innovations, and student achievements, to demonstrate IARI's commitment to excellence. IARI and its sixteen hubs are dedicated to delivering high-quality education adopting to the evolving changes posed by the New Education Policy 2020. To enhance academic administration, TGS has introduced new Associate Dean roles, ensuring smooth governance and compliance.

The year 2024 witnessed numerous academic and research accomplishments, particularly the retaining Rank #1 at NIRF rankings in Agriculture and Allied Sector as well as topping in research and innovation. The decision to publish the magazine stems from these encouraging events of special significance. This issue is set to be released on the auspicious occasion of IARI's 63rd Convocation.

TGS remains dedicated to fostering research-driven education and leadership development, equipping students to address challenges of the future. As we shape the modern agri-

culture, we hope this magazine provides valuable insights into IARI's travel through academic excellence.

I am immensely proud of our students, faculty, and editorial team for their dedication in compiling this magazine, which truly reflects IARI's commitment to learning, innovation, and career growth.

IARI Scripts History with NIRF Rankings:

Retains the Title of the Best Agricultural Institution

ICAR-Indian Agricultural Research Institute (IARI) has once again cemented its legacy as the nation's premier agricultural institution, securing the prestigious NIRF Rank 1 in the Agricultural and Allied Sector for the second consecutive year. This historic achievement reaffirms IARI's commitment to excellence in education, research, and innovation, setting new benchmarks for agricultural sciences in India.

Significance of NIRF Ranking

The National Institutional Ranking Framework (NIRF), launched by the Ministry of Education, Government of India, is the most authoritative ranking system in the country. It evaluates institutions based on Teaching, Learning & Resources, Research & Professional Practices, Graduation Outcomes, Outreach & Inclusivity, and Peer Perception. Achieving Rank 1 in the Agricultural and Allied Sector signifies IARI's dominance in all these aspects, especially in research contributions and technological advancements that directly impact India's agricultural sector.

A Testament to Excellence

IARI, widely known as the 'Pusa Institute,' has been a beacon of agricultural research, education and technological advancements for over a century. With a strong emphasis on cutting-edge research, world-class faculty, and state-of-the-art infrastructure, the institute has consistently pushed the boundaries of agricultural science, making significant contributions to India's food security and sustainable farming practices.

Driving Innovation and Research

A key factor behind IARI's unparalleled success has been its relentless focus on research-driven solutions to modern agricultural challenges. Over the past year, the institute has spearheaded revolutionary advancements in precision agriculture, climate-resilient crop varieties, AI-driven farm analytics, and hydroponic farming techniques. These innovations are not only transforming India's agrarian landscape but are also gaining international recognition.

Academic Excellence and Global Recognition

IARI has also excelled in research and innovation, securing a spot among the top 50 universities in various NIRF categories. Beyond NIRF, the institute has also performed well in other national and global rankings. The Indian Institutional Ranking Framework (IIRF), an independent corporate ranking platform, has placed IARI as the second-ranked deemed university in India since 2021. Similarly, in the U.S. -based EduRank system, which evaluates universities using publicly available data, IARI ranks as the top institution for agricultural sciences in India, 8th in Asia, and 63rd globally. The institute has also won the prestigious ICAR Sardar Patel Outstanding Institution Award three times in the past decade, further solidifying its leadership in agricultural education and research.

Vision for the Future

With this back-to-back NIRF triumph, IARI remains steadfast in its mission to revolutionize Indian agriculture. The institute is actively expanding its initiatives in agri-tech start-ups, digital farming solutions, and biofortified crops to address food security challenges and enhance farmer welfare.

As IARI continues to shape the future of agriculture in India, this accolade serves as a testament to its unwavering dedication to research, innovation, and academic brilliance. With a legacy built on excellence and a vision set on transformation, the 'Pride of Pusa' is poised to lead India towards a more sustainable and technologically advanced agricultural future.

Deeksharambh:

Opening Gateway to Academic Brilliance

As part of the National Education Policy (NEP 2020) implementation, IARI introduced *Deeksharambh*, a student induction program for newly admitted undergraduate and postgraduate students. This non-graded, two-credit course aims to familiarize students with the institution's academic framework for a holistic learning experience. The program, running from October 15-28, 2024, was designed to ensure students seamlessly transition into their academic journey at IARI.

The inauguration ceremony took place on October 15, 2024, at the Agricultural Engineering auditorium. The event was attended by distinguished dignitaries including Dr. T.R. Sharma, DDG (Crop Science), ICAR and Director, IARI, Dr. R.C. Agrawal, DDG (Edu), ICAR; Dr. Anupama Singh, Joint Director (Education) & Dean; and Dr. Harshwardhan Choudhary, Associate Dean (UG), IARI. Parents and students from 13 hub campuses participated virtually. The program commenced with a lamp-lighting ceremony and *Saraswati Vandana*, followed by a welcome address from Dr. Choudhary.

Dr. Anupama Singh highlighted the structured two-week program and encouraged participation in sports, yoga, cultural events, and social activities. Dr. T.R. Sharma emphasized the importance of dedication, humility, sincerity, and a sense of belonging for success. Chief Guest, Dr. R.C. Agrawal delivered an insightful lecture on 'NEP 2020 – An Opportunity for Inclusive Learning' and commended IARI for adopting the 6th Dean's Committee recommendations. He also noted the increasing presence of female students in agricultural education.

An ICAR documentary on 'Opportunities through Agricultural Education' was showcased, providing parents with insights into career prospects. The inauguration concluded with a vote of thanks from Dr. Monika A. Joshi, Associate Dean (Hubs), ICAR-IARI.

Dr. T.R. Sharma inaugurated *Deeksharambh*, in presence of Dr. R.C. Agrawal

Dr. Himanshu Pathak, addressing students

Deeksharambh adhered on its four principles—Socializing, Associating, Governing and Experiencing (SAGE) - to provide students a feeling self-assurance and compassion.

Orientation & Interactive Sessions

Students were introduced to the Graduate School's UG program by Dr. Harshwardhan Chaudhary, academic code of conduct by Dr. Anil Dahuja, IQAC coordinator, examination rules by Dr. Akshay Talukdar, Controller of Examinations, and hostel regulations by Dr. Anil Sirohi, Master of Halls of Residences (MoHR). An online workshop on the Academic Management System (AMS) was conducted with active participation from hub institutes. Following the orientation on hostel management and health facilities, an introduction to international opportunities was done by Dr. K.K. Vinod, Associate Dean (International Affairs), Networking and training

Daily chores included yoga, sports and other activities

opportunities within India by Dr. M.R. Khan, Associate Dean (New Initiatives) and innovation and entrepreneurship opportunities by Dr. Aakriti Sharma, CEO, Pusa Krishi.

Daily activities included morning yoga and evening sports. A session by Dr. H.S. Gaur, Former Dean, IARI, delved into the history of agriculture and IARI's legacy. A motivational session on wellness, meditation, and stress management was conducted by Sri Yogesh Arora, Divine Bliss International.

Participants and organizers of *Dekkashaarambh program*

Deeksharambh not only orient students to IARI ecosystem, but also give directions to energetic young minds on their commitment to society and nation as a whole.

Students' cultural show was the main attraction of *Grand Finale*

A three-day 'Well-being and Happiness' workshop by Heartfulness Campus, helped students adapt to their new environment. Mr. Sanjay Kumar Singh, Director, Dimensions Education Pvt. Ltd., led a workshop on Behavioral Skill Management.

Community Engagement

Students visited *Rashtriya Virja Nand Kanya Vidyalaya*, a blind school, and *Guru Nanak Sukh Shaala*, an old-age home, to foster empathy and social values. A cycling tour allowed students to explore IARI campus. Students also spent a day at the farm of IARI Fellow Farmer, Shri Satyawan Sehrawat in Dariyapur Kalan, to have first-hand experience on farm practices, biogas production and cultivation of IARI crop varieties. They also visited a *Gaushala* and interacted with local farmers.

Postgraduate Induction

Week-long program for postgraduate students was held between 21-28 October 2024. Adorned with expert lectures, the program showcased Dr. Suman P.S. Khanuja, Founder & Chairman of FFSF, speaking on startup ecosystems and entrepreneurship development. Dr. H.S. Gupta, Former Director, IARI and DG, BISA, highlighted challenges in Indian agriculture and future strategies. On October 22, Dr. Himanshu Pathak, Secretary, DARE & Director General, ICAR, addressed students on success strategies.

Dr. Anupama Singh elaborated on IARI's actions on Sustainable Development Goals (SDGs), while Dr. C. Viswanathan, Joint Director (Research), highlighted research opportunities. Dr. Rabindra Padaria, Joint Director (Extension), emphasized honesty and integrity in professional life. A workshop on *'Holistic Well-being and Gender Equity'* was led by Dr. Malavika Dadlani, former Joint Director (Research), , highlighting gender challenges and empowerment. Dr. Sujata Sharma, biologist author from AIIMS, recommended meditation for stress relief in young adults. Dr. J.P. Sharma, former VC, SKUAST-Jammu, recommended that happiness and motivation are essential in personal and academic growth. Students were also taken on a cultural and historical tour of Delhi.

Grand Finale

The program concluded on October 28, 2024, with a mega cultural event where students showcased diverse music and dance performances, celebrating India's unity in diversity. The event marked the successful completion of the induction program, leaving students enriched with knowledge, values, and a sense of belonging to IARI.

IARI Opens Doors to the World:
Internationalization Takes a Giant Leap

IARI Joins *Study in India* (SII)

IARI has officially joined the Study in India (SII) program, an initiative by the Government of India to attract international students to Indian higher education institutions. This aligns with the National Education Policy (NEP) 2020, which emphasizes internationalization and collaboration in higher education.

Launched by the Ministry of Education in partnership with the Ministry of External Affairs and the Ministry of Commerce and Industry, SII aims to position India as a global education hub by offering quality education, cultural immersion, and competitive academic opportunities.

On January 2, 2024, IARI officially joined SII, reinforcing its status as a global agricultural institute and fostering international research collaborations, with Dr. Anupama Singh, Dean & Jt. Director (Edu) as compliance officer and Dr. K.K. Vinod, Associate Dean (International Affairs) as the nodal officer. Through SII's single-window admission system, IARI will admit international students via the SII portal (www.studyindia.gov.in), streamlining the process for global applicants. On March 22, 2024, Dr. Vishal Somvanshi and Dr. Amalendu Ghosh, International Relations Officers, representing the Office of International Affairs at IARI, took part in the SII website-portal outreach and orientation program for compliance officers from higher education institutes. This event was held at the AICTE Auditorium in Vasant Kunj, New Delhi.

In 2024, IARI received 34 applications through SII. IARI's participation in SII will attract students from various countries, particularly in agricultural sciences, biotechnology, and sustainable farming. The institute will offer specialized postgraduate and doctoral programs, promoting knowledge exchange and agricultural innovation.

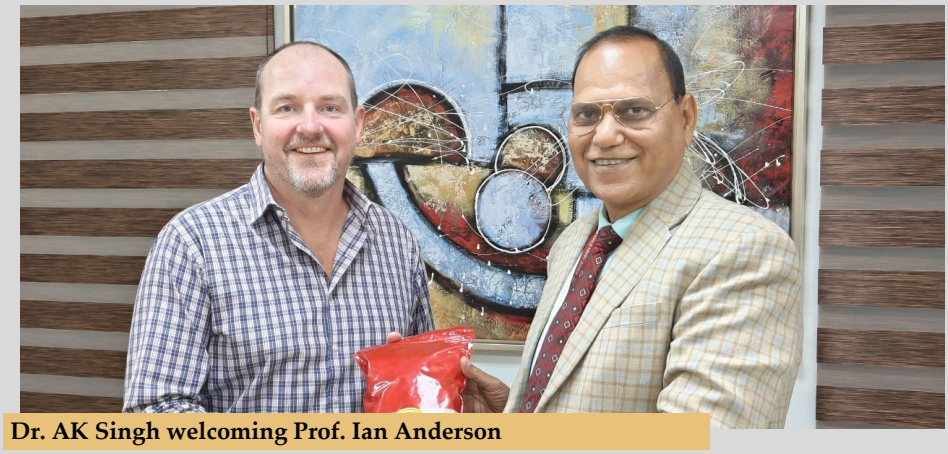
Western Sydney University Holds Dual Degree Workshop

IARI hosted a delegation from Western Sydney University (WSU), Australia, on March 18-19, 2024, to strengthen academic and research collaborations under the ICAR-WSU MoU. This partnership, which began in 2019 with a Dual Degree Ph.D. Program, is now expanding to include a Dual Degree Undergraduate Program.

Led by Prof. David Tissue from the Hawkesbury Institute for the Environment, the WSU research team engaged with IARI faculty to explore joint research opportunities. The delegation included Prof. Oula Ghannoum, Dr. Uffe Nielsen, and Dr. Kopal Chaube. On March 18, they interacted with Dual Degree Ph.D. students and visited IARI research facilities. On March 19, they conducted seminars to discuss potential collaborations.

Simultaneously, a WSU academic delegation, including Dr. Sunil Panchal and Ms. Namrata Anand, met with IARI's UG articulation team and representatives from State Agricultural Universities (SAUs). Discussions covered articulation programs, dual degree structures, and application processes across various disciplines, including Agriculture, Agricultural Engineering, and Food Technology.

Earlier, on February 28, 2024, another WSU delegation, led by Prof. Ian Anderson, visited IARI, further strengthening Indo-Australian ties in agricultural education and research.



Dr. AK Singh welcoming Prof. Ian Anderson

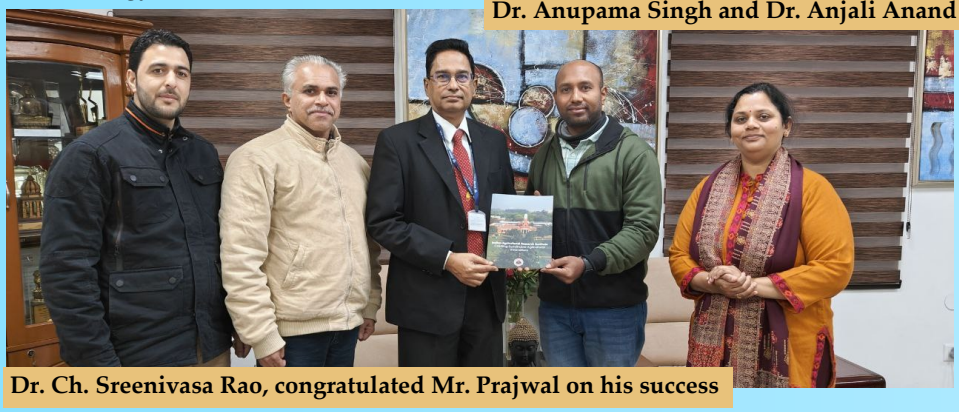
Students Move East to the 'Western'

IARI has partnered with Western Sydney University (WSU), Australia, under a Memorandum of Agreement (MoA) to offer a Dual Degree Ph.D. Program. As part of this collaboration, three IARI students have been selected to pursue their research at WSU for 18 months, fulfilling the requirements for their doctoral degrees. WSU is globally recognized for its excellence in agricultural and environmental sciences.

Dr. T.R. Sharma felicitated Ms. Snehalatha Pasupuleti on her departure to WSU

The selected students were Ms. Snehalatha Pasupuleti from Nematology, Mr. Rabiul Alam from Plant Physiology, and Mr. Prajwal R from the Agricultural Engineering Divisions. Snehalatha and Prajwal will join the Hawkesbury Institute for the Environment (HIE), while Rabiul will undertake research at the School of Science at WSU.

Dr. Anupama Singh and Dr. Anjali Anand with Mr. Rabiul Alam and his parents



Dr. Ch. Sreenivasa Rao, congratulated Mr. Prajwal on his success

Ms. Snehalatha will focus on developing a rapid point-of-care diagnostic method for plant-parasitic nematodes, crucial for both Australian and Indian agriculture. She is mentored at IARI by Dr. Vishal Somvanshi, Principal Scientist, as her principal supervisor and Dr. M. R. Khan, as her co-supervisor. Ms. Snehalatha joined WSU on 16 September 2024. At WSU, she will be supervised by Dr. Uffe Nielson, Associate Professor and Prof. Markus Riegler, Professor, Entomology as co-supervisor.

Mr. Rabiul will work on deciphering the source-sink relationship in wheat under high-temperature stress. He works under the guidance of Dr. Anjali Anand, Professor, and co-supervised by Dr. Viswanathan Chinnusamy, Jt. Director (Research). Mr. Rabiul joined WSU on 05 October 2024. He will be working under Dr. Jay Bose, Associate Dean, High Degree Research (HDR) and Co-supervised by Prof. Zhonghua Chen, Professor - Research Lectureship.

Mr. Prajwal will develop an autonomous harvesting system using intelligent maturity detection and quality assessment for selected vegetables under protected cultivation environments. He works under the supervision of Dr. Roaf Ahmad Parray, Scientist and co-supervised by Dr. Tapan Kumar Khura, Principal Scientist at IARI. Mr. Prajwal left IARI on 31 December 2024, to join WSU in Q1 2025. At WSU, he will be working under Prof. Oula Ghannoum, Discipline Lead, Biological Sciences as Supervisor and co-supervised by Yi Guo, Associate Professor, Data Science, Translational Health Research Institute (THRI), WSU.

Students were given formal send off by Dr. T.R. Sharma to Ms. Snehalatha, Dr. Ch. Sreenivasa Rao to Mr. Prajwal in presence of their parents, Supervisors, Dr. Anupama Singh, Dean & Jt. Director (Edu), and Dr. K.K. Vinod, Associate Dean (International Affairs).

Promoting IARI Education in Sri Lanka

A delegation from IARI—Dr. K. K. Vinod, Associate Dean (International Affairs), Dr. Vishal Somvanshi, and Dr. Amalendu Ghosh (International Relations Officers)—visited Galle, Sri Lanka, from August 9 to 12, 2024, to participate in the *Study in India* event organized by the Consulate General of India, Hambantota, and the Sri Lankan government.

The event aimed to strengthen academic ties between Indian institutions and Sri Lankan stakeholders. The team engaged with Sri Lankan students, university representatives, and officials to raise awareness about educational programs and research opportunities at IARI.

Dr. Vinod delivered a presentation on August 9, highlighting IARI's role in agricultural education. The delegation also explored potential collaborations with Sri Lankan universities, such as University of Ruhuna to send faculty members for Ph.D. programs at ICAR-IARI. Discussions further emphasized the importance of expanding international student enrollment.

IARI team with Shri Harvinder Singh, Consul General and Smt. Ratnamala Chalamcharla, Vice Consul, Consulate General of India, Hambantota

Key outcomes from the visit included increasing participation in global education fairs, direct engagement with universities, and exploring offshore campus opportunities to enhance IARI's international outreach.

The event reinforced IARI's commitment to globalizing agricultural education and aligning with India's National Education Policy 2020.

Growing Agri-Education Ties:
University of Melbourne Leads Agri Talks

On 17 October 2024, the Melbourne Global Centre – Delhi hosted a high-level roundtable discussion on *Agricultural Research and Education for the Future*, bringing together leading academics, policymakers, and research leaders from Australia and India. The event marked a significant step in strengthening agricultural education and research collaboration between the two nations.

The discussion featured key representatives from the University of Melbourne's Faculty of Science, led by Dr. Surinder Singh Chauhan, Associate Professor, alongside leadership from the Indian Council of Agricultural Research (ICAR) led by Dr. R.C. Agrawal, DDG (Edu), vice chancellors, and directors from top Indian agricultural universities. IARI team was led by Dr. Anupama Singh, Jt. Directior (Edu), with Dr. K.K. Vinod, Associate Dean (International Affairs), Dr. Anil Dahuja, IQAC Coordinator and Dr. M.R. Khan, Associate Dean (New Initiatives) as members.

Participants of the Roundtable with Dr. Surinder Singh Chauhan

Topics covered included global trends in agricultural education, Australia-India research collaboration, student mobility and exchange programs, advancements in technology and online learning, and industry-academia partnerships. The event aimed to shape a more inclusive and dynamic agricultural education framework while fostering actionable initiatives for future collaboration.

India-Australia Higher Education Ties:
IARI Participates in Internationalization Workshops

In collaboration with the Australian High Commission and the University Grants Commission (UGC), a series of workshops have been organized to develop structured academic relations between Indian and Australian universities. The session was facilitated by Nathaniel Webb, First Secretary (Education and Research) at the Australian High Commission, and Dr. B. Chandrasekar, Executive Director, EdCIL with special participation from Dr. Archana Thakur, Joint Secretary, University Grants Commission (UGC).

Participants of the Second Workshop at Australian High Commission

IARI, as part of the Study in India (SII) program, initiated by the Ministry of Education, Government of India, continues to strengthen its global academic presence through active participation in internationalization workshops and collaborations. IARI's Office of International Affairs have been engaging with key stakeholders to enhance international academic partnerships. On October 7, 2024, Dr. Amalendu Ghosh, International relations Officer, attended the first workshop, held virtually. Experts from the University of Queensland, the University of New South Wales, and La Trobe University provided insights into setting up international offices, student recruitment, admissions, and global marketing strategies. This session laid the groundwork for structured collaboration and highlighted the potential for joint research and academic programs.

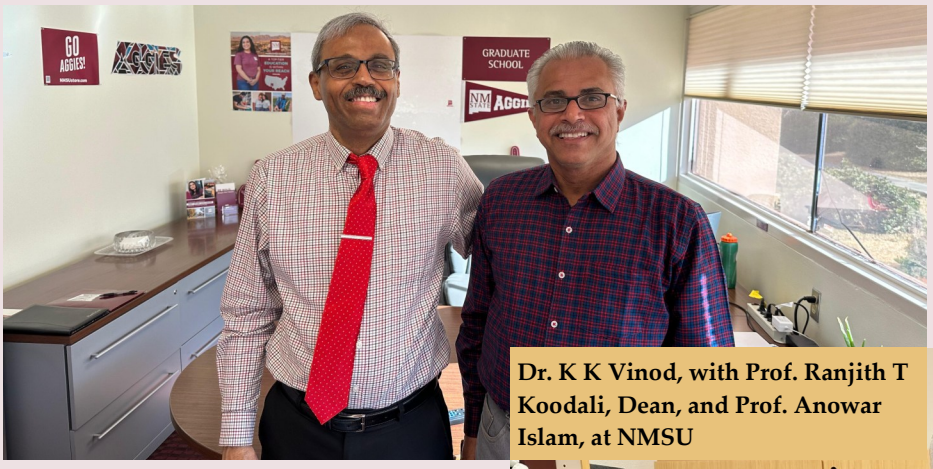
The second workshop took place on November 28, 2024, at the Australian High Commission in New Delhi, where Dr. KK Vinod, Associate Dean (International Affairs) and Dr. Amalendu Ghosh participated. This session focused on international student support services, discussing essential elements such as student orientation, accommodation, counselling, and social integration. Representatives from Flinders University, Griffith University, James Cook University, La Trobe University, and other Australian institutions shared best practices for creating a conducive environment for international students. Discussions also explored the possibility of a joint degree program between IARI and La Trobe University, reinforcing India's vision of becoming a preferred destination for global education.

The workshops were attended by distinguished officials, including representatives from the Indian Council of Agricultural Research (ICAR), National Bureau of Plant Genetic Resources, and various agricultural universities across India. Key speakers such as Professor Simon Biggs from James Cook University and Dr. Stacey Farraway from La Trobe University emphasized the significance of India-Australia collaborations in agricultural education and research. The events concluded with discussions on future workshops focusing on joint degrees, research partnerships, student mobility, and international policy frameworks. These engagements reaffirm IARI's commitment to fostering global academic ties and positioning India as a hub for quality agricultural education.

IARI team with Prof. Jessica Vanderlelie, Deputy Vice-Chancellor (Academic), La Trobe University and Australian High Commission staff

Exploring Global Opportunities in the US

In a significant step towards fostering international academic collaboration, Dr. K. K. Vinod, Associate Dean (International Affairs) of IARI, visited New Mexico State University (NMSU) and Texas Tech University (TTU) during March 2024. His discussions with faculty and administrators focused on advancing agricultural research, education, and student exchange programs between these prestigious institutions and IARI.



Dr. K K Vinod, with Prof. Ranjith T Koodali, Dean, and Prof. Anowar Islam, at NMSU

At New Mexico State University (NMSU), Dr. Vinod met with Dr. Ranjit T. Koodali, Dean of the Graduate School and Associate Provost for International Affairs, to explore collaborative opportunities. Key topics included India's National Education Policy (NEP), IARI's global rankings, student excellence, and potential research partnerships. A major highlight was the discussion of a graduate exchange program, which could provide IARI students with international exposure in cutting-edge agricultural research. The meeting was arranged by Dr. Naveen Pupala, a faculty member in the Department of Plant and Environmental Sciences, based at the Ag. Science Center in Clovis.

Dr. Koodali acknowledged the high academic caliber of Indian scholars and emphasized the interest of U.S. universities in fostering deeper collaborations with Indian institutions. Additionally, Dr. Vinod held discussions with Prof. Anowar Islam, Head of the Extension Plant Sciences Department, further broadening the scope of possible research engagements.

Continuing his efforts at Texas Tech University, Lubbock, Texas, Dr. Vinod engaged with Dr. Gunwant Baliram Patil, Assistant Professor at the Institute of Genomics for Crop Abiotic Stress Tolerance. Their discussions revolved around collaborative research projects and the potential for a graduate student exchange program, which could enhance knowledge-sharing and innovation in crop genomics and stress tolerance.

With Dr. Gunwant Baliram Patil and Dr. Naveen Puppala at Texas Tech University

The discussions at both universities received positive responses, paving the way for new international collaborations between IARI and leading U.S. agricultural research institutions. These engagements mark an important milestone in IARI's mission to strengthen global partnerships, facilitate cutting-edge research, and provide its students with world-class educational opportunities.

Dr. Jen Dollin Hosts Workshop at IARI on SDGs and THE Impact Rankings

On November 18, 2024, Dr. Jen Dollin, Director of Sustainability Education and Partnerships at Western Sydney University (WSU), conducted a workshop at IARI on strategic approaches to the Times Higher Education (THE) Impact Rankings and advancing sustainability through the United Nations Sustainable Development Goals (SDGs).

The day-long event began with a welcome by Dr. K.K. Vinod, Associate Dean (International Affairs), followed by an inaugural speech by Dr. Anupama Singh, Joint Director (Education), who introduced Dr. Dollin to IARI's mandate and activities. Dr. Anupama highlighted how IARI has been contributing to SDGs since its inception, particularly in poverty alleviation and sustainable well-being.

Dr. Jen Dollin was Received by Dr. Anupama Singh and Dr. C. Viswanathan

Dr. Dollin, whose leadership has helped WSU secure the No.1 global ranking in the THE Impact Rankings for SDGs in 2023 and 2024, presented WSU as a case study in achieving sustainability leadership. She explained how WSU excels in SDG 5 (Gender Equality), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), and SDG 17 (Partnerships for the Goals). She emphasized a strengths-based approach to improve university rankings by leveraging research, governance, and community outreach.

Following the presentations, Dr. Dollin toured IARI facilities aligned with SDGs, including the Nanaji Deshmukh Plant Phenomics Centre, Pusa Amrit Sarovar, Centre for Protected Cultivation Technology, Climate Research Facility, Integrated Farming System, and the Prof. M.S. Swaminathan Library.

In the afternoon, a workshop titled "IARI SDG Strategies: A Strength-based Approach" was conducted. Dr. Viswanathan Chinnusamy, Joint Director (Research) emphasized IARI's critical role in achieving SDGs related to agriculture, calling for stronger research and policy alignment to maximize impact.

Dr. Jen Dollin visited Centre for Protected Cultivation Technology

Dr. Dollin highlighted India's significant progress in the 2024 THE Impact Rankings, where 105 universities participated, excelling in SDG 3 (Good Health and Well-being), SDG 6 (Clean Water and Sanitation) and SDG 7 (Affordable and Clean Energy). These achievements underscore India's growing commitment to sustainability in higher education, supported by government policies and institutional collaborations.

A key component of the workshop was leveraging data analytics to track SDG contributions, enhance research impact, and conduct gap analyses to improve rankings. Discussions focused on cross-sector collaborations, regional sustainability challenges, and strategies to integrate sustainability into education, research, and operations.

The workshop concluded with a strategic roadmap for IARI, emphasizing strong governance, enhanced research metrics, and inter-institutional partnerships. Dr. Dollin's visit reinforced the importance of data-driven sustainability strategies and the global role of universities in advancing the SDGs. WSU and IARI plan to continue their collaboration, aiming to strengthen sustainability

Sixty-Second Convocation:
Enduring Grand Legacy

The 62nd Convocation of IARI held during February 4-9, 2024, showcased academic excellence, groundbreaking research, and inspiring addresses by distinguished guests. The event featured research presentations, memorial lectures, and a grand convocation ceremony graced by the Honorable President of India, Her Excellency Smt. Droupadi Murmu.

62nd Convocation was graced by Her Excellency, Smt. Draupadi Murmu

Research and Academic Presentations

The convocation week began with selected masters' and Ph.D. students from different disciplines presenting their research achievements, in competitive spirit to win IARI gold medals and best student of the year award. Event was filled with scintillating presentations and intellectual discussions on various subjects.

Professors from various schools, including Crop Improvement, Crop Protection, Natural Resource Management, Basic Sciences, Horticultural Sciences, and Social Sciences, showcased students' research on cutting edge technologies such as genomics, climate-resilient cropping systems, AI applications in agriculture, post-harvest management, and rural livelihood improvement. The XXIII Sukumar Basu Memorial Award was conferred upon Dr. Y.S. Shivay for his contributions to nutrient management and the rice-wheat cropping system.

Lal Bahadur Shastri Memorial Lecture

The 54th Lal Bahadur Shastri Memorial Lecture was delivered by Dr. Himanshu Pathak, Secretary (DARE) & DG (ICAR), on "Transforming Agricultural Education for Aspiring India." Dr. Pathak explored the historical impact of the Vedic education system, emphasizing the role of agricultural universities in India's progress. He highlighted the role of national education policies, and the increasing participation of youth in agriculture. The session was chaired by Dr. Panjab Singh, Former Secretary and DG, ICAR.

Dr. Himanshu Pathak delivered 54th Lal Bahadur Shastri Memorial Lecture

Presidential Address and Convocation Ceremony

The convocation culminated on February 9, 2024, with an address by the Honorable President of India, Smt. Droupadi Murmu, who lauded IARI's contributions to food security. She acknowledged the development of over 200 technologies, more than 100 crop varieties, and multiple patents by the institute. Stressing the importance of sustainable agricultural growth, she emphasized policies to enhance farmers' income and productivity, expressing confidence that Indian farmers will lead the nation's development by 2047.

Honorable Union Minister of Agriculture and Farmers Welfare, Shri Arjun Munda, along with senior ICAR and IARI officials, adorned the ceremony. Dr. A.K. Singh, Director, IARI, provided insights into the institute's advancements, which contribute significantly to the nation's food production.

The 62nd Convocation of IARI celebrated research innovation, academic achievements, and policy discussions, reaffirming the institute's leading role in shaping India's agricultural future.

Student-driven Research Wins Prestigious IARI Awards

In the 62nd Convocation, recognizing outstanding academic achievements of Master's and Ph.D. research across various disciplines, One Gold Medal and six Merit Medals were awarded to exceptional Master's students, while one Gold Medal and five Merit Medals were conferred upon Ph.D. scholars for their remarkable contributions to agricultural research.

Ms. Jagadam Sai Rupali

Gold medal for the best masters research was bagged by Ms. Jagadam Sai Rupali from the Division of Entomology. Under the guidance of Dr. Sagar D, her thesis focused on post-mating transcriptional changes in female moths of fall armyworm, *Spodoptera frugiperda.*

Transcriptomic analysis revealed 13,207 differentially expressed genes, with 846 genes significantly altered at 24 hours post-mating. Key upregulated genes (e.g., cathepsin B, cytochrome P450 6B1) regulate egg development and detoxification, while immune-related genes were downregulated, suggesting a trade-off between reproduction and immunity. The study provides insights into molecular mechanisms driving reproductive success, offering potential targets for pest management strategies to control fall armyworm infestations effectively.

Mr. Satyam Rawat

Out of the six merit awards, Mr. Satyam Rawat of the Agronomy Division received the merit medal for his commendable research under the guidance of Dr. Rajiv Kumar Singh. The study, conducted at ICAR-IARI, Jharkhand, examined nano-urea's impact on maize productivity and nitrogen use efficiency in acid soils. Results showed that 100% recommended N + 2 nano-urea sprays achieved the highest grain yield (6.89 t/ha) and maximum economic returns. Notably, 75% recommended N with nano-urea sprays produced yields and returns comparable to 100% recommended N, highlighting nano-urea's potential as an eco-friendly alternative. The research underscores its role in improving nitrogen efficiency while reducing fertilizer dependency in acidic soils.

Mr. S. Chakraborty

Next merit medal was won by Mr. Shuvarghya Chakraborty of Biochemistry Division, under the guidance of Dr. Veda Krishnan. He conducted a study on 'Isolation, Structural Characterization, and Hypoglycemic Effects of Functional Polysaccharides from Shiitake (*Lentinula edodes*)'. Aligned with India's "One District One Product (ODOP)" initiative, the research explored indigenous Shiitake strains for their β-glucan content and anti-diabetic potential. DMRO-623 was identified as the highest β-glucan-producing strain (47%). The acid-alkali method was most effective for extracting bioactive triple-helical β-glucan (THG). Characterization confirmed LNT's structure, and enzyme inhibition assays revealed its ability to reduce carbohydrate hydrolysis. Molecular simulations validated its inhibitory effects on key diabetic enzymes. This is the first study to characterize LNT from Indian Shiitake, highlighting its potential for diabetes management through functional foods.

Ms. Jyotsna Verma

Ms. Jyotsna Verma of Plant Genetic Resourses under the guidance of Dr. Kuldeep Tripathi, became the third merit medal awardee. She assessed genetic variability in black gram germplasm for pre-harvest sprouting (PHS) tolerance. Analyzing 112 accessions, she identified 13 PHS-tolerant lines, with IC0485641 showing the lowest seed germination in pod (2.75%). Correlation studies revealed that PHS was linked to water imbibition and fresh seed germination. Lower α-amylase activity in tolerant accessions confirmed its role as a biochemical marker. Identified PHS-tolerant lines, such as IC485641 and IC485425, may serve as donors for breeding PHS-resistant blackgram varieties, aiding climate-resilient crop development.

Ms. Poulami Basak

Ms. Poulami Basak, under Dr. Malkhan Singh Gurjar, characterized *Bipolaris sorokiniana* and evaluated bioagents against spot

blotch disease in barley. Her research has one the fourth merit award. Among 45 isolates, Pusa, Bihar isolates were highly pathogenic. Cross-infectivity assays showed barley isolates were less virulent on wheat. Three genotypes (EC0328964, IC0393134, IC0446132) were resistant, while five were moderately resistant. Transcriptome analysis revealed defense-related genes in resistant genotypes. *Trichoderma asperellum* 8686 and 8687 showed the highest in vitro inhibition, while *Bacillus amyloliquefaciens* was most effective in seed treatment and in planta studies, proving to be a promising biocontrol agent against spot blotch.


Ms. Vathsala V.

Winning the fifth award, Ms. Vathsala V., under Dr. Charanjit Kaur, work on optimizing ultrasound-assisted extraction (UAE) for pectin from sweet lime and pummelo peels using Response Surface Methodology (RSM), offered a promising approach for food waste valorization. Pummelo peel UAE yielded 26.35% pectin with 69.11% galacturonic acid under optimal conditions. The extracted low-methylated pectin (LMP) exhibited high antioxidant activity, superior rheological properties, and biological benefits, including lipid inhibition in HepG2 cells. Low-fat mayonnaise was successfully formulated using LMP from pummelo peels, demonstrating its potential in low-glycemic food development. UAE proved superior to traditional methods due to higher efficiency, shorter processing time, and environmental sustainability.


Ms. Tuhina Ghosh

Ms. Tuhina Ghosh, under Dr. Shiv Kumar Yadav, studied the effect of zinc oxide (ZnO) nanoparticle-based seed priming on tomato (*Solanum lycopersicum* L.) under salinity stress, was adjudged the sixth recipient of IARI merit medal. In her study, she found that QA001 genotype outperformed QA002 in both control and stress conditions. ZnO NP @ 750 ppm for 6 hours significantly improved germination (92%), seed vigor, chlorophyll production, and antioxidant enzyme activity, while reducing ROS accumulation and lipid peroxidation. The study highlights nano-priming as an effective strategy to mitigate salt stress effects, enhancing seed quality and stress resilience in tomato crops.

Chickpea Drought Tolerance Study Uncovers Key Genes

IARI Gold Medal for the Ph.D.


Dr. Sheel Yadav

research was won by Dr. Sheel Yadav, from the Division of Molecular Biology & Biotechnology. Working under Dr. P.K. Jain, she investigated epigenetic mechanisms influencing drought tolerance in chickpea. The study analyzed two contrasting varieties—ICC 4958 (drought-tolerant) and ICC 1882 (drought-sensitive)—under drought stress. Results showed significant genome-wide hypomethylation in the tolerant variety, with the mCHH methylation type being most variable. Key drought-responsive genes were identified, including ribosomal protein RPS6, SPL transcription factors, and GRAS transcription factors. The RNA helicase gene CaDExD/H66, homologous to *A. thaliana*'s CLASSY proteins, was found to potentially regulate DNA methylation via siRNA pathways. Downregulation of RPS6 in the drought-sensitive genotype was linked to reduced ribosome biogenesis, impacting stress adaptation. These findings provide crucial insights into epigenetic regulation of drought response, offering potential genetic targets for breeding climate-resilient chickpea varieties.

AI for Disease Detection in Crops


Dr. R. N. Singh

Dr. Ram Narayan Singh, a Ph.D. researcher under Dr. P. Krishnan at IARI, received the prestigious IARI Merit Award for his study on assessing wheat stripe rust and chickpea wilt using thermal and optical remote sensing. Conducted over multiple years, the research integrated AI-driven machine learning models to predict disease severity and crop yield. Results showed that as disease severity increased, key plant parameters like LAI, RWC, photosynthesis, and NDVI declined, while canopy temperature rose. Supervised image classification accurately estimated rust severity, with Support Vector Machines achieving over 98% accuracy. The Cubist model proved best for wheat rust prediction, while a Least Absolute Deviation technique improved wilt severity prediction. The study demonstrates the potential of AI and imaging technologies for early disease detection and precision agriculture, offering farmers and policymakers valuable tools for disease monitoring and resource management to enhance food security and crop resilience.

Study Enhances Maize Oil Content Using Genetics


Dr. A. Katral

Dr. Ashvinkumar Katral, a Ph.D. researcher under Dr. Vignesh Muthusamy at IARI, received the prestigious IARI Merit Award for his groundbreaking study on improving maize kernel oil content through genetic analysis and marker-assisted selection. Screening 292 maize genotypes revealed rare beneficial alleles of *dgat1-2* and *fatb* genes, identifying 10 promising germplasms. Newly developed gene-based InDel markers enabled precise genetic characterization. Multi-location trials of 48 genotypes confirmed wide genetic variation for oil content and fatty acid composition. Marker-assisted breeding successfully enhanced kernel oil content (>6.5%), reduced palmitic acid by 35%, and increased oleic acid by 50% in four multi-nutrient-rich maize hybrids. Genome-wide association studies identified key marker-trait associations for oil quality and nutritional traits. The developed genotypes combine high oil content, improved oil quality, and enriched lysine, tryptophan, proA, and proE, offering significant potential for nutritionally superior maize cultivation.

Study Uncovers Calcium's Role in Wheat Nitrogen Efficiency


Dr. Sandeep Adavi

Next merit ward was won by Dr. Sandeep Adavi B, who researched under Dr. Lekshmy S at the Physiology Division. His study focused on calcium's role in nitrogen response in bread wheat (*Triticum aestivum*). Semi-dwarf wheat genotypes (*Rht-1*) exhibit low nitrogen use efficiency (NUE), contributing to fertilizer loss and environmental issues. The study identified key calcium-signaling genes—CBLs, CIPKs, CPKs, and NLPs—exhibiting distinct expression patterns under nitrate treatments. Findings revealed that cytosolic calcium ($[Ca^{2+}]cyt$) regulates nitrate-responsive genes, with optimal levels enhancing NUE. High nitrate and calcium levels, along with auxin, influenced root development and nitrogen metabolism. Field experiments confirmed that external calcium supplementation improves NUE by enhancing nitrogen remobilization and post-anthesis uptake. This research highlights calcium as a crucial mediator in nitrate signaling, offering potential strategies to boost wheat yield through improved nitrogen management.

Study Identifies Viruses Threatening Mustard Crops


Dr. P. Singhal

Dr. Pankhuri Singhal, under Dr. V. K. Baranwal at IARI, received the prestigious IARI Merit Award for her pioneering research on mustard mosaic disease. Using electron microscopy and high-throughput RNA sequencing, she identified Turnip Mosaic Virus (TuMV) as the primary pathogen, sometimes co-infecting with Cucumber Mosaic Virus (CMV). The study confirmed 100% TuMV incidence in mustard fields and identified the world-B3 sub-pathotype in South Asia. It also provided the first evidence of true seed-borne TuMV transmission, with aphids acting as carriers. Mixed TuMV and CMV infections reduced mustard yield by over 50%, causing severe mosaic and puckering symptoms. Additionally, novel recombinant CMV isolates infecting previously unreported hosts were discovered in India. This research highlights the urgent need for virus-resistant mustard varieties and improved disease management strategies, offering valuable insights for protecting mustard crops and ensuring sustainable oilseed production in India.

Innovative Filter for Drip Nutrigation


Dr. Rashmi Yadav

Dr. Rashmi Yadav, under Dr. Susama Sudhishri at the Water Science and Technology Division, received the prestigious IARI Merit Award for her groundbreaking research on utilizing biogas slurry in drip nutrigation. India's biogas slurry, rich in essential nutrients (1.5% N, 1.1% P, 1% K), often faces challenges in direct land application. This study developed an advanced filtration system to integrate biogas digestate into drip irrigation, reducing clogging and optimizing nutrient delivery. The cascade filter achieved 79.4% filtration efficiency, reducing turbidity and total solids while maintaining a steady filtration rate. Field trials on spinach demonstrated that biogas slurry nutrigation (BSN) with 80% RDF produced comparable yields to 100% RDF while improving soil enzyme activity. The system proved economically viable, with a payback period of 1.33 years and a benefit-cost ratio of 2.29. This research promotes sustainable agriculture by integrating bio-waste recycling with precision irrigation, aligning with circular economy and environmental sustainability goals.

Awards were conferred to the recipients by Honorable President of India, Her Excellency Smt. Draupadi Murmu, during 62nd Convocation. Congratulations to all the winners.

Commemorating Excellence:

Celebrating Special Days in Science and Beyond

Numbers in Motion: Celebrating National Statistics Day

National Statistics Day was celebrated on June 29th by ICAR-IASRI honoring the significance of statistics in research and decision-making. The excitement began early, with pre-celebrations kicking off on June 12th, setting the stage for an engaging and dynamic event. The *flashmob - mob momentum* ignited enthusiasm among students, creating a lively atmosphere that showcased the power of numbers through movement and energy. This was followed by *Camera Quest*, a creative initiative capturing the essence of statistical sciences through a visual storytelling challenge. The grand celebration on June 29th witnessed the esteemed presence of Honourable DDG (Education) Dr. R.C. Agrawal and Director ICAR-IASRI Dr. Rajender Parsad, who emphasized the pivotal role of statistics in shaping modern research. With students, faculty, and staff actively participating, the event became a dynamic fusion of learning, creativity, and statistical appreciation. Through a blend of engagement, innovation, and spirited interactions, ICAR-IASRI reaffirmed its commitment to promoting statistical sciences, making National Statistics Day 2024 a remarkable and inspiring occasion!

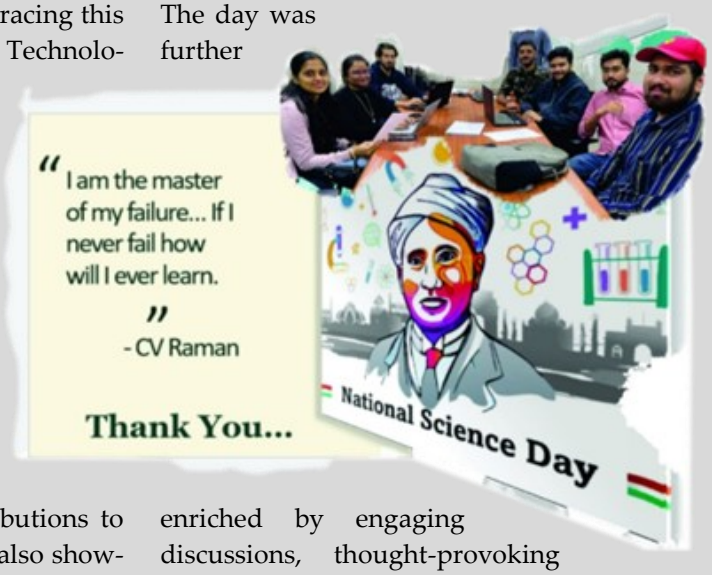
Glimpses from National Statistical Day celebrations

Innovating for a *Viksit Bharat*: National Science Day

The ICAR-Indian Agricultural Statistics Research Institute (ICAR-IASRI) joined the nationwide celebration of National Science Day, embracing this year's theme, "Indigenous Technology for *Viksit Bharat*." The event honored India's rich scientific legacy while emphasizing the nation's commitment to innovation and self-reliance.

A key highlight of the celebration was a student-led documentary on Sir C.V. Raman and the Raman Effect, which traced his groundbreaking contributions to science. The documentary also showcased India's remarkable achievements in science and agriculture, aligning with the Prime Minister's vision of a technologically empowered and self-sufficient nation.

The day was further enriched by engaging discussions, thought-provoking presentations, and insightful reflections on the role of indigenous technology in driving progress. Across various disciplines, faculty and students shared perspectives on how scientific advancements can shape a self-reliant and progressive India.



The celebration not only reinforced the significance of homegrown innovations but also inspired young minds to contribute to the nation's scientific and agricultural growth. As India continues to make strides in technological development, events like these serve as a catalyst for future discoveries and innovations, paving the way for a truly *Viksit Bharat*.

Greener Today, Brighter Tomorrow:

Celebrating World Environment Day

The World Environment Day celebrations across IARI and its hubs demonstrated a nationwide commitment to sustainability through awareness programs and large-scale plantation drives. As part of the celebrations, IARI participated in the global campaign "Plant4Mother" (एक पेड़ माँ के नाम), launched by the Hon'ble Prime Minister of India. The initiative encouraged tree plantation as a tribute to nature and motherhood, reinforcing the need for sustainable practices and environmental stewardship.

Dr. C. Viswanathan, Jt. Director (Res) during the celebrations

The Division of Environmental Science at IARI celebrated World Environment Day with a strong focus on sustainability, climate action, and biodiversity conservation. The event emphasized the collective responsibility to protect nature for future generations. Students and faculty engaged in interactive sessions, awareness campaigns, and discussions on eco-friendly innovations, green technologies, and policy-driven solutions to address environmental challenges, aiming to foster environmental consciousness and proactive action.

Further strengthening this commitment, the National Service Scheme (NSS) organized a tree plantation drive and awareness rally on August 9, 2024. The rally, which started at the MOHR office and concluded at the Scientist Apartment, ICAR, featured student-designed posters highlighting environmental conservation. More than 200 NSS student volunteers, faculty members, and senior officials, including the Associate Dean (UG), Project Director of the Water Technology Centre, Head of Floriculture & Landscaping, and Incharge OHLU, participated in planting teak saplings, reinforcing the institute's dedication to sustainability.

'Plant a tree for mother' has become a national movement—NSS volunteers during the campaign

The campaign extended beyond New Delhi, with ICAR hubs across the country actively participating. ICAR-IIHR Bengaluru, ICAR-CICR Nagpur, RCER Patna, ICAR-IIWBR Karnal, and ICAR-IISR Lucknow organized tree plantation activities, ensuring environmental responsibility at a national level. In Hyderabad, the NSS unit of IARI-Mega university, ICAR-CRIDA, conducted a plantation drive at Hayathnagar Research Farm, engaging undergraduate students and faculty in tree planting.

IARI is committed to building a sustainable future through self-reliant and eco-friendly technologies.

By integrating discussions with hands-on initiatives, the event inspired students, researchers, and faculty to adopt long-term environmental practices, ensuring today's efforts contribute to a greener, healthier future. By integrating discussions on sustainability with hands-on initiatives, the event aimed to inspire students, researchers, and faculty to adopt long-term environmental practices. With such initiatives, IARI continues to lead by example, ensuring that today's actions contribute to a greener, healthier, and more sustainable future.

Water for Peace:
IARI Commemorates World Water Day 2024

On March 22, 2024, the Water Technology Centre (WTC), IARI, New Delhi, celebrated World Water Day with the central theme "Water for Peace." The event underscored the critical role of water in fostering global harmony, sustainability, and agricultural resilience. Dr. Himanshu Pathak, Secretary (DARE) & Director General (ICAR), graced the occasion as the Chief Guest, alongside Dr. P.K. Singh, Agriculture Commissioner, and Dr. S.K. Ambast, Chairman, Central Groundwater Board, Government of India, as Guests of Honour. Dr. A.K. Singh, Director, IARI, delivered the welcome address, setting the tone for a day of insightful discussions on sustainable water management. Dr. P.S. Brahmanand, Project Director, WTC, outlined a 10-point action plan for agricultural water sustainability, while Dr. Susama Sudhishri, Professor, Water Science and Technology, concluded the event with a vote of thanks. The celebration saw the enthusiastic participation of 180 attendees, including scientists, professors, students, and experts from various ICAR institutes. A quiz competition on water conservation was also held for students, adding an element of engagement and learning, with winners receiving special recognition. The event successfully reinforced the message that water is not just a resource but a unifying force, essential for peace, sustainability, and the future of agriculture.

Dr. Pathak speaking on the occasion of world water day

Strength in Every Step:
Celebrating International Women's Day

On March 8, 2024, International Women's Day was celebrated with great enthusiasm across various divisions of IARI, honoring the resilience, achievements, and contributions of women in agriculture and science. At the Division of Agricultural Statistics, the celebrations were vibrant and engaging, featuring a Rangoli Competition that showcased creativity, a Pink Walkathon symbolizing unity and empowerment, an insightful Women's Day Lecture, and a students' cultural program filled with performances that paid tribute to the spirit of womanhood. The day was a powerful reminder of the role of women in shaping the future of science, research, and innovation. With a blend of artistic expression, intellectual discourse, and collective celebration, IARI reaffirmed its commitment to fostering gender equality and empowering women in every sphere of academia and agriculture.

"SDG 5 champions gender equality, empowering women through equal opportunities for a sustainable and inclusive future."

Glimpses from Women's day celebrations

Sowing Knowledge, Harvesting Insights:
Field Day on PGR Management

On November 14, 2024, the lush fields of IARI and NBPGR Farm, Pusa, became a dynamic learning ground as students engaged in an immersive Field Day experience. The event provided a unique platform for students to interact with expert breeders, exploring diverse aspects of taxonomy, breeding, and plant genetic resource (PGR) management.

Dr. Sunil Archak, Professor, PGR leading a field team of students on the occasion

Amidst the fields, students gained firsthand insights into modern breeding techniques, varietal selection, and conservation strategies, deepening their understanding of genetic diversity and crop improvement. The interactive discussions fostered a spirit of collaborative learning, reinforcing the significance of field-based training in agricultural research. The Field Day not only strengthened student-breeder engagement but also underscored the importance of preserving and utilizing plant genetic resources for future food security, making it a truly enriching experience for all participants.

Earth's Palette:
Celebrating World Soil Day with Art & Awareness

December 4, 2025, the Division of Soil Science and Agricultural Chemistry marked World Soil Day 2024 with a unique and creative initiative— a Workshop-cum-Competition titled "*Exploring the Colours of Natural Soil Painting: A Hands-on Experience with Earth's Palette*." Blending science with art, this hands-on workshop allowed participants to explore the natural hues of soil, transforming them into expressive artworks that celebrated the richness and diversity of the very foundation of life—soil. Through this interactive experience, students and researchers deepened their appreciation for soil health, conservation, and its role in sustainable agriculture. The event not only showcased the artistic potential of soil but also reinforced the message of preserving and protecting this precious resource, making World Soil Day 2024 a vibrant and thought-provoking celebration!

To commemorate World Soil Day on December 5, 2024, the students and faculty of the Division of Soil Science and Agricultural Chemistry actively participated in an awareness program held in Mirpur village, Aligarh district, Uttar Pradesh. The initiative focused on enhancing soil fertility and improving crop productivity, fostering community engagement and knowledge-sharing among farmers and agricultural enthusiasts.

Students with their artistic creations made using soil colours

Honoring the Mentors:
A Heartfelt Tribute on Teachers' Day

IARI came alive with gratitude and celebration as various divisions marked Teacher's Day with heartfelt tributes, engaging activities, and student-led initiatives.

As part of the celebrations, the Graduate School organized the Teacher's Day Lecture, featuring Prof. Appa Rao Podile, Former Vice Chancellor, University of Hyderabad, as the speaker delving into "*Drivers of Change in Higher Education*". The event was presided over by Prof. Shanti Lal Mehta, Former Vice Chancellor, MPUAT, Udaipur, and Former DDG (Education), ICAR, New Delhi. In his thought-provoking and reflective address, Prof. Rao emphasized the importance of diversity in higher education, the need for mental health awareness, and the integration of artificial intelligence in learning. He also highlighted the urgency of addressing the skills gap and the necessity of reimagining degree programs and courses to align with contemporary learner demands. Additionally, he discussed the role of massive open online courses (MOOCs) in enhancing learning opportunities, advocating for an education system that is adaptable, inclusive, and future-ready.

Dr. Appa Rao Podile, delivering the lecture

Modern education should allow learners to chose what they wanted to learn effortlessly

The Division of Molecular Biology and Biotechnology students organized a special event, expressing gratitude through performances and speeches, recognizing mentors' dedication to education and research. Students and faculty were engaged in interactive sessions, fun activities, and discussions, strengthening teacher-student bonds.

Swachhata Hi Seva 2024: A Commitment to Cleanliness

IARI successfully concluded the *Swachhata Hi Seva* program, a cleanliness drive held from September 17 to October 2, 2024. Under the guidance of the Director and Joint Directors, students, faculty, and staff actively participated in this initiative, reinforcing their dedication to a cleaner and greener environment.

Throughout the two-week-long program, volunteers undertook extensive cleaning efforts across the IARI campus, enhancing the serenity of its lush greenery. This initiative not only improved the aesthetic appeal of the campus but also promoted environmental sustainability.

Beyond physical cleanliness, the event played a significant role in instilling social awareness about hygiene and sanitation. Participants embraced this program as a pledge to the nation, emphasizing the importance of cleanliness in both public and private spaces. The campaign also strengthened social and cultural harmony, as individuals from diverse backgrounds came together with a shared mission.

The *Swachhata Hi Seva* drive culminated on October 2, 2024, marking Gandhi Jayanti, a day dedicated to the ideals of Mahatma Gandhi, who championed cleanliness and self-discipline. The event concluded with reflections on the significance of maintaining cleanliness and a renewed commitment to carrying forward this mission beyond the program.

Through this initiative, IARI reaffirmed its role as a leader in sustainable and community-driven efforts, setting an inspiring example for institutions across the country.

Event was marked with large participation from students and faculty

Mind Matters:

IARI Hosts Interactive Workshop on Workplace Mental Health

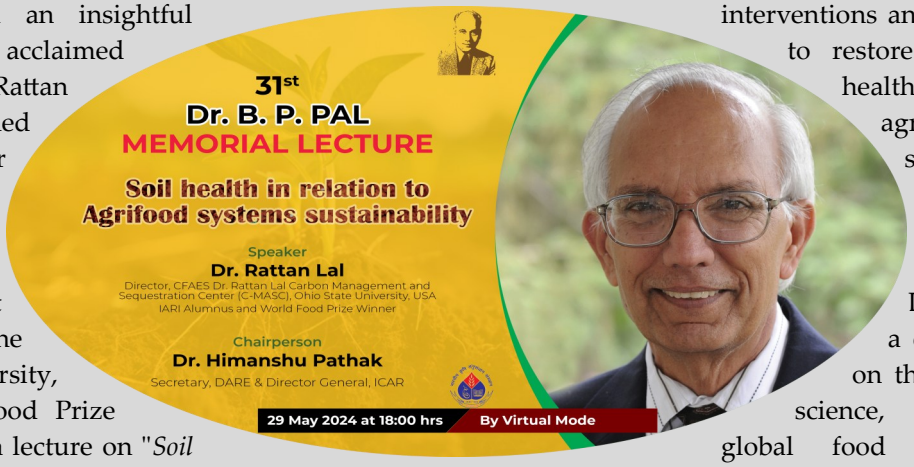
On World Mental Health Day (10th October 2024), IARI in collaboration with the Brain Behaviour Research Foundation of India (BBFRI), organized an online interactive workshop focusing on this year's theme: "It is Time to Prioritize Mental Health in the Workplace." This engaging session brought together faculty and staff to discuss the importance of mental well-being in professional settings. Experts shared valuable strategies for stress management, work-life balance, and fostering a positive workplace culture, emphasizing the need to break the stigma surrounding mental health. The workshop encouraged open dialogue, self-care practices, and institutional support mechanisms to create a healthier, more resilient work environment. By prioritizing mental wellness alongside professional growth, IARI continues to champion a holistic approach to workplace well-being, ensuring that productivity thrives in harmony with mental health. The event served as a powerful reminder that a mind at peace is the foundation of success.

Mental health is just as important as physical health. Care your colleagues' mental well-being as yours….

Nurturing the Earth:

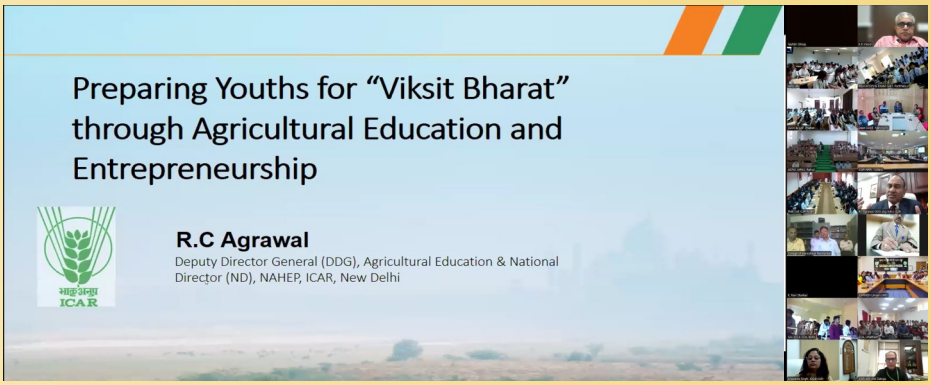
31st Dr. B.P. Pal Memorial Lecture

The 31st Dr. B.P. Pal Memorial Lecture was organized on 29th May 2024 by the Graduate School, IARI, New Delhi, in collaboration with the Genetics Club through virtual mode. The event featured an insightful address by globally acclaimed IARI alumnus, Prof. Rattan Lal, distinguished University Professor of Soil Science & Director, CFAES Rattan Lal Center for Carbon Management and Sequestration, The Ohio State University, USA, and World Food Prize laureate. Delivering a lecture on "*Soil Health in Relation to Agrifood Systems Sustainability*," Prof. Lal emphasized the critical role of soil conservation, carbon sequestration, and regenerative agriculture in ensuring global food security and environmental resilience. He highlighted sustainable soil management strategies that can mitigate climate change, enhance biodiversity, and secure productive agrifood systems. The prestigious session was presided over by Dr. Himanshu Pathak, Secretary, DARE & Director General, ICAR, who reinforced the need for scientific interventions and policy frameworks to restore and maintain soil health for long-term agricultural sustainability. This memorial lecture, dedicated to the pioneering legacy of Dr. B.P. Pal, served as a compelling discourse on the intersection of soil science, sustainability, and global food systems, inspiring researchers and policymakers to work towards a greener, healthier, and food-secure future.



Empowering Youth for *Viksit Bharat*:
Observing Agricultural Education Day 2024

On December 3, 2024, the ICAR-Indian Agricultural Research Institute (IARI), New Delhi, celebrated Agricultural Education Day through a virtual event, marking the birth anniversary of India's first President and the first Union Minister of Food & Agriculture, Shri Rajendra Prasad. This occasion served as a reminder of the pivotal role of agricultural education in shaping the nation's future. The event featured an insightful and thought-provoking lecture by Dr. R.C. Agrawal, Deputy Director General (Agricultural Education), ICAR, on "Preparing Youths for 'Viksit Bharat' through Agricultural Higher Education". Dr. Agrawal emphasized the importance of equipping young minds with cutting-edge knowledge, skills, and research opportunities to drive innovation, sustainability, and self-reliance in Indian agriculture.



The session commenced with a warm welcome by Dr. Anil Dahuja, Coordinator, IQAC. Dr. Anupma Singh, Joint Director (Education) & Dean, IARI, provided an overview of the significance of Agricultural Education Day and introduced the distinguished speaker. Through this event, IARI reaffirmed its commitment in reinforcing the critical role of education in achieving a self-sufficient and progressive India. The discussions ignited fresh perspectives on how agricultural education can be a catalyst for national development, ensuring a resilient and thriving agrarian economy.

Beyond Borders:
Exploring Global Avenues in Agricultural Education

To empower young minds with global opportunities, the Pusa Graduate School Students' Union (PGSSU), IARI, organized a Brainstorming Session on "*Overseas Opportunities for Higher Education in Agricultural Sciences*" on November 17, 2024, in online mode. The session featured insightful talks by Ms. Renuka Vallarapu, Senior Management Analyst, Seattle University, USA, who spoke on "Beyond Borders: Cultivating a Global Career – Navigating Study Abroad Options for Indian Graduates", and Mr. Dattatray G. Bhalekar, Ph.D. Scholar, Washington State University, USA, who shared practical insights on "*Mastering the Path to Higher Education in the USA: Tips and Strategies*". Ms Renuka outlined various strategies to seek academic opportunities in the US and emphasized that social media play a significant role in crafting student profiles. She offered to help anyone seeking advices on identifying suitable academic positions and crafting a winning statement of purpose. Mr. Bhalekar shared his experiences in moving to WSU from IARI and guided the students in preparing for the global educationThe session was chaired by Dr. R.S. Paroda, Chairman, TAAS, New Delhi; President, IARI Alumni Association and Former Secretary, DARE & DG, ICAR, while Dr. Anupama Singh, Joint Director (Education) & Dean, ICAR-IARI, graced the event as the Guest of Honour. Through expert guidance, first-hand experiences, and strategic insights, the session provided aspiring scholars with a roadmap to global educational prospects, fostering aspirations for international academic excellence in agricultural sciences.

IARI Alumni Association:
Strengthening Bonds, Shaping the Future

The IARI Alumni Association (IAA) has been actively fostering connections between its esteemed alumni and the current generation of students and faculty, through a series of impactful events in 2024. From thought-provoking lectures to a grand alumni meet, these initiatives have strengthened IARI's vision of becoming a global leader in agricultural research and education.

IARI Alumni Meet & National Symposium

On June 22, 2024, the newly elected Executive Committee of IAA hosted the much-awaited IARI Alumni Meet, featuring the felicitation of eminent alumni, an Alumni-Student interaction session, a GB meeting, and a National Symposium on *Transforming IARI into a Global Leader in Agricultural Research and Education: An Alumni Perspective*.

Distinguished panelists of the symposium

A distinguished panel discussion on IARI's transformation into a Global University and an open session on mobilizing resources for IARI's global aspirations were key highlights of the symposium.

Hon'ble Union Minister of Agriculture & Farmers Welfare and Rural Development, Shri Shivraj Singh Chouhan, graced the event as the Chief Guest, urging the scientific community to empower small and marginal farmers and accelerate India's self-reliance in pulses and oilseeds. The Alumni Meeting was presided over by Dr. R.S. Paroda, President, IAA.

IAA's 1st Foundation Day Lecture

Marking a milestone in IAA's journey, on December 2, 2024, the First Foundation Day Lecture was delivered virtually by Prof. Govindarajan Padmanaban, Former Director, IISc, Bengaluru, on "60+ Years of Science at IISc". The session offered valuable insights into the evolution of scientific research and its profound impact on society.

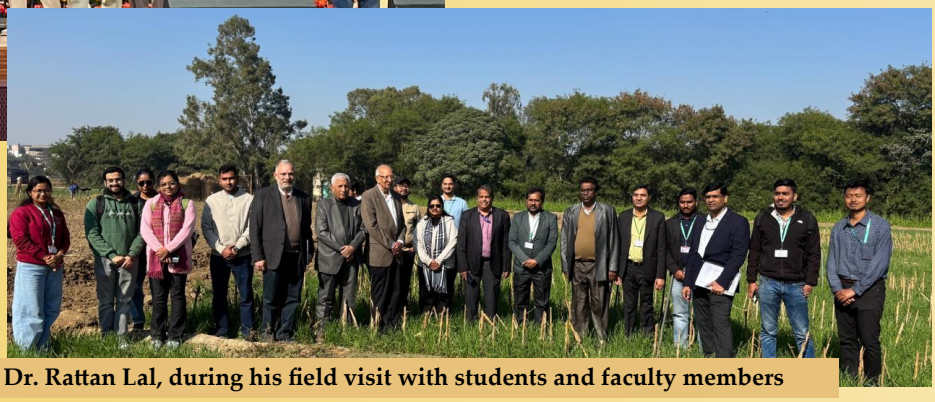
Book Release & Lecture by Prof. Glenn Denning

Continuing the tradition of engaging with globally renowned scientists, IAA organized a book release event for "Universal Food Security", authored by Prof. Glenn Denning, Former DG, ICRAF. Following the launch, Prof. Denning delivered an insightful lecture on "Universal Food Security: A Global Perspective with Implications for India". The session concluded with an interactive discussion, allowing faculty and students to exchange ideas with the distinguished speaker.

Visit by Prof. Rattan Lal, World Food Prize Laureate

In the IAA Lecture & Interactive Session Series, on December 11, 2024, internationally acclaimed Soil Scientist and IARI alumnus, Prof. Rattan Lal, delivered a hybrid-mode lecture on carbon management and sustainable soil health at the Assembly Hall of the Agricultural Engineering Division, ICAR-IARI. Earlier that day, Prof. Lal visited various labs and ongoing field experiments, interacting with researchers to explore advancements in soil carbon sequestration and sustainable agricultural practices.

These highly engaging events reaffirm IAA's commitment to nurturing a strong alumni network and leveraging their expertise to inspire future generations. As IARI strides towards global recognition in agricultural sciences, its alumni continue to be the torchbearers of innovation, research, and sustainable development.


Dr. Rattan Lal, during his field visit with students and faculty members

Empowering Future Agri-Leaders:
IARI Student Clubs Garner Momentum

In a significant step towards enhancing student engagement and holistic development, the Indian Agricultural Research Institute (IARI) has launched six student clubs aimed at fostering leadership, creativity, and teamwork. These clubs—Arts, Photography & Film Making, Literary, Dramatics, Music, Nature, and Sci-Tech—offer students platforms to explore diverse interests, develop essential skills, and build valuable networks beyond academics.

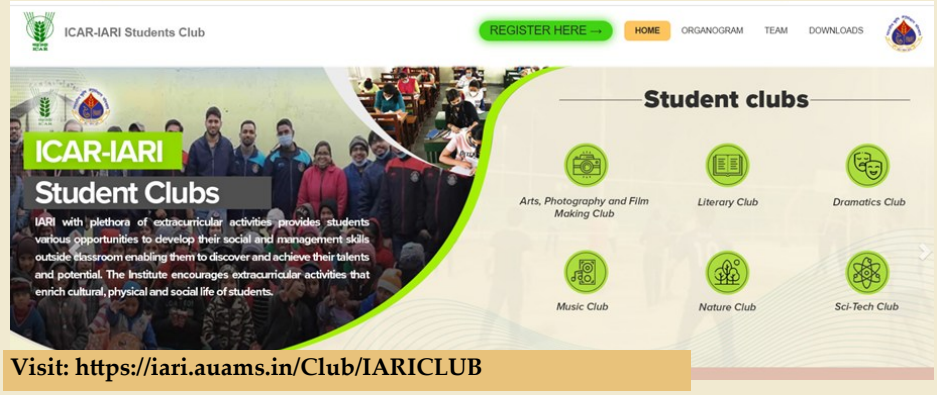
IARI Student club advisors

To introduce students to these initiatives, IARI organized an orientation session on May 29, 2024, at the Dr. B.P. Pal Auditorium. Led by Dr. P.R. Shashank (Senior Scientist, Division of Entomology), Club Coordinator, under the guidance of Dr. Anupama Singh, Joint Director (Education) and Dean, the session familiarized undergraduate students with the clubs and their Standard Operating Procedures (SOPs). Club advisors provided insights into their respective domains, encouraging participation and collaboration. Around 80 UG students attended, marking the beginning of an interactive and enriching journey within the IARI community.

Ms. Paavan addressing students

Further strengthening this initiative, on July 4, 2024, Ms. Paavan, an esteemed alumnus of O.P. Jindal Global University and former head of the Psychology Society, shared her experiences and strategies for student club management. Addressing undergraduate student representatives, she emphasized the role of student clubs in fostering leadership, skill development, and networking opportunities. She also highlighted the challenges she faced in leading a student society and the innovative strategies she used to enhance its impact. The session was observed by Dr. Harshvardhan Choudhary (Associate Dean, UG) and Dr. Monica Joshi (Associate Dean, Hubs) to ensure a seamless discussion, while Dr. Shashank and Dr. Veda Krishnan (Senior Scientist, Division of Biochemistry) served as conveners. Eleven student representatives and club advisors actively participated, exchanging ideas and insights.

Aligning with IARI's vision of producing well-rounded graduates, these student-driven clubs will play a crucial role in shaping future-ready professionals equipped with both technical expertise and essential life skills. To facilitate seamless participation and management, a dedicated subsite has been created under AUAMS.



Visit: https://iari.auams.in/Club/IARICLUB

Adopt a Plant, Nurture the Future:
IARI Nature Club's Green Initiative on World Environment Day

In a bid to foster environmental stewardship, the Nature Club launched the *Adopt a Plant* initiative on World Environment Day, June 5, 2024. The event was inaugurated by Dr. A.K. Singh, Director & Vice-Chancellor alongside Dr. Anupama Singh (Joint Director, Education), Dr. P.K. Bhowmik and Dr. Ashish Khandelwal (Club Advisors). The initiative saw enthusiastic participation from faculty, staff, and students, all united in their commitment to sustainability. Under the program, 69 first-year students, divided into 26 groups, were assigned *Amaltas* (*Cassia fistula*) and *Gulmohar* (*Delonix regia*) saplings to nurture for the next four years. This hands-on approach ensures long-term care while instilling a deep-rooted sense of responsibility for the environment. Event highlighted the importance of sustainable green initiatives. The day concluded with a renewed commitment to nature, marking a significant step toward a greener and eco-conscious campus.

Tree planting at Phalguni Hostel

C. Viswanathan (Joint Director, Research), and Dr. R.N. Padaria (Joint Director, Education), Dr. P.R. Shashank (Club Coordinator), Dr.

Each sapling was offered to one set of students to be cared for four years....

Pedal for the Planet:
Cycling Event Champions Sustainability

The Nature Club set the wheels of sustainability in motion with its exciting "Pedal for the Campus" cycling event. Designed to promote environmental consciousness and fitness, the event saw an enthusiastic turnout of 45 first-year UG students embracing the spirit of sustainability on two wheels.

The 4.5 km route took cyclists through some of the most scenic spots on campus, including the IARI Selfie Point, Pusa Gol Chakar, lush green fields, and the WTC road. The ride began at the MOHR main gate, officially flagged off by Dr. Prolay Bhowmik (Club Advisor) and Dr. Shashank P.R. (Club Coordinator). Adding to the excitement, Dr. Anupama Singh, Dean & Joint Director (Education), graced the occasion, inspiring students to embrace an active and eco-friendly lifestyle.

More than just a race, "Pedal for the Campus" was a movement—encouraging students to adopt greener choices and contribute to a more sustainable campus.

Dr. Anupama Singh, Dr. Anil Sirohi and Dr. D.K. Singh leading the cycling campaign

Magic on Canvas:
Imaginations Take Colours

The Art, Photography, and Filmmaking Club, in collaboration with the Sci-Tech Club, brought creativity to the forefront with two engaging competitions that blended art, innovation, and festive spirit.

As part of *Deeksharambh*, on October 19, 2024 the clubs organized an exciting painting competition themed "Innovations in Agriculture," where 40 first-year UG students (Batch 2024) showcased their artistic interpretation of modern farming advancements.

The event transformed canvases into vivid depictions of precision farming, sustainable techniques, and futuristic agricultural innovations, proving that creativity and science go hand in hand. More than just an artistic endeavor, the competition encouraged students to think critically about the future of agriculture, setting a dynamic tone for upcoming club activities.

Bringing festive cheer to campus, on December 21, 2024, the Club hosted the "Christmas Magic on Canvas" poster-making competition. Around 25 participants from various batches brought the holiday spirit alive with stunning posters featuring twinkling Christmas trees, cozy winter scenes, and the warmth of the season. Das Sai Rajan, first year undergraduate student won the 1st Prize. The event was attended by Dr. Bipin Kumar (Club Advisor) and Dr. Shashank P.R. (Club Coordinator), who awarded certificates to the winners.

Both events highlighted the power of artistic expression in fostering creativity, collaboration, and a sense of community. As IARI continues to encourage holistic student development, such initiatives provide a platform for students to explore imagination, innovation, and inspiration beyond the classroom.

Prize winning drawing by Das Sai Ranjan

Students during and after the event, with club advisors

Creativities with creators……..

Feathered Foundations:
Creating Homes for Our Winged Visitors

On December 22, 2024, the Nature Club took a creative leap into conservation with "Feathered Foundations"—a hands-on birdhouse -making activity at Vasanth TV Hall, IARI. The initiative aimed to provide safe nesting spaces for wild birds while fostering awareness about avian conservation among club members and in the campus. With hammers, nails, and a shared passion for nature, participants enthusiastically crafted birdhouses, learning the importance of preserving bird habitats in urban landscapes. The event emphasized how small efforts can have a significant impact on local bird populations, encouraging students to take proactive steps in wildlife conservation.

Students with their bird-houses (right) with Dr. Harshwardhan Chaudhary

Dancing into the Minds:
Flaunting Creative Rhythm

The dramatics and music clubs of IARI set the stage ablaze with two spectacular events, celebrating dance, music, and theatrical talent among students. As part of *Deeksharambh* 2024, the club orchestrated a mesmerizing cultural evening, featuring soulful musical performances, energetic dance sequences, and thought-provoking theatrical acts. With over 80 students participating, the event transformed the stage into a hub of artistic expression, friendship, and cultural appreciation within the IARI community. The club hosted a high-energy dance audition, where over 45 aspiring dancers showcased their skills, creativity, and passion. From classical elegance to contemporary moves, participants impressed judges with their dedication and enthusiasm. The auditions provided a platform for students to express themselves beyond academics, fostering a vibrant cultural spirit at IARI.

These events reinforced IARI's commitment to holistic student development, proving that the institute is not just a center of academic excellence but also a thriving cultural and artistic hub.

Dramatic club stole the show during *Deeksharambh*

Scinnovation:

Scaling New Frontiers

The Sci-Tech Club of IARI has been at the forefront of fostering scientific curiosity, innovation, and teamwork through a series of dynamic events and competitions. From thought-provoking challenges to hands-on activities, the club has provided students with platforms to explore their creativity and technical prowess.

To emphasize sustainability and technological advancements, the Sci-Tech Club hosted *Sustainovation*, a unique art competition where students created posters depicting groundbreaking innovations. Encouraging teamwork and critical thinking, the event challenged students to translate scientific concepts into creative visual narratives. Taking scientific exploration to a national scale, the club collaborated with INSA-INYAS to launch *Full STEM Ahead*, a prestigious E-Essay Writing Competition. The event attracted participants from across India, inviting them to express their insights on key STEM topics. The competition concluded with the announcement of winners in November 2024, celebrating young scholars' analytical and research-driven writing skills.

In a move to nurture hands-on technical expertise, the Sci-Tech Club initiated *Bio-Hack*, a program dedicated to assembling a skilled team for national and international hackathons. With 21 passionate students actively collaborating through an online platform, the initiative has fostered problem-solving skills in electronics, robotics, and engineering, positioning IARI as a hub for emerging tech talent. Beyond technology, the club extended its efforts to agricultural education by organizing *Agriculture Education Day* on December 3, 2024. Young children were introduced to farming practices through interactive field visits, engaging them in storytelling sessions and hands-on learning experiences to cultivate early awareness of agriculture's significance.

To strengthen teamwork and interpersonal connections, the club concluded the year with *Nexus*, an ice-breaking and team-building event on December 28, 2024. Featuring origami challenges, interactive games, and collaborative activities, *Nexus* fostered camaraderie between juniors and seniors, promoting collaboration and creativity within the IARI student community.

Skills Open Doors to Success!

IARI Strengthens Agripreneurship, Skill Development, and Career Opportunities for Students

In a strategic move to foster agripreneurship among students, the Academic Council of ICAR-IARI has approved two new courses: *Foundational Entrepreneurship Development* (compulsory for UG Third Year, Semester I) and *Entrepreneurship Opportunity Analysis and Strategy*. These courses aim to equip students with the knowledge and skills to analyze entrepreneurial

opportunities and navigate the startup ecosystem. Additionally, the Zonal Technology Management and Business Plan Development (ZTM & BPD) unit of IARI is actively supporting external startups while also incubating IARI students across UG, PG, and Ph.D. levels, transforming their ideas into viable businesses under the *ICAR-IARI Student Startup Scheme.*

To further refine these courses, a brainstorming session was held on May 22, 2024, where Dr. Suman Khanuja, Adjunct Faculty, IARI & Former Director, CMAP, Lucknow, provided insights on encouraging students to venture into entrepreneurship. The session, chaired by Dr. Anupama Singh, Dean & Joint Director (Education), IARI, aimed at restructuring the curriculum to enhance its impact.

Complementing academic programs, IARI is expanding skill development initiatives through two diploma courses—*Data Science and Analytics* (offered by IASRI, New Delhi) and *Soil Testing and Nutrient Management* (from the Division of Soil Science and Agricultural Chemistry). These courses align with ICAR Education Division guidelines and the National Education Policy (NEP) 2020, focusing on sustainable agriculture and equipping students with industry-relevant skills.

An online session for the Reliance Foundation Scholarship (RFS) was conducted on 30th October 2024 for first-year undergraduate/Post Graduate students of IARI and its hubs to encourage the students to compete for the RFS.

To enhance career prospects for students, a Placement Cell has been established under the chairmanship of Dr. Vageeshbabu S. Hanur at IARI-IIHR, offering skill-building programs and industry exposure. As part of its initiatives, a Skill Development Training Program was conducted for senior PG students on *Statistical Methods for Research Data Analysis using R,* culminating in a Certificate of Completion. The Center for International Programs and Collaboration (CIPC), in collaboration with professors, also provided guidance training for PG students preparing for Agricultural Research Service (ARS) interviews in horticultural subjects at the Agricultural Scientists Recruitment

Dr. Suman Khanuja, addressing students

Board (ASRB). In an effort to bridge academia and industry, an interactive session between horticultural industry leaders and PG students was held at ICAR-IIHR, Bengaluru, with the esteemed presence of Dr. Sawant. The session offered valuable networking opportunities and insights into the latest industry trends. Placement training was effectively coordinated by Dr. Vageeshbabu S. Hanur (PS & Chairman, Placement Cell), Dr. R. Venugopalan (Chairman, PGE Cell), and other PGE Cell members.

Additionally, an awareness session on the Reliance Foundation Scholarship (RFS) was conducted online on October 30, 2024, to encourage first-year UG and PG students of IARI and its hubs to apply for this prestigious scholarship and support their academic pursuits.

On January 7, 2025, Dr. K.S. Thyagarajan, Head of Corporate Affairs & Sustainability (Agri) at PI Industries Ltd, delivered an insightful lecture at the Division of Agricultural Engineering, ICAR-IARI, on *Job Opportunities for Agricultural Students in the Corporate Sector*. The session provided students with a deeper understanding of the evolving career landscape in agriculture and sustainability, inspiring them to explore diverse opportunities beyond traditional roles.

Through these integrated efforts, IARI continues to pave the way for innovation, entrepreneurship, and career excellence, ensuring that its students are well-prepared to contribute to the agricultural sector and beyond.

At IIHR, training imparted orientation to students on career scopes in agriculture

Learning to Practice:
Experiential Learning Opens

The Experiential Learning Unit (ELU) for Drone Robotics and Machine Learning was inaugurated on March 22, 2024 at the Division of Agricultural Physics, ICAR-IARI, by Dr. Himanshu Pathak, Hon'ble Director General, ICAR, and Secretary, DARE. This state-of-the-art centre is designed to equip students and researchers with hands-on expertise in emerging technologies, addressing the growing demands of the modern tech-driven agricultural landscape.

Experiential learning plays a crucial role in bridging the gap between theoretical knowledge and real-world applications by fostering critical thinking, problem-solving skills, and adaptability. The Experiential Learning Centre for Drone Technology and Machine Learning embodies this approach by offering a practical and immersive environment where students can engage in drone experimentation, machine learning applications, and robotics research. The facility is equipped with advanced laboratories, simulation environments, and high-tech hardware, providing learners with the tools necessary to develop innovative solutions for precision agriculture, automation, and beyond.

By integrating experiential learning into its curriculum, ICAR-IARI aims to prepare individuals for rewarding careers in cutting-edge technological domains while simultaneously contributing to industry and societal advancement. The centre is expected to serve as a hub for innovation, research, and skill development, empowering students and professionals to drive transformative advancements in agriculture and allied fields.

Inauguration by Dr. Himanshu Pathak, Secretary, DARE & Director General, ICAR

Empowering Minds:
Capacity Building & Training Spotlight

Academia-Industry Linkage: A Dynamic Student Interaction with Sh. Sunil Johnson

To equip students with real-world industry insights, the Division of Agricultural Engineering organized an interactive session with Sh. Sunil Johnson, Business Head of Krish-E, Mahindra's AgriTech venture, and former National Sales Head, Mahindra Tractors. As part of the division's skill-building initiatives, the session provided students with a unique opportunity to explore agricultural technology, mechanization, and precision farming. Sh. Johnson shared valuable insights on emerging trends, market dynamics, and the role of AI, IoT, and innovation in modern farming. The interaction encouraged students to engage, inquire, and gain a deeper understanding of career pathways in AgriTech, reaffirming the division's commitment to holistic learning, skill development, and industry readiness.

Shri Sunil Johnson interacting with students

From Campus to Corporate:
Alumni Insights for Future scientists

The disciplines of Agricultural Statistics and Computer Applications organized a series of online student-alumni interaction sessions, providing valuable insights into industry trends, research opportunities, and career growth.

In Agricultural Statistics, two sessions featured distinguished alumni working in multinational corporations. Dr. Pratyush Das Gupta, Senior Consultant at Deloitte, addressed students on 26 January 2024, sharing his professional experiences and challenges. Similarly, on 2 February 2024, Dr. Shwetank Lall, Lead Math-Architect at AvatarUX Studios, provided insights into the evolving role of statistical applications in industry.

The Computer Applications discipline also hosted multiple interactive sessions with accomplished alumni. On 22 March 2024, Mr. Sanjeev Kumar, Vice-President at Lutron, USA, discussed future coding skills, while Mr. Ashutosh Karna, Principal Technologist at HP Inc., Spain, engaged students on 3D printing trends on 29 January 2024. Additionally, on 13 January 2025, Dr. Dharmendra Saraswat, a distinguished faculty member at Purdue University, guided students on the SERB Fellowship, offering research insights and motivating them toward academic excellence.

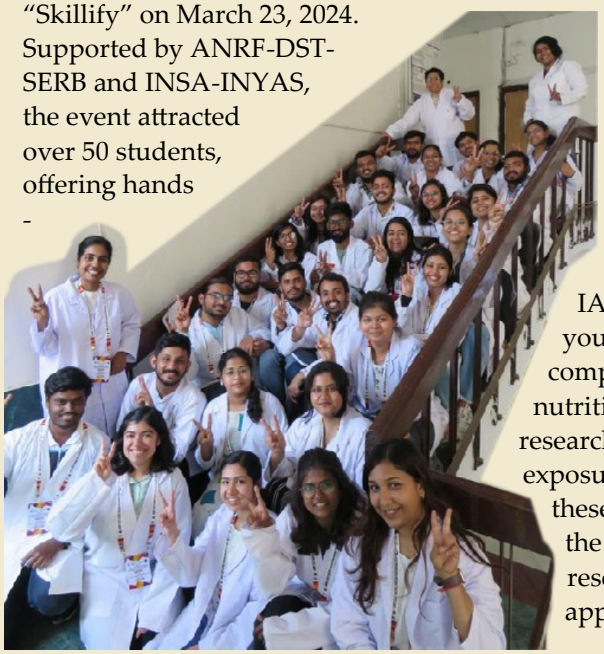
Dr. Sanjeev Kumar

Dr. Dharmendra Saraswat, interacting with students

Skill Building Workshops on Advanced Tools and Assays in Biochemistry for Students

The Division of Biochemistry at ICAR -IARI, New Delhi, hosted a high-end workshop (Karyashala) titled "Food Matrix Characterization Techniques: Nutrients to Nutrient Bioavailability" from March 19–23, 2024. Sponsored by ANRF-DST-SERB under the ABHYAS program of the Accelerate Vigyan Scheme, the workshop, led by Dr. Veda Krishnan, provided 25 meritorious students with hands-on training in advanced food matrix characterization techniques. Participants engaged in expert-led discussions, live demonstrations, and interactive sessions, gaining insights into cutting-edge analytical methodologies and innovations in food biochemistry and nutrient bioavailability.

Furthering its commitment to skill development, the Division of Biochemistry also organized "Skillify" on March 23, 2024. Supported by ANRF-DST-SERB and INSA-INYAS, the event attracted over 50 students, offering hands-on training in biochemical techniques. Through dynamic discussions, expert demonstrations, and interactive learning, participants refined their scientific skills and explored industry-relevant methodologies.

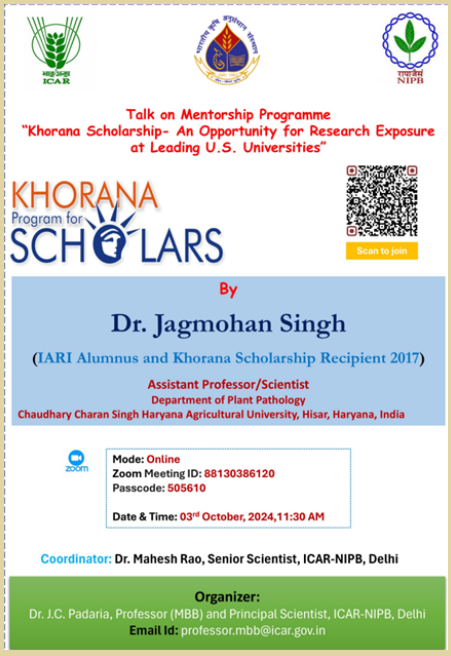


Both initiatives reinforced IARI's dedication to nurturing young researchers with essential competencies to advance nutritional science and biochemical research. By providing practical exposure and scientific expertise, these programs continue to bridge the gap between academic research and real-world applications.

Unlocking Global Research Opportunities:

Mentorship Talk on Khorana Scholarship

The Division of Molecular Biology and Biotechnology, ICAR-NIPB, Delhi, organized an insightful online mentorship talk on the prestigious Khorana Scholarship on October 3, 2024. The session featured Dr. Jagmohan Singh, Assistant Professor/Scientist, Department of Plant Pathology, CCS HAU, Hisar, Haryana, who delivered an inspiring talk titled "*Khorana Scholarship: An Opportunity for Research Exposure at Leading U.S. Universities*." Aimed at PG and Ph.D. students, the talk provided a comprehensive overview of the scholarship's application process, selection criteria, and the invaluable research experiences it offers at top-tier institutions in the U.S.. Through engaging discussions, Dr. Singh shared first-hand insights, tips, and success strategies, motivating young scholars to pursue global research opportunities and expand their scientific horizons.



Hands-On Discovery:
Practical Training in Molecular Biology & Biotechnology

The Division of Molecular Biology and Biotechnology at ICAR-NIPB, New Delhi, hosted an immersive hands-on workshop from November 19 to 21, 2024, designed to equip BSc and BTech life sciences students with essential molecular biology and biotechnology techniques. Organized under the Society for Plant Biochemistry and Biotechnology (SPBB), this dynamic training program provided young scholars with practical exposure to cutting-edge lab techniques, experimental workflows, and real-world applications in biotechnology. Through interactive demonstrations, expert mentorship, and guided laboratory sessions, students gained fundamental skills and hands-on experience, bridging the gap between classroom learning and advanced scientific research. The workshop fostered curiosity, confidence, and a deeper understanding of molecular sciences, empowering the next generation of researchers to explore the frontiers of biotechnology.

Participating students during the training session

Nurturing Soil, Nurturing the Future:
Advanced Training on Carbon Management

Students from the Division of Soil Science and Agricultural Chemistry actively participated in the SERB-DST sponsored training program, "Managing Carbon to Improve Soil Health and Combat Climate Change," held from March 1 to 23, 2024. Hosted by the Division of Soil Science and Agricultural Chemistry, this intensive program provided participants with cutting-edge knowledge and hands-on training on sustainable soil management practices. Through expert lectures, interactive discussions, and practical demonstrations, students explored the critical role of carbon dynamics in enhancing soil fertility, mitigating climate change, and ensuring long-term agricultural sustainability. This initiative not only strengthened their scientific understanding but also empowered them to become agents of change in sustainable agriculture and environmental stewardship.

Participants during the training session

Awards, Recognitions and Achievements

Exceptional Achievements Recognized during 62nd Convocation

The 62nd Convocation of the ICAR-Indian Agricultural Research Institute (IARI) held on Feb 9, 2024 at New Delhi celebrated outstanding academic achievements, with distinguished students receiving prestigious awards for their excellence in research and academics.

Dr. R.N. Singh

Dr. R. N. Singh, a Ph.D. student in Agricultural Physics, was honored with the IARI Merit Medal for the best Ph.D. thesis and the K.N. Synghal Gold Medal for the best Ph.D. thesis in the Natural Resource Management (NRM) division.

Dr. Sheel Yadav

Sheel Yadav, a Ph.D. scholar in Molecular Biology and Biotechnology, was conferred with the **IARI "Best Student of the Year Award"** by the Honorable President of India, Smt. Droupadi Murmu, in recognition of outstanding academic and research contributions.

Ms. Jyotsna Verma, an M.Sc. student in Plant Genetic Resources, received the **IARI Merit Gold Medal**, a testament to her exemplary performance in postgraduate studies.

Ms. Jyotsna Verma

Dr. Sandeep Adavi

Dr. Sandeep Adavi, scholar from the Division of Plant Physiology was also awarded a **Gold Medal for Ph.D.**, highlighting his academic excellence.

Ms. Tuhina Ghosh

Adding to the accolades, Ms. Tuhina Ghosh, an M.Sc. scholar, received the **IARI Merit Medal** for her research on the "Effect of ZnO nano-particle-based priming on seed quality enhancement in tomato (*Solanum lycopersicum* L.) under salt stress." She was felicitated by the Honorable President of India.

Following the convocation ceremony different divisions did gave farewell to outgoing students. In this occasion, meritorious students were recognized by awards given by various organizations.

Dr. Ranabir Chakraborty

Dr. Ranabir Chakraborty, a Ph.D. student, was honored with the Dr. S.P. Raychaudhury Gold Medal Award 2024, presented by the Delhi Chapter of the Indian Society of Soil Science during the IARI Convocation 2024.

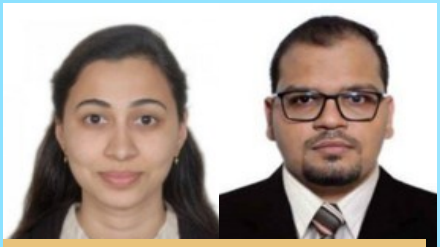
Dr. Ashvinkumar Katral

Dr. Ashvinkumar Katral, scholar from the Genetics Division has won IARI Gold Medal for his Ph.D. research on Development of multi-nutrient rich maize hybrids with high oil, high oleic acid and low palmitic acid.

The convocation was a momentous occasion, celebrating the dedication and scholarly excellence of young agricultural scientists contributing to India's agricultural advancements.

IARI Students Shine with Prestigious Awards

The Indian Agricultural Research Institute (IARI) continues to celebrate the exceptional achievements of its students, with several scholars receiving prestigious awards and global fellowships in recognition of their academic excellence and research contributions.



Dr. C. Bhat Dr. M. Dash

Adding to the list of academic accolades, Dr. Chaitra G. Bhat and Dr. Manoranjan Dash, both Ph.D. graduates, were jointly awarded the Professor D.J. Raski Academic Merit Award by the Nematological Society of India. The award was presented during the National Symposium, *"Nematodes: The Unseen Foes and Friends of Plant and Soil Health,"* held at the Indian Statistical Institute, Kolkata, from January 31 to February 2, 2024.

Dr. Avjit Ghosh Ms. A. Nymisha

Dr. Avijit Ghosh and Ms. Alapati Nymisha received the Dr. K.N. Synghal Memorial Award for their outstanding research, further solidifying IARI's reputation for excellence in agricultural sciences.

In recognition of exceptional research presentations, Mr. Rehan A, an M.Sc. student in Plant Genetic Resources, was honored with the

Mr. Rehan A.

Best Oral Presentation Award for his work on *"Optimization of Explant Type and Regeneration Media for Cryopreservation of Rubia cordifolia."* His presentation was part of the CAA-BASSD-2024 conference, organized by Kumaun University, Nainital, in collaboration with the Agro Environmental Development Society (AEDS) from March 1-3, 2024.

These prestigious recognitions underscore IARI's commitment to fostering excellence in agricultural sciences, with its students making significant contributions both nationally and internationally.

Ms. Raseela

Student of B. Tech (Biotechnology) III Year, Ms. Raseela N secured 2nd position in Orator's conclave conducted by NSS unit of Sri Ram College of Commerce, Delhi University in December 2024.

Monitoring Pests Smarter way

Varshan P.A., Kumar Vaibhav, and Aniket Raj, B.Tech (Ag. Engg.) II year students of IARI, New Delhi won Best Technical Presentation award for the presentation on "Smart Pest Management: Leveraging Machine Learning in Precision Agriculture" in All India Research Scholar Summit- 2024 organized by IIT Chennai during March 4- 7, 2024. Award was given by Hon'ble Governor of Tamil

Ms. Saptaparnee Ms. Jayashree

Jayashree Murmu and Saptaparnee Dey, Ph.D. students stood 1st and 2nd positions in workshop cum competition on "Exploring the Colours of Natural Soil Painting: A Hands on Experience with Earth's Palette" 2024 by the Division of SSAC and Delhi Chapter, ISSS.

More Honours

The Indian Agricultural Research Institute (IARI) continues to celebrate the remarkable achievements of its students, with several scholars receiving prestigious awards and fellowships for their outstanding research and academic contributions.

Soumyajit Ghoshal of the Agricultural Chemicals Division was honored with the Dr. M.S. Swaminathan Award for Outstanding Master Research in Agricultural and Allied Sciences at the 8th National Youth Convention on *"New Perspectives for Sustainable Agriculture & Livelihood Security,"* held on August 22-23, 2024.

Mohammad Waris

Lham Dorjee

Mohammad Waris has been conferred with the prestigious Netaji Subhas ICAR-International Fellowship by ICAR for his Ph.D. thesis project, marking a significant milestone in his academic journey.

For exceptional research in plant pathology, Dr. Lham Dorjee was awarded the Prof. M.J. Narasimhan Academic Award 2024 by the Indian Phytopathological Society for his best thesis work.

Mr. Kunal K, an M.Sc. student in Plant Genetic Resources, received the Dr. K.L. Mehra Memorial Award, instituted by the Indian Society of Plant Genetic Resources, New Delhi.

Students Move to Purdue for Global Research

On the global front, Mr. Selvaprakash R, a Ph.D. student in Agricultural Physics, was awarded the SERB-Overseas Visiting Doctoral Fellowship (OVDF) to pursue advanced research at Purdue University, USA, from August 2023 to January 2025. At Purdue, he is deepening his expertise in hybrid deep learning models, integrating LSTM, SegRNN, CNN, and GANdeep, to enhance the prediction of rice blast disease.

Mr. Abhradip Sarkar Ph.D. student in Agricultural Physics, has been awarded the SERB-Overseas Visiting Doctoral Fellowship (OVDF). He will be conducting research at the Geoinformatics, Ecosystem Management, and Soil Sustainability (GEMS) Laboratory, Purdue University, USA, from August 2024 to August 2025. His research focuses on managing soil health in the Indo-Gangetic Plains of India.

IARI Students are hard-working and mentored to meet challenges in modern agriculture.

These prestigious awards and global research opportunities reaffirm IARI's commitment to fostering excellence in agricultural sciences and empowering young researchers to make meaningful contributions to sustainable agriculture.

Hubs of Academic Excellence:

IARI Outreach Gaining Momentum

Entrepreneurship Programs and Exposure Visits

From March to September 2024, students from various ICAR institutes actively participated in entrepreneurship programs, industrial visits, research exposure tours, and academic celebrations, gaining hands-on knowledge in agriculture, biotechnology, and sustainable farming practices. Students of M.Sc.-MBB, Ms. Shivani Kanyal, Ms. Sejal Batra, and Ms. Dipti Ranjan, attended a one-week ESDP on "Sugarcane Propagation through Tissue Culture Techniques," while Ph.D. Plant Pathology students, Mr. Prakash Chandra Tripathi and Ms. Manasi Mishra, participated in an ESDP on "Development of Agri-preneurship through Healthy Settling Nurseries for Quality Sugarcane Planting Materials." These programs, sponsored by the Ministry of MSME, Government of India, were conducted at ICAR-IISR, Lucknow, from March 12-18, 2024.

IARI's academic hubs are a strong push toward decentralizing excellence in agricultural research and education while taking advantage of the regional institutes.

As part of their academic exposure, students visited various industrial and research facilities. On March 17, 2024, PG students of ICAR-IISR, Lucknow, visited Haidergarh Sugar Mill (Balrampur Chini Mill Group)

to understand sugarcane juice processing and sugar production. They also explored plant tissue culture laboratories, polyhouses, greenhouses, and farm facilities, gaining insights into modern sugarcane cultivation. Similarly, on July 5, 2024, UG students of ICAR-IISR, Lucknow, visited ICAR-CISH, Lucknow, to learn about fruit science research

and development. Their tour covered laboratories, orchards, and experimental facilities, providing valuable exposure to horticultural innovations. Further, on August 8, 2024, students of ICAR-CICR, Nagpur, visited the Biological Control Laboratory at the College of Agriculture, Nagpur (Dr. PDKV, Akola), where they explored mass production units

of *Trichoderma* and *Trichogramma*, biofertilizer and biopesticide production units, an Insect Museum, and the *Trichogramma* rearing unit. Additionally, IIAB, Ranchi students undertook a study tour to ICAR-National Research Centre for Orchids, Gangtok (Sikkim), and Krishi Vigyan Kendras (KVKs) in March 2024, focusing on horticulture and field applications. PG and Ph.D. students of IIAB, Ranchi, also visited BIT Mesra, Ranchi, for an exposure visit in biotechnology and applied agricultural sciences.

Across the Hubs

Deeksharambh for UG and PG Students

IARI successfully conducted its first *Deeksharambh* programme for newly admitted undergraduate (UG) and postgraduate (PG) students across various hub campuses. The orientation sessions, held from October 15 to 28, 2024, aligned with the New Education Policy and followed the guidelines set by the University Grants Commission (UGC) and the Graduate School – IARI.

In addition to on-campus activities, ICAR-IARI organized a series of online sessions to benefit students, covering crucial topics such as traffic rules, cyber security, and students' welfare policies. Distinguished speakers, including the Hon. Director General of ICAR and the Dean of IARI, addressed the students, providing insights into academic and professional growth.

The PG *Deeksharambh*, specifically designed for newly admitted postgraduate students of the 2024-25 academic year, took place from October 21 to 28, 2024. The initiative aimed to familiarize students with academic guidelines, institutional policies, and essential life skills, ensuring a smooth transition into their academic journey.

ICAR-CRIDA Marks International Day of Yoga with Special Session

Hyderabad, June 21, 2024 – The ICAR-Central Research Institute for Dryland Agriculture (CRIDA) observed the International Day of Yoga (IDY) with a dedicated yoga session led by expert instructors. Mr. Kishore Mishra and Mrs. Arrthi Mishra from Gandhi Gyaan Mandir, Koti, guided participants through various yoga postures and breathing exercises, emphasizing the significance of yoga for physical and mental well-being.

Sports Enthusiasm on Display at ICAR-IISR Foundation Day

Lucknow, February 16, 2024 – The Foundation Day celebrations of ICAR-Indian Institute of Sugarcane Research (IISR) saw enthusiastic participation in a series of sports events. Students competed in multiple athletic and team sports, including 100m and 200m races, javelin throw, discus throw, volleyball, cricket, and football. The event aimed to promote physical fitness and team spirit among participants.

Appraisal Visits:
Strengthening the Hub Campuses

Appraisal visits to ICAR-IIWBR Karnal Hub, and ICAR-CAZRI Jodhpur Hub arose lots of enthusiasm among the students and faculty. Karnal hub runs bacelors, masters and doctoral programs. In the 2023-24 academic session, 23 students enrolled in the B.Sc. program, while 16 students joined the M.Sc. program, specializing in Genetics & Plant Breeding (5), Agronomy (5), and Plant Pathology (6). Eight doctroral students are enrolled, with 3 in Genetics & Plant Breeding, 3 in Agronomy, and 1 each in Plant Pathology and Soil Science.

At Jodhpur hub, 7 students have enrolled in masters and doctoral programs. Two masters students each have enrolled for Agronomy and Genetics & Plant Breeding; while under doctoral steam, two students are have joined for Agronomy, and one for Genetics & Plant Breeding. 35 scientists from various disciplines have been recognized as faculty/ guides. Plans are underway to introduce Ph.D. and M.Sc. programs in Soil Science for the 2024-25 session, with 5 faculty members and 4 guides recognized. Additionally, 16 committees/cells have been constituted in adherence to UGC guidelines.

The visit highlighted the steady progress in academic programs, faculty development, and research initiatives, reinforcing the hubs' commitment to excellence in agricultural education.

Scripting Excellence:
Hub Campuses Celebrate Hindi Diwas with Literary Flair

As part of the "*Hindi Chetna Maas* 2024" celebrations at the ICAR-Indian Agricultural Research Institute (IARI) from 1st to 30th September 2024, the hub campuses actively participated in a vibrant showcase of Hindi literary talent. To honor the richness of the Hindi language and its significance in agricultural discourse, the office of AD (Hubs) organized online competitions for UG, PG, and Ph.D. students, celebrating the art of expression through self-composed Hindi poetry and insightful Hindi essays on agricultural themes. The competitions witnessed enthusiastic participation, with students weaving words into powerful narratives that reflected their passion for agriculture and scientific innovation. An esteemed panel of faculty members from ICAR-IARI and its hub campuses meticulously evaluated the submissions, selecting the top three contenders in each category for UG and PG/Ph.D. programmes. These winners will be felicitated on the Institute's Foundation Day, further reinforcing the commitment to promoting Hindi as a medium of scholarly and creative expression. The event was a testament to the role of language in bridging knowledge, culture, and scientific thought, inspiring young minds to embrace Hindi as a dynamic tool for communication and innovation in agricultural sciences.

Hindi Diwas is a reminder of the language's historical significance and its role in shaping India's identity while respecting the country's multilingual fabric

IARI-Assam:
Students Celebrations in 2024

Cultivating Futures: National Agricultural Education Day

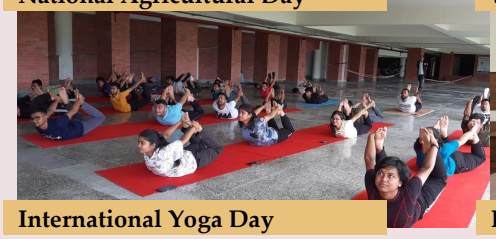
IARI-Assam celebrated National Agricultural Education Day on 3rd December 2024 at Christ King Higher Secondary School, Gogamukh, Dhemaji, Assam, with a lecture on "Opportunities in Agricultural Education in the Present Scenario." The session inspired students to explore agricultural sciences as a transformative career, addressing global food security and sustainability. Experts shared insights on emerging career prospects, modern technology, and research in agriculture. The event reinforced the importance of scientific advancements in shaping the future of food and farming, encouraging students to become future agricultural leaders and innovators.

Harmony in Motion: Celebrating International Yoga Day

On June 21, 2024, IARI-Assam marked International Yoga Day with students and staff participating in yoga sessions guided by trained instructors. The event emphasized holistic well-being, mindfulness, and the role of yoga in fostering physical fitness, mental clarity, and emotional resilience. By promoting yoga as a daily practice, IARI-Assam reaffirmed its commitment to a balanced and healthy lifestyle.

National Agricultural Day

World Egg Day



International Yoga Day

Parthenium Awareness Week

Cracking the Power of Nutrition: World Egg Day

IARI-Assam celebrated World Egg Day on 10th October 2024, highlighting the nutritional value of eggs and their role in combating malnutrition. The event included awareness campaigns and interactive sessions on egg production, protein-rich diets, and poultry farming innovations. By promoting the significance of eggs in food security, IARI-Assam emphasized sustainable agricultural practices and healthier communities.

Plant 4 Mother: A Green Tribute to Mother Nature

IARI-Assam organized the "Plant 4 Mother Campaign" (एक पेड़ मां के नाम) to promote environmental consciousness and honor motherhood. Sixteen trees of three species—Krishnachura, Radhachura, and Arjun—were planted, symbolizing resilience, sustainability, and ecological responsibility. This initiative encouraged individuals to celebrate their mothers by planting and nurturing trees, reinforcing the message of a greener future.

Battling the Green Menace: Parthenium Awareness Week

To combat the spread of Parthenium, a harmful invasive weed, IARI-Assam held a Parthenium Awareness Campaign on 22nd August 2024. The event educated school students about its adverse effects on health, biodiversity, and agriculture. Experts shared insights on allergic reactions, respiratory issues, and environmental disruptions caused by the weed, along with effective control measures. The campaign emphasized the need for community participation in eradicating this 'Green Menace,' promoting vigilance and sustainable solutions for ecosystem protection.

One Tree for Mother Campaign

List of Dissertations 2024

Master's Program

Agricultural Chemicals

Amandeep - Synthesis of molecularly imprinted polymers for selective removal of triclosan from water

Anirban Barik - Chemical profiling of *Angelica archangelica* L. roots for potential nematicidal action against *Meloidogyne incognita*

Arunima MU - Dissipation of oxytetracycline antibiotic in honey

Astha Priya - Bioprospecting of *Datura* sp. for the control of *Bemisia tabaci*

Geetanjali - Synthesis and evaluation of tetrazole derivatives against plant pathogenic fungi

Koyel Mondal - Synthesis of substituted imines and antifungal evaluation against sclerotial fungi

Neeraj Dhakar - Quantification and insect growth regulatory activity of nimbolide from the leaves of *Azadirachta indica* A. Juss

Subhajit Rakshit - Status of glyphosate residues in waters of NCR region and it's sorption behavior in soil.

Agricultural Economics

Anukriti Raj - An analysis of electricity tariff policies for irrigation and its implications on groundwater use and irrigation cost in India

Athulya S - A gender based study on varietal adoption, trait preference and value addition by paddy farmers: A case of selected stress prone districts of Odisha

Harshit Gupta - Potential impact of free trade agreement between India and UK on Indian agriculture

Neha Sannyasi - India's trade policies on cereals: Economic assessment of its effects on export and welfare

Vishwanath - Economic evaluation of kisan credit card scheme in Latur district of Maharashtra

Agricultural Extension

Bandewale Swetha - A comparative study of conventional and organic farming in Telangana state

Bhukya Karthik - Effectiveness of micro irrigation under *Pradhan Mantri Krishi Sinchayee Yojana* (PMSKY) in rainfed area of Rayalaseema region of Andhra Pradesh.

Devanand Tripathi - Professional competencies of agripreneurs in Madhya Pradesh: An exploratory study

Fathimath Shibila K - A study on adaptive capacity and livelihood security of farmers in flood prone areas of Kerala

Kishan K - A study on consumer behaviour towards bio fortified products and their willingness to pay

Sakaray Vaishnavi - An analytical study of self-help groups under *Deendayal Antyodaya Yojana*-national rural livelihood mission in Andhra Pradesh

Simran Pundir - Rural women leadership in climate change adaptation and sustainable livelihood

Sreenanda S Anand - Assessment of teaching effectiveness and its determinants in the agricultural education system

Sulthana Parveen - A study on entrepreneurship development training in Kerala

Suresh Kumar Bishnoi - A study of social networks and stakeholders in farmer producer organizations

Yogesh BM - An assessment of training needs and their determinants in communication skills among postgraduate students in agricultural universities

Agricultural Physics

Abithaa P - Evaluation of the effect of foliar nitrogen fertilization by drone and knapsack sprayer on growth and yield of wheat (*Triticum aestivum* L.)

Animesh Panda - Soil quality index for enhanced productivity under conservation agriculture based rice-wheat cropping system

Pritam Chanak - Electrochemical method-based remediation of heavy metals from irrigation water

Shreya Sharma - Effect of zinc oxide green-nanoparticles to enhance moisture stress tolerance in wheat (*T. aestivum* L.)

Supriyo Dhara - Drone based water stress monitoring under different irrigation and nitrogen levels in wheat (*Triticum aestivum* L.)

Swagata Das - Effect of magnetic treatment of seeds on biophysical parameters and yield characteristics of wheat grown under different irrigation conditions

Agricultural Statistics

Anurag Rawat - Designs for two-level factorial experiments in block size four

Ayub Aktar - Crop yield estimation using machine learning technique for geo-referenced survey data

Punuru Lingamma - Kriging based spatial estimation of finite population total under complex surveys

Rounak Kumar - Bivariate empirical mode decomposition based models for agricultural price forecasting

Safeela Nasrin M - Calibration estimation of population total in the presence of non-response under two stage sampling design

Suman Kalyan Barman - Ensemble based forest cover trend estimation

Swarup Bera - Resampling variance estimation of finite population parameter under two stage ranked set sampling

Umesh TH - Geographically weighted ANN based model calibration estimation of finite population total

Varshini BS - CNN-transformer hybrid deep learning model for time series forecasting.

Vyshna IC - Calibration estimation of population total by double use of auxiliary information in two stage sampling design

Agronomy

Aastika Pandey - Effect of land configuration and cereal-legume integration on system productivity, resource use efficiency and soil health

Chandrakant Yadav - Response of organic and inorganic nutrient management practices in finger millet under alluvial soil of Assam

Hamesh Kumar Meena - Integrated weed management in lentil (*Lens culinaris* Medik.)

Huchchappa Jamakhandi - Response of maize to nutrients sources in acidic soil of upper Assam

Navneet Kumar - Response of wheat (*Triticum aestivum* L.) to chemical fertilizers under FYM and biofertilizer integration

Rimjhim Chaudhary - Nutrient management in baby corn (*Zea mays* L.)- based intercropping systems

Sayantika Sarkar - Precision nitrogen management in maize using android-based mobile app

Shubham Yaduwanshi - Biochar and solid digest effects on productivity and nutrient use efficiency in mung bean under mung-wheat system

Sneha Bharadwaj - Analyzing the yield gap of rice in a hilly-ecosystem using bio-physical modelling for different nitrogen levels

Biochemistry

Arun Kumar P - Effect of melatonin on paddy soil microbiota and associated enzymes.

Ayush Singhania - Study on differential accumulation pattern of l-dopa in faba bean (*Vicia faba* L.) leaves: Biochemical and molecular perspectives

Bidyutprava Nayak - Extraction and quantification of eritadenine towards the estimation of its anti-hyperlipidemic effect in Indian shiitake (*Lentinula edodes*)

Madhunisha Chandrashekar - Enrichment of carotenoids in chickpea sprouts (*Cicer arietinum* L.) using plant growth regulators

Mansoor Shaji N - Influence of processing treatments on protein digestive properties and functionality of pulses protein isolates blends

Mohammed Salman CK - Development and validation of glucose nanosensor for predicting inherent glycemic response

Prathwinraj A - Biochemical approaches for the production of plant derived iron, protein and provitamin a enriched nutrimix powder with improved shelf life

Shakthi Thangavel E - Unravelling the trans-generational efficacy of seed priming towards morpho-physiological and biochemical imprints to mitigate drought stress in rice (*Oryza sativa* L.)

Soumili Nayak - Characterization of protein digestive properties and functionality of millet protein isolates blends after processing treatments

Bioinformatics

Ashok S - Standardizing workflow for identifying stress-tolerance contributing non-coding RNAs in Vigna and developing a comprehensive ncRNA database for legumes

Dipankar Mandal - Development of HapMap database and visualization tool for tea

Satendra Shivam - Integrating a module with HTP-DAP for QTL mining using high throughput phenomics and genomics

Soumya Shivamurti - Development of computational tool for mining intron length polymorphism markers and designing primers

Surapuram Aswini - Integrating GWAS module with HTP-DAP for SNP-trait associations mining

Computer Applications

Anwan Alam - Web application on causal analysis for identification of best production practices for maximizing crop yield

Jatindra Nath De - Web-based personalized recommender system through bibliometric measures and collaborative filtering approaches in agriculture

Kamaladharani S - Decision support system for equine diseases diagnosis and management

Krantibira Swain - Development of mobile app for energy audit surveys in India in the context of SDG 7.0

Mohammed Safwan - Development of mobile application for the shelf life of pearl millet flour using rancidity

Pradyuman Thakur - Development of deep learning based application for real-time wheat ear detection

Entomology

Akash Kotru - Taxonomic studies on subfamily Agrypninae (Coleoptera: Elateridae) from India

Arindam Kumar - Development of isothermal nucleic acid amplification assays for detection of *Phthorimaea absoluta* (Meyrick) (Lepidoptera: Gelechiidae)

Chethan Kumar M - Studies on the effect of silicon amendment on pink stem borer *Sesamia inferens* Walker in wheat under climate change scenario

Debanjan Basu Roy - Screening and characterization of okra germplasm against okra yellow vein mosaic disease transmitted by whitefly (*Bemicia tabaci* Gennadius).

Debkumar Mondal - Termite scenario in maize residue based conservation agriculture system in north India

Dhurve Kanchan Rangrao - Foraging behaviour and pollination efficiency of stingless bee, *Tetragonula ruficornis* on bitter gourd grown under protected conditions

Komal Priya Mitte - Comparative symbiotic bacterial communities associated with litchi leaf roller, *Statherotis leucaspis* (Meyrick, 1902) (Lepidoptera: Tortricidae) reared on different litchi varieties

Pradeep Raja Godugu - Identification and evaluation of behaviour modulating plant volatiles for leafhopper, *Amrasca* (*Sundapteryx*) *biguttula* (Ishida)

Raiza Nazrin MR - Functional characterization of core gut bacteria in honeybees *Apis mellifera /Apis cerana* (Apidae, Hymenoptera)

Sharath R - Comparative toxicity evaluation of conventional and alternate contact insecticides against red rust flour beetle, *Tribolium castaneum* (Herbst.)

Sneha Sharma - Studies on genetic diversity and population dynamics of *Amrasca biguttula* (Ishida) in okra in Chhattisgarh

Sourav Chakrabarty - Identification of agriculturally important insects associated with cruciferous crops (Brassicaceae) using artificial intelligence

Vinotha S - Pollinator diversity studies in integrated farming system

Environmental Sciences

Anjaly M - Quantification of soil ecosystem service from *kole* wetland: A coastal agrarian wetland in Kerala

Anju Choudhary - Effect of microbial and non-microbial bio-stimulants for increasing the chickpea resilience to dry spell

Arun Meena - Impact assessment of plant biostimulant and phenolic compound for water stress mitigation in wheat crop

Ashwariya Laxmi - Nitrogen and water footprints of tomato cultivation under different irrigation and nitrogen management practices

Ashwini Yadav - Isolation, characterization of biosurfactant and their effect on hydrocarbons' degradation in different soils

Asmaul Hossain - Study on reactive nitrogen losses from tomato cultivation under open field and polyhouse condition

Nisha Khatri - Greenhouse gases and particulate matter emission due to sugarcane residue burning using measurements and remote sensing

Pavan Kalyan KV - Chitosan / zeolite urea nanocomposite to improve nitrogen use efficiency in wheat

Rajdeep Das - Preparation and performance analysis of bioplastics synthesized using titanium dioxide nanoparticles with corn cob

Ramakrishna Panda - Mapping of variation in soil organic carbon stock within IARI-Jharkhand farm

Reenu Verma - Elevated temperature responsiveness of soybean genotypes

Genetics and Plant Breeding

Aiswarya VS - Exploring phosphorus starvation tolerance in *aus* rice (*Oryza sativa* L.) And deciphering the genetic basis of tolerance through genome-wide association studies

Anand Maurya - Characterization of M_2 population of winged bean (*Psophocarpus tetragonolobus*) through agromorphological traits and molecular markers

Ankita Singh - Understanding the complex regulatory network of fusarium wilt (*Fusarium oxysporum* fsp. *Lentis*) resistance in lentil (*Lens culinaris* Medik.) Using comparative RNA-seq analysis

Aritabha Kole - Identification of genomic regions for kernel row number in maize (*Zea mays* L.)

Ayan Deb - Genetic diversity and marker trait association analysis for morpho-biochemical traits in coloured rice (*Oryza sativa* L.) Collected from Chhota Nagpur plateau

Bhaskar Chodasani - Exploring the genetic and adaptive diversity of oryza species naturalized in Jharkhand , India

Hrudya Biji - Diversity analysis in soybean with special reference to mung bean yellow mosaic virus (MYMV) resistance in soybean (Glycine max (L.) Merrill)

Jyotsna Maurya - Genetic diversity analysis for low phosphorous tolerance in lentil germplasm

Kommula Uday - Estimation of genetic diversity for low phosphorus tolerance in paddy (Oryza sativa L.) landraces from Chot Nagpur plateau region

Mamta - Molecular mapping and characterization of neurotransmitter compound, gamma amino butyric acid (GABA) in the germinated brown rice (GBR)

Pratap Ghosh - Identification of the gene for seed coat colour in winged bean (*Psophocarpus tetragonolobus* L.)

Valipeta Samantha Reddy - Inheritance and mapping of genomic regions for brown spot resistance in rice (*Oryza sativ*a L.)

Keerthi GM - Studies on regulatory and functional response of root plasticity to abiotic stresses in maize (*Zea mays* L.)

Kothalanka Victor Paul - Genetic variability and molecular analysis of folate accumulation in maize kernels

Malavika N Shal - Identification of genomic loci associated with yellow rust resistance derived from *Triticum turgidum* and *T. spelta* and their utilization in wheat improvement aided by speed breeding

Monika Sahu - Genetic studies on tolerance to fall armyworm (*Spodoptera frugiperda* (JE Smith)) in tropical field corn (*Zea mays* L.)

Prathibha K - Genome wide association study to identify marker trait associations for nutritional and glycaemic quality traits in indian dwarf wheat (*Triticum sphaerococcum* Percival)

Rohit - Morpho- physiological and molecular characterization of elite wheat varieties carrying alternative dwarfing genes

Rohit Sarkar - Genome wide association analysis for traits influencing terminal heat stress in lentil (*Lens culinaris* Medik. *culinaris*).

Shiwani Meena - Genome wide association mapping for combined drought and heat tolerance in wheat

Microbiology

Abhijit Pal - Bio-stimulant assisted mycorrhizal donor plant *in vitro* culture system for enhanced colonization and efficacy

Balamurugan N - Phyllosphere methylotrophs of major cereals and pulse crops as a source of recalcitrant soil carbon

Deepak - Biocontrol potential of AMF associated bacteria against common root rot in wheat

Kamali R - Prospecting bacterial exopolysaccharides for plant growth stimulation

Prajwal KH - Understanding the response of cyanobacterial biofertilizer strains to atrazine

Sarthak Patil - Strain identification and characterization of exopolysaccharides producing cyanobacteria

Ujwalgowda HS - Standardising process for bioethanol production from corn stover using both hemicellulosic and cellulosic fractions

Molecular Biology and Biotechnology

Akash Nigam - Identifying under-expressed genes in wheat against heat-shock for understanding the regulation of high temperature tolerance

Ankit Patel - Development of in-vitro regeneration protocol for strawberry (fragaria × ananassa)

Anurag Kumar - Targeted alterations in conserved structural motif in central repeat domain of a *Xanthomonas oryzae* pv. *oryzae* Tal effector to study effect on virulence in rice

Anusha T - Molecular insights into the fungicidal action of green silver nanoparticles against the chickpea wilt caused by *Fusarium oxysporum*

Arpita Dash - Molecular dissection of the qGN4.1 QTL underlying high grain number phenotype in rice

Divakar Singh - Identification and expression analysis of gene(s) responsible for nodulation in winged bean (*Psophocarpus tetragonolobus* (L.))

Durgam Revanth - Exploiting *Osmir167-Osarf12* module for improved root system architecture in rice through CRISPR/Cas9-based genome editing technology

Ghodake Akshay Bharat - Exploring biocontrol potential by unraveling presence of chitinase genes and antifungal activity in *Bacillus thuringiensis* isolates representing diverse agroclimatic zones of India

Jagabandhu Pan - Occurrence of broad-spectrum entomotoxic and plant growth promoting genes in native *Bacillus thuringiensis* isolates recovered from diverse habitats of india for biological pest control

Jamshida D - Identification and characterization of genes responsible for anthocyanin content in winged bean (*Psophocarpus tetragonolobus* L.)

Palli Tarun Kumar - Understanding the nano-silica induced molecular regulations in chickpea, *Cicer arietinum* L.

Pooja Ludhani - Screening and characterization of tDNA-free multigenic genome edited rice mutants of *pi21*, *mpk5* and *spl11* for blast resistance

R Hari Chandana - Molecular characterization of a high-affinity nitrate transporter gene (*TaNRT2.5*) of bread wheat (*Triticum aestivum* L.)

Rashmi Kumari - Molecular characterization of key host factors involving in pathogenesis of mung bean yellow mosaic India virus in mung bean

Subramanian K - Molecular responses of bacterial endophytes mediated defense against fusarium wilt in chickpea

Nematology

Bijaylokhimi Saikia - Morphological and molecular identification of cyst nematodes (Heterodera spp.) from IARI farm, New Delhi

Preetham V - Exploration and evaluation of entomopathogenic nematodes associated with arecanut (*Areca catechu* L.) rhizosphere from Dakshina Kannada district of Karnataka

Sharad - Detection and molecular characterization of white tip nematode of rice, *Aphelenchoides besseyi* infecting rice

Srinivasa G - Diversity and community profile of plant and soil nematodes associated with various crops under protected cultivation

Suman Panja - Effect of nanoemulsions of essential oils on *Meloidogyne graminicola* infecting rice

Plant Genetic Resources

Bhagirath Jha - Genome-wide association mapping of stem rust resistance in emmer wheat (*Triticum turgidum* ssp. *dicoccum* Thell) germplasm.

Rahul Jahageerdar - Study on morpho-nutritional diversity in wild *Vigna* species

Rehan A Nadaf - Cryopreservation of *Rubia cordifolia* L. Using encapsulation dehydration

Rosemary J - Use of microsatellite markers for diversity analysis and identification of pea (*Pisum sativum* L.) cultivars

Suhail Ansari - Deciphering nutritional and molecular diversity in Luffa acutangula L. Roxb.

Plant Pathology

Ankita - Diversity and identity of *Fusarium* species associated with postharvest diseases of fruits from Delhi mandis

Chaitra Channappa Sarawad - Enumeration of seed mycoflora and their management with *Beauveria bassiana* and *Trichoderma asperellum* in newly released chickpea varieties

Chandrakesh Gautam - Determination of genetic diversity of citrus tristeza virus causing decline of assam lemon (*Citrus limon*) in northeast India and development of disease-free planting material

Jyoti Kumari Agrwal - Patho-genetical studies of *Fusarium* wilt resistance in tomato

Pallavi Bisht - Antimicrobial activity and optimization of bioactive secondary metabolite production by antagonistic yeast, *Hanseniaspora uvarum*

Prantik Mazumder - Characterization of virus associated with shoe-string disease affected tomato plant and management through exogenous application of dsRNA

Sangale Smita Bhausaheb - Characterization of *Tilletia indica*, assessment of biocontrol agents and identification resistance sources for Karnal bunt

Shivaraj - Characterization of wheat genotypes for *Fusarium* head blight resistance through phenotyping and molecular markers

Shreya Maigur - Comparative efficacy of selected microbial bioagents and identification of resistance sources against stem rot of chickpea caused by *Sclerotinia sclerotiorum*

Tanisha Metia - Deciphering bio-compatibility between *Trichoderma* spp and *Pseudomonas* spp. and its bioefficacy against *Sclerotinia sclerotiorum*

Plant Physiology

Apoorva Ashu - Physio-biochemical and molecular basis of photo-thermo insensitivity in chickpea (*Cicer arietinum* L.)

Baiarilang Chyne - Physiological basis of tolerance to low phosphorus and iron toxicity stress in rice germplasm from north-east India

Haritha Si - Identification and characterization of amino acid permeases family genes in response to nitrogen stress in rice (Oryza sativa L.)

Kruthika S - Physiological and biochemical characterization of common bean genotypes in reproductive stage under water deficit stress

Neteti Siddartha Kumar - Marker trait association analysis for seedling stage drought tolerance in lentil (*Lens culinaris*)

Sreehari V Santhosh - Identifying the genomic regions associated with root characteristics under moisture deficit stress in wheat (*Triticum aestivum* L.)

Thokchom Malemnganbi Devi - Physiological and biochemical basis of amelioration of heat stress through nitrogen management in wheat

Unti Miiri Ezing - Physiological characterization of mustard (Brassica juncea L.) genotypes for drought tolerance

Seed Science and Technology

Ashwini - Assessment of the relationship between morphological characteristics, seed germination, and dormancy in *Triticum aestivum* L. and *Triticum durum* Desf. genotypes

Ayushi Yadav - Prediction of seed vigour in rapeseed and mustard using near-infrared spectroscopy (NIRS)

Febina AS - Seed technological interventions and phylogenetic studies for lectin genes to mitigate the bruchid infestation in chickpea

Nan Khaing Khaing Soe - Evaluation of seed physiological parameters in diverse rice genotypes under different seed aging methods

Nikhita Shivaji Rathod - Genetic variation for seed longevity trait in diverse soybean genotypes

Prajapati Dineshbhai Roopshibhai - Critical moisture levels for anoxia storage in soybean seeds

Riya Biswas - Physiological and biochemical basis of seed longevity in contrasting maize inbreds.

Samrat Rej - Effect of seed coating with microbial formulations on seed yield and quality in green gram [Vigna radiata (L) R. Wilczek]

Souvik Chakrabortty - Hyperspectral imaging for varietal identification and quality assessment of rice seed lots

Soil Science

Arijit Chowdhuri - Impact of natural farming on carbon fractions and properties in an alfisol under rice-rabi maize system

Chandra Saha - Assessment of enhanced rock weathering for carbon sequestration and reclamation of an acid soil from Assam

Purbasa Kole - Soil carbon and nitrogen pools under different cropping systems of the eastern plateau and hills region

Sneha R - Development of optimum soil fertility and leaf nutrient standards in relation to fruit yield of Assam lemon

Tripti Pal - Identification of response-based nutrient deficiencies in Assam lemon grown on acid soil

Abhishek Pratap Singh Chauhan - Evaluation of urea loaded nanoclay biopolymer composites and biosolubilizers for enhancing nutrient availability and nitrogen use efficiency in rice and wheat

Ankit Kumar - Development of composite beads for removal chromium and crystal violet from simulated effluent and its impact on mung bean

Atul Meena - Fungus inoculated rice straw biobed for enhancing phosphorus availability in soils

Debmalya Sarkar - Determination of minimum silicon dose for enhancing phosphorus availability in diverse soils

Pradarshak Sen - Carbon mineralization kinetics of different crop residues with Pusa decomposer in soil

SG Sarowar - Thermodynamic approach for assessing plant available potassium in soils

Shalini Kumari - Aggregate associated phosphorus fractions and enzyme activities in an inceptisol under conservation agriculture based maize-wheat system

Water Science and Technology

Ankit Pratap Singh - Standardization of irrigation scheduling for soil moisture sensor-guided wastewater use in gladiolus (*Gladiolus grandiflora* L.)

Mohd Ekhlaq - Crop evapotranspiration and soil moisture depletion based irrigation scheduling under drip fertigation in cabbage

Floriculture and Landscaping

Aashna Kumari - Nematicidal efficacy of chrysanthemum coronarium against *Meloidogyne incognita*

Amulya Kalahal - Influence of cyanobacterial inoculation on root traits, growth and flower quality in chrysanthemum (*Chrysanthemum morifolium* Ramat.)

Athira N - Phytoextraction of heavy metals using marigold (*Tagetes erecta* Linn.) from wastewater-irrigated and inherently polluted soil

Deepika - Phenotypic expression of qualitative and quantitative traits in French marigold (*Tagetes patula* L.) under different growing conditions

Sanapala Keerthana - Extraction of natural dye from rose flowers and its application on fabrics

Shorya Sharma - Screening of marigold genotypes (*Tagetes* spp.) against *Alternaria* leaf spot under *in vitro* and *in vivo* conditions

Swati - Development of *in vitro* protocol for efficient regeneration of rose (*Rosa* x *hybrida* L.) genotypes using axillary and non-axillary explants

Tejaswini P - Effect of growth elicitors on vegetative, flowering and corm traits of *Gladiolus*

Vidya Maruti Nargundkar - Optimization of pot mums and growth media for vertical gardening with bibliometric renaissance

Fruit Science

Aanamika Rai - Morpho-chemical and molecular diversity studies in pomegranate genotypes

Dhrumeshkumar Chavda - Characterization and quality assessment of interspecific citrus hybrids

Kritidipta Pramanik - Development and validation of genome-wide SSR markers in guava (*Psidium guajava* L.)

Raushan Vatshya - Validation of new hyper-variable mango SSRs and diversity analysis of heirloom mango varieties.

Renu Chauhan - *In vitro* multiplication and rooting of an endangered endemic wild species of banana (*Musa indandamanensis* L. J. Singh)

Sahil - Insights into the nut and food qualities of selected walnut (*Juglans regia* L.) genotypes

Shiva Kumar N - Effect of poly 4 (polyhalite) on growth, yield and quality of kinnow mandarin

Shivam Kumar Rajpoot - *In situ* characterization and diversity analysis of custard apple (*Annona squamosa* L.) germplasm of Chota Nagpur plateau region

Swati Yadav - *In vitro* multiplication and conservation of endemic fruit tree species *Garcinia gummi-gutta*.

Post-Harvest Management

Akshat Jain - Ohmic heating for quality retention of citrus and tomato processed products

Avinash Kumar - Utilization of tomato pomace powder for development of puffed extruded snacks

Manisha Bhardwaij - Impact of maturity stages and processing regimes on GABA compounds in banana and tomato

Pavankumar T - Valorization of pummelo (*Citrus grandis* L.) peel for nanocellulose extraction

Sasira D - Pectin extraction from carrot pomace: Application in emulsion with bael (*Aegle marmelos* Correa) fruit powder

Shakshi Kumari - Innovative naturally coloured *poshak prash*: Formulation and characterization

Vegetable Science

Ananya P Kumar - Assessing genetic diversity in brinjal genotypes for resistance against *Fusarium oxysporum* f. Sp. *melongenae*

Anupam Saha - Studies on nutritional and biochemical diversity in brinjal (*Solanum melongena* L) genotypes

Balkrishna Nayak - Genotyping and phenotyping of ToLCD resistant backcross lines of tomato for processing traits

Banoth Tharun - Studies on genetic diversity and expression of triterpenoid biosynthetic genes in bitter gourd genotypes (*Momordica charantia* L.)

Chaithra M - Effect of mulching and fertigation doses on growth, yield and quality of summer squash (*Cucurbita pepo* L.) varieties under low tunnels

Manu AN - Standardization of *in vitro* regeneration protocol through callus culture in okra (*Abelmoschus esculentus* [L.] Moench)

Taniya Shit - Studies on genetics and molecular mapping of downy mildew resistance in cucumber (*Cucumis sativus* L.)

Theja MJ - Genetic studies for yield and quality traits in advanced breeding lines of brinjal (*Solanum melongena* L.)

Vishal Ssunartiya - Heterosis and combining ability analysis for yield and quality traits in bitter gourd (*Momordica charantia* L.)

Yogita Yadav - Understanding biochemical and molecular basis of differential response against downy mildew in cauliflower (*B. oleracea* var. *botrytis*)

Agricultural Engineering

Saranya A - Alleviating water stress in garlic crop through deficit irrigation and plant growth regulators in Deccan plateau

Subha Mondal - Deficit drip irrigation (DDI) strategies and plant growth regulators (PGR) in high-density mango orchards

Ajay - Development of hot air dryer coupled with biomass fired steam heater

Biman Majumdar - Design and development of an IOT enabled depth- integrated type soil moisture monitoring system

Dera Vikas Reddy - Development of non-destructive adulteration detection protocol for saffron using advanced imaging techniques

Karale Omkar Sunil - AI based nutrition management modeling for vertical hydroponic farming

Pratyasha Mishra - Modelling water and nutrient dynamics of mustard crop under deficit irrigation

Sajja Poojith - Ergonomic assessment of powered cylindrical lawn mower for enhanced operator's comfort

Shilpa S - AI based crop growth modeling in vertical hydroponic system

Vikesh Mangilal Suryawanshi - Study on water productivity of tomato under sensor based irrigation scheduling

Ph.D. Program

Agricultural Chemicals

Garima Sethi - Bio-augmentation for managing degradation of persistent pesticides in biomixtures

Kailash Pati Tripathi - Synthesis of isoxazole and pyrazole derivatives and their evaluation against plant pathogenic fungi and barnyard grass in rice

Rajni Godara - Synthesis of prenylated chalcones and their evaluation against plant pathogenic nematodes and fungi in tomato

Sameer Ranjan Misra - Triazolyl schiff's bases and amides based on naturally occurring citronellal as potential plant pathogen and nematode antagonists in rice

Shila Neel - Chemo-profiling of *Gymnema sylvestre* leaves for potential antifungal action against storage pathogens

Shreosi Biswas - Development and evaluation of drone compatible formulation/s for smart pest management in maize

Agricultural Economics

Ajmal S - Economic valuation of *kole* wetland agroecosystem in Kerala

Geetha ML - Economics of contract farming in India: A case of vegetable production in Karnataka

Jamaludheen A - Climate change and food security of farm households: A case study of Kuttanad region of Kerala

Jobin Sebastian - Impact of climate change on rice based cropping systems: An analysis in the east coastal zone of Andhra Pradesh

Omprakash Naik N - A study on land use change and ecosystem services valuation in Maharashtra

Pavithra S - Agricultural credit, indebtedness and farm income linkages in India

Agricultural Engineering

Arti Kumari - Development of integrated sensing device for irrigation scheduling

Bogala Pravallika - *In situ* stabilization of rice bran with infrared heating of brown rice

Edde Mounika - Infrared pretreatment for milling quality improvement of kodo millet (*Paspalum scrobiculatum*)

Jagadale Manisha Hanumant - Ergonomic studies on hand cranking operation for women workers

Manojit Chowdhury - Design and development of crop canopy reflectance based real-time variable rate fertilizer application system

Mude Arjun Naik - Design and development of robotic pesticide applicator for greenhouse

Pradeep Kumar - Design and development of embedded system controlled site specific seed cum fertilizer applicator

Radhika Sahu - Enhancing water productivity in Jargo medium irrigation project, UP, under changing climatic conditions

Rathod Sunil Kumar - Design and development of a robotic spot-tiller cum planter

Ravi Kumar Sahu - Investigations on nano-micro surface modification of biomass-based carbon for supercapacitor electrode

Thorat Deepak Sabaji - Development of canopy volume based variable rate spraying system for pomegranate orchard

Yamagar Somnath Gangaram - Design and development of electrical multi-tool carrier and compatible equipment for protected cultivation

Agricultural Extension

Juhee Agrawal - Nudging healthy food choices among students: A choice architecture study

Sujay Basappa Kademani - A study on institutional interventions for agri-entrepreneurship development

Agricultural Physics

Nandita Mandal - Quantification and mapping of soil ecosystem services under conservation vis-à-vis conventional agriculture

Sunny Arya - Artificially intelligent high-throughput phenotyping of wheat for water and nitrogen deficit stress tolerance using fluorescence and hyperspectral imaging

Agricultural Statistics

A Anil Kumar - Orthogonal and sliced Latin hypercube designs for computer experiments in agriculture.

B Manjunatha - A study on copula approach for time series forecasting

Bijoy Chanda - A study on efficient equivalent-estimation split-plot designs through algorithmic intervention

G Avinash - Hidden markov models for time series forecasting in agriculture

Harish Nayak GH - Modeling agricultural price through deep learning techniques

Kaushal Kumar Yadav - Construction of statistical designs based on semi-Latin rectangles

Lokeshwari M - Deep learning approaches for cereal crops yield prediction using spectral indices

Moumita Baishya - Multiple frame survey estimators and resampling methods of variance estimation under two stage sampling

Agronomy

Akshay Glotra - Tillage, residue and nutrient management for enhancing productivity and resource use efficiency in maize-wheat system.

Ashok Kumar - Moisture conservation and potassium management in pearl millet–wheat cropping system

Gunturi Alekhya - Crop establishment methods, residue retention and nitrogen effects on weeds, productivity and resource-use efficiency in a wheat-cotton system under conservation agriculture

K Srikanth Reddy - Productivity and resource budgeting of rice-based production systems under different irrigation methods and nitrogen management

Kadapa Sreenivasa Reddy - Performance of nitrogen sources and zinc fertilization on productivity and nutritional quality of wheat-rice sequence

Madam Vikramarjun - Moisture management and Zn fertilization effects on productivity and resource use efficiency of pearl millet–mustard cropping system

Priyanka Saha - Productivity, resource use efficiency and greenhouse gases emission in pigeon pea-wheat system under different production scenarios

Sanketh GD - Nitrogen management in rice wheat system under various crop establishment protocols

Biochemistry

Nand Lal Meena - Comparative analysis of seed quality among tolerant and sensitive rice cultivars (*Oryza sativa* L.) in response to drought stress

Rosalin Laishram - Characterization of functionally improved *okara* (soymilk residue) and its deployment for the development of nutritional enriched food products

Bioinformatics

Baibhav Kumar - A study on machine learning based approach for long non-coding RNA subcellular localization prediction

Jutan Das - Development of artificial intelligence based FISH specific long non-coding RNA biomarkers discovery tool and web genomic resource

Parinita Das - A study on development of artificial intelligence-based methodology for identification of copy number variation in crops

Computer Applications

Himanshu Shekhar Chaurasia - Image analysis based plant phenotyping for yield estimation using artificial intelligence techniques

Entomology

Anil - Elucidation and characterization of gut bacteria associated with nitrogen cycling in white grubs (Scarabaeidae: Coleoptera)

Chaitanya - Investigations on optimal foraging in six spotted ladybird beetle, *Cheilomenes sexmaculata* (F.)

Hemant Kumar - Investigations on heat stress *vis-a-vis* reproductive pathways of common cutworm, *Spodoptera litura* (*fabricius*) (Lepidoptera: Noctuidae)

Kalyanam Sai Ishwarya Lakshmi - Investigations on plant resistance to fall armyworm, *Spodoptera frugiperda* (JE Smith) in maize

M N Rudra Gouda - Genome-wide analysis and identification, characterization, expression and functional analysis of odorant-binding proteins and chemosensory proteins in the whitefly, *Bemisia tabaci*

Mahendra KR - Deciphering mechanisms of plant resistance to *Chilo partellus* (swinhoe) in maize

Padala Vinod Kumar - Effect of rice crop phenology on brown planthopper (BPH), *Nilaparvata lugens* (Stal) incidence and role of BPH induced plant volatiles on wolf spider, *Pardosa pseudoannulata* (Bosenberg and Strand)

Pynhunlin Nola Kharkrang Dohling - Biosystematic studies on bees (Hymenoptera: Apoidea) of Meghalaya

Rakesh Kumar - Biocontrol potential of *Cheilomenes sexmaculata* (Fabricius) against cotton whitefly, *Bemisia tabaci* (Gennadius)

Environmental Science

Alesh Kumar - Phosphorus dynamics under different tillage and residue management practices in maize-wheat cropping system

Ankita Paul - Effectiveness of modified urea fertilizers in reducing ammonia and nitrous oxide losses and increasing the nitrogen use efficiency in rice

Helen Mary Rose - Life cycle assessment of maize and wheat products

Sethupathi N - Amelioration of ozone stress in chickpea through nutrient and microbial intervention

Shravani Sanyal - Field and simulation studies on the interactive effect of elevated carbon dioxide and temperature on *aestivum* and *durum* wheat

Floriculture and Landscaping

Chander Prakash - Screening of tuberose (*Polianthes tuberosa* Linn.) Genotypes for salinity and heavy metals stress tolerance

Chetna Jyoti - Studies on seed production in China aster (*Callistephus chinensis* (L.) Nees.)

Neeraj Singh Negi - Photomorphogenetic studies in *Chrysanthemum morifolium* cv. Zembla

Priya Yadav - Studies on polyploidy induction and assessment of induced variations in bougainvillea species

Vidyashree S - Studies on soilless culture of pot Gerbera (*Gerbera jamesonii* Bolus ex Hooker F.)

Chandana S - Standardization of dendrobium orchid production under vertical farming structures and post-harvest handling protocols.

Dedhia Labdhi Dilip - Assessment of genetic diversity for carotenoid content and screening for resistance to *Alternaria* spp. in marigold (*Tagetes* spp.)

Sindhu K - Effect of silicon on growth, flowering and corm traits of Gladiolus under different soil conditions

Fruit Science

Ajay Kumar - Exploitation of *Psidium cattleianum* wild species for biotic stress tolerance in guava

Amol Kailas Jadhav - Genetical studies for seedlessness and related traits in grape (*Vitis vinifera* L.) Parents and its hybrids raised using *in vivo* and *in vitro* techniques

Anagha PK - Physiology of drought tolerance in citrus rootstock genotypes

Bindu Praveena Ravipati - *In vitro* screening of *Vitis* spp. for low moisture stress tolerance

Lal Chand - Scion-rootstock interaction and osmolyte induced changes under water deficit stress in citrus

Mude Ramya Sree - Characterization of powdery mildew resistance in grapevine genotypes and identification of markers for resistance

Mukesh Shivran - Rootstock-mediated changes in mango (*Mangifera indica* L.) cultivars

Narendra Singh - Evaluation of interspecific citrus scion hybrids for fruit quality and health promoting compounds

Sinchana Jain NR - Studies on inheritance of peel and pulp color in mango (*Mangifera indica* L.)

Sreekanth HS - Morphological, biochemical and molecular characterization of maternal half-sib progenies of Amrapali for identification of superior genotypes

Genetics and Plant Breeding

Amar Kant Kushwaha - Fine mapping of a major QTL *qBK1.2* imparting tolerance against bakanae disease caused by *Fusarium fujikuroi* in rice (*Oryza sativa* L.)

Aavula Naveen - Identification of novel alleles/genes for grain protein content and essential amino acids through genome-wide association mapping in pearl millet [*Pennisetum glaucum* (L.) R. Br.]

Bhargavi HA - Association mapping for identification of novel alleles/genes responsible for flour rancidity in pearl millet, *Pennisetum glaucum* (L.) R. Br

Gangadhara KN - Genetic mapping of root system architecture in rice (*Oryza sativa* L.)

Meniari Taku - Introgression of *LOX2* allele in vegetable soybean through rapid breeding approaches under controlled environmental conditions

Mukesh Sankar S - Identification of novel alleles/genes against blast disease through genome wide association mapping in pearl millet [*Pennisetum glaucum* (L.) R. Br.]

Neethu Mohan - Identification of heterotic restorers and improvement of maintainer and restorer lines for yellow rust resistance in wheat (*Triticum aestivum* L.).

Nenavath Krishna Kumar Rathod - Inheritance studies and mapping of early maturity in soybean [*Glycine max* (L.) Merr.]

Shiv Kumar Singh - Genetic analysis and marker-traits association study for physiological traits in bread wheat (*Triticum aestivum* L.)

Shivanagouda Patil N - Genome wide association studies for harvest index and associated traits in chickpea (*Cicer arietinum* L.)

Sonu - Genetic mapping of iron toxicity tolerance in rice (*Oryza sativa* L.)

Vinay Rojaria - Genetic, physiological and molecular characterization of *lpa1*- and *lpa2*-based low phytate maize genotypes

Microbiology

Anil Kumar - Process optimization for enhanced biomass and lipid accumulation using *Dunaliella tertiolecta* for exploring biodiesel potential

Devashish Pathak - Developing synthetic microbials (SMS) based novel biostimulants for improved crop growth and nutrient use efficiency

Krutika Patil - Co-digestion of paddy straw and wastewater grown microalgae and assessment of its manurial potential in rice crop

Lavanya AK - Interactive effect of water-deficit stress and osmotolerant bacteria on nutrient uptake and biomass accumulation in mustard

Naitam Mayur Giridhar - Insights into the genome of extreme halophilic archaea: Prospecting agriculturally important (salinity tolerance) genes

Nivedha RM - Development and evaluation of cyanobacterial formulations for nutri-fertigation of vegetable crops

Satish Kumar - Development of bacterial biofertilizer spray formulation for selected solanaceous vegetables

Vikas Sharma - Analyses of the nutrient mobilization potential of cyanobacteria and their biofilms in maize (*Zea mays* L.)

Molecular Biology and Biotechnology

Ahmed Mohammed Usmail - Identification of quantitative trait loci (QTLs) associated with tolerance to salt stress in wheat

Bablee Kumari Singh - Molecular characterization of genes governing heat tolerance in rice

Deepesh Kumar - Identification, characterization and functional validation of drought-responsive microRNA(s) in rice

Gopal - Identification of key genes associated with seed protein content in chickpea by RNA-seq and small RNA analysis

Krishnayan Paul - Amelioration of cold induced sweetening in potato (*Solanum tuberosum* L.) by simultaneous silencing of genes encoding UDP-glucose pyrophosphorylase and vacuolar acid invertase

Priyanka Kumari - Molecular characterization of m6a methylation/demethylation dynamics in pigeon pea

Shaziya Sultana - Elucidating the molecular processes underlying acquired and transgenerational thermotolerance in wheat

Sougata Bhattacharjee - Functional characterization of homologs of tomato self-pruning 5g (*sp5g*) gene for role in flowering in pigeon pea

Nematology

Artha Kundu - Determination of G-protein coupled receptors involved in odor- and chemo- reception in *Heterorhabditis bacteriophora*

Manish Kumar - Genes and pathways for parasitism and development of *Anguina tritici* on wheat

Plant Genetic Resources

Anto James - Molecular diversity and genetic integrity analysis in stored accessions of cotton in the national genebank

Shivam Kumar - Morphological and physiological aspects in seeds of *Artocarpus* spp. for amenability to cryostorage

Plant Pathology

Deep Narayan Mishra - Exploring the potential of mycogenic nanoparticles for management of *Alternaria brassicae* in *Brassica juncea*

Emmadi Venu - Prediction of leaf curl disease risk in chili for management decision

Kalaivanan NS - Elucidating major TAL effectors of *Xanthomonas oryzae* pv. *oryzae* (race4) for their role in bacterial blight development in rice

Mrutyunjaya S - Elucidation of structural features and functional role of *hpa1* like type three translocators of *Xanthomonas axonopodis* pv. *punicae* in the induction of bacterial blight on pomegranate

Rashmi ER - Targeting bacterial blight resistance through CRISPR/Cas9 mediated editing of rice sweet genes

Sudeepta Pattanayak - Metabarcoding and functional analysis of maize endophytic microbiome for suppression of *Bipolaris maydis*

Vimalkumar C - Assessment of rice sheath rot epidemic for prediction of disease risk under current and future climates

Vineeth Vijayan - Deciphering endophytic mycobiome of maize for management of banded leaf and sheath blight caused by *Rhizoctonia solani* f. sp. *sasakii*

Plant Physiology

Adhip Das - Phenotyping and identification of superior donors for high temperature tolerance in rice

Devika S - Deciphering the interactive effect of nitrogen and high night temperature on yield and grain starch quality in rice

Sukumar Taria - Stem reserve mobilization and staygreen traits for yield stability in wheat under combined heat and drought stress

Vijay Rajamanickam - Genome-wide association studies for phosphorus use efficiency in diverse bread wheat germplasm

Post-Harvest Technology

Harish T - Studies on production of kamalam/dragon fruit (*Hylocereus polyrhizus*) powder using tray drier and its value added products

Lekshmi SG - Ornamental plant extracts for management of postharvest diseases and quality of guava fruits

Sreenatha A - Development and characterization of finger millet based functional food through extrusion processing

Sukanya Mam - Effect of vacuum frying on bioactive compounds retention and shelf-life extension of red cabbage and broccoli

Seed Science and Technology

Chaithanya G - Studies on seed invigoration treatments to mitigate salinity stress in soybean (*Glycine max* L.)

Narender Pal - Studies on variability for seed quality traits with respect to seed longevity in onion (*Allium cepa* L.)

Soil Science

Ravi Saini - Effect of urea loaded nanoclay biopolymer composites on soil nitrogen dynamics and nitrogen use efficiency under a maize-wheat cropping system

Riaj Rahaman - Quality and stability of soil organic carbon in maintaining soil health and crop productivity under long-term experiments in different agro-ecological regions of India

Anshuman Das - Soil organic carbon sequestration in rice-wheat cropping system under conservation agriculture

Dewali Roy - Development of novel soil organic carbon based protocols for soil quality assessment

Jyotirmaya Sahoo - Impact of residue management on carbon dynamics in a typic haplustept under wheat based-cropping systems

Kavitha Pandu Jadhav - Assessing stability of clay humus metal and metalloid complexes in different soil orders under paddy cultivation

Kingshuk Modak - Impact of long-term fertilization on phosphorus dynamics in inceptisol and vertisol

Moumita Ash - Potassium stratification and supplying capacity of an inceptisol in maize-wheat system under conservation agriculture

Pooja Tamuk - Acquisition of soil iron by iron deficiency tolerant and sensitive rice genotypes as influenced by organic acids and microbial intervention

Premlata Meena - Effect of urea and nitrification inhibitors loaded nanoclay biopolymer composite on nitrogen use efficiency in maize-wheat cropping system

Protima Rani Sarker - Long-term manuring and fertilization effect on soil fertility, phosphorus fractions and biological properties under soybean-based cropping systems in a vertisol

Ravindra Kumar Rekwar - Impact of conservation agriculture on dynamics of potassium in a typic haplustept under maize based cropping systems

Soura Shuvra Gupta - Chemistry and availability of molybdenum in soils

Sunita Yadav - Soil carbon and nitrogen stock and quality under diverse land use systems in north eastern region of India

Tirunagari Rupesh - Phosphorus dynamics and availability in soil amended with rock phosphate enriched compost under a maize-wheat cropping system

Vegetable Science

Anjan Das - Understanding the physio-biochemical and genetic basis of drought tolerance in cucumber (*Cucumis sativus* L.)

Gujjala Narayana Swamy - Genetic and molecular analyses for root knot nematode resistance in brinjal (*Solanum melongena* L.)

Meghana D - Exploring antioxidant vitamins and pigments diversity in chilli accessions through metabolomic and genomic approach

Koushik Saha - Genetic and molecular analyses for pungency related traits in *Capsicum* species

Pooja Belwal - Generation and characterization of doubled haploids (DHs) in onion (Allium cepa L.)

Pradeepkumara N - Development of mapping population and identification of QTLs associated with extended shelf-life in cucumber (Cucumis sativus L.)

Pydi Roshni - Incorporation of multiple virus resistance into male sterile genetic background in chilli (*Capsicum annuum* L.)

Sulochana KH - Molecular and biochemical basis of resistance to *Phomopsis* fruit rot in eggplant (*Solanum melongena* L.)

Water Science and Technology

Kishor N - Water dynamics under drip irrigation with application of hydrogels in red cabbage

Neha Singhal - Drought vulnerability assessment using composite drought index

Shiv Shanker Chaudhari - Irrigation water security index for district Bahraich, Uttar Pradesh, India

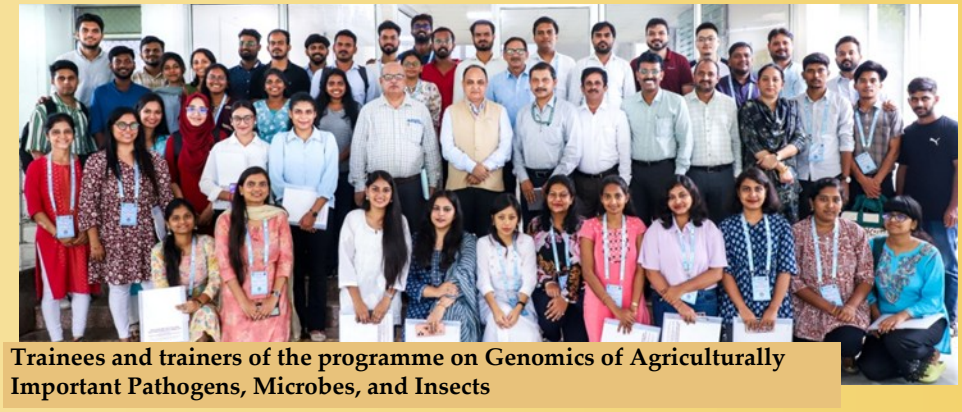
NAHEP-CAAST:

Leveraging Next-gen Student Trainings

Under the National Agricultural Higher Education Project (NAHEP), IARI has been operating Centre for Advanced Agricultural Science and Technology (CAAST), focusing on Genomics-Assisted Crop Improvement and Management. As part of this initiative, a series of specialized training programs and workshops were conducted to enhance research capabilities and technological advancements.

A training on Genome Editing for Crop Improvement: Strategies and Applications was held from July 1-12, 2024, in collaboration with ICAR-NIPB and the Division of Plant Physiology. With 30 participants, the program focused on CRISPR-Cas technology, gene knockout, and trait enhancement for crop improvement. Sessions covered target gene selection, regulatory aspects, and molecular techniques, providing hands-on experience. Experts shared insights into genome editing tools.

From July 22 to August 2, 2024, a training on Genomics of Agriculturally Important Pathogens, Microbes, and Insects was conducted by the Divisions of Plant Pathology, Entomology, and Microbiology, with 35 participants covering genome sequencing, bioinformatics, molecular diagnostics, and metagenomics. Lectures on pathogen genomics, microbial interactions, and insect resistance, offering participants valuable insights into genomic applications in agriculture were delivered. A manual on pathogen genomics was also released during the event.



Trainees and trainers of the programme on Genomics of Agriculturally Important Pathogens, Microbes, and Insects

Another workshop on Intellectual Property Rights (IPR) in India was held on July 11 and August 5, 2024, in collaboration with the Zonal Technology Management Unit (ZTMU). Attended by 100 participants, the workshop focused on patents, trademarks, copyrights, plant variety protection, and legal frameworks in agricultural research. Distinguished speakers, including Dr. K.S. Kardam, Dr. Usha Rao, and Shri Rahul Bagga, led discussions on IPR policies, filing procedures, and commercialization strategies. Case studies and interactive sessions provided researchers with practical insights into intellectual property management in agricultural innovation.

Lecture delivered by Dr. K.S. Kardam

Trainees and trainers of the programme on genome editing

PGSSU Wraps up a Dynamic 2024 with a Spectrum of Events

The Pusa Graduate School Student Union (PGSSU) of ICAR-IARI, New Delhi, successfully organized an array of events throughout the year, reinforcing its commitment to fostering academic excellence, social engagement, and holistic student development.

Cultural and Social Festivities

The year began and ended on a high note, with a New Year Celebration on December 31, 2023, at the Hemant-Vasant Ground, setting the stage for a year filled with vibrant activities. The International Women's Day celebration, featuring a friendly cricket match for girls on March 8, emphasized inclusivity and empowerment. Other significant social gatherings included the Annual Girls' Hostel Freshers' Party (March 23), the Holi Celebration in the Girls' Hostel (March 25), the Bloom Bash Program (May 31 – June 2), and the Diwali Celebration (October 29).

Community Awareness

PGSSU also played an active role in community welfare. The year commenced with a Blood Donation Camp on January 12, encouraging students to contribute to a noble cause. The union took a proactive approach to civic awareness, hosting an Awareness Program on Lok Sabha Elections (March 21) and a New Criminal Laws Awareness Session in collaboration with the Delhi Police (July 1). Furthering student well-being, the union facilitated First Aid Box Distribution in All Hostels on March 14. World Environment Day was observed on June 5, and an Anti-Ragging Awareness Program took place from August 12 to 17 to ensure a safe and inclusive campus environment.

Academic and Career Development

The PGSSU actively promoted academic and professional growth through initiatives such as a Logo Design Competition for the IARI Alumni Association (February 22) and a Brainstorming Session on Overseas Opportunities for Higher Education in Agricultural Sciences featuring Padma Bhushan awardee Dr. R.S. Paroda (November 17). The union also played a key role in student governance, organizing a Debate Among Contestants for the New PGSSU Election (November 12) and an Oath-Taking Ceremony for the Newly Elected PGSSU in the presence of Dr. Anupama Singh, Dean & Joint Director (Education), IARI (November 18).

Sports and Fitness Initiatives

Sports and fitness were integral to PGSSU's agenda in 2024. The Annual Sports Meet (May 15–20) showcased students' athletic talents, while a major milestone was the Inauguration of a New Badminton Court by Dr. Himanshu Pathak, Secretary, DARE & DG, ICAR, on May 20. A Free One-Month Yoga Camp, launched on June 6, promoted mental and physical well-being.

Institutional Alumni Engagement

PGSSU also facilitated student participation in institutional milestones. Notably, students took part in the 100th Anniversary of the DD Kisan Program (May 19), strengthening their engagement with agricultural advancements. Additionally, the IARI Alumni Meet on June 22 provided a platform for networking and reconnecting with past graduates.

A Year of Growth and Inclusion

The diverse events of 2024 reflect PGSSU's dedication to fostering an inclusive and dynamic student community. By promoting academic excellence, social harmony, cultural celebrations, and physical fitness, the union has continued to shape a well-rounded student experience at ICAR-IARI.

With a successful year behind them, the PGSSU looks forward to an even more impactful 2025.

Upcoming Events

The Pusa Krishi Vigyan Mela (PKVM) 2025, organized by ICAR-IARI, from February 22nd to 24th, 2025, with the theme *'Unnat Krishi—Viksit Bharat*'.

National Science Day on Feb 28, 2025. The theme of the event is *Empowering Indian youth for global leadership in science and innovation for Viksit Bharat*

423rd Academic Council Meeting on 20 March 2025

55th Lal Bahadur Shastri Memorial Lecture on March 21, 2025

The 63rd Convocation of The Graduate School, IARI on 22 March 2025. Week long program will commence from 17 March 2025

Foundation Day on 1st April 2025

Start of new Session of ANASTU-IARI Joint Degree Programme on 07 April 2025

Acknowledgements

The editors sincerely acknowledge the generous inputs received from various divisions, which have enriched the contents of this publication. We extend our special gratitude to Dr. B. M. Prasanna, Regional Director for Asia, CIMMYT, for his valuable suggestions, as well as to Dr. Brahmanand, Project Director for his inputs and the Graduate School staff for their support in convocation coverage. We also appreciate the assistance provided by the IQAC Office and the Office of International Affairs in compiling this edition. Their inputs have been instrumental in enhancing the quality of this publication.

ISSN:

Pusa Krishiksha

Published by
The Graduate School
ICAR-Indian Agricultural Research Institute
Pusa, New Delhi 110012, INDIA

www.iari.res.in