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From the President's Desk

Transforming Agri-food Systems: Challenges and Initiatives



Global poverty is rising due to covid, conflicts, calamities and climate change. A report of the Food and Agriculture Organization (FAO) of the United Nations highlights that 830 million people globally face severe food insecurity, with malnutrition affecting over

700 million people (FAO, 2022). The inadequate dietary intake has adversely affected 703 million people including 194 million children of less than five years of age. Therefore, we need to develop the sustainable food systems to fight hunger and malnutrition. It is required to bring science, investment and political commitment to transform the food system for better nutrition and health. The resilience and sustainability of agri-food systems have thus become critical priorities in addressing global food insecurity, malnutrition, and environmental degradation.

The World Food Programme's goal to eliminate hunger by 2030 is critical and there is a need to focus on smallholder farming, improving infrastructure and incorporating technology to increase agricultural efficiency while reducing environmental damage. Nutrition, health and education for every child should be our responsibility to nourish the future. The report on food insecurity by the FAO in 2021 (www.fao.org/3/cb4474en) shows that the Asian continent is still rife with hunger and malnutrition. Moreover, the regions of the world with wide spread hunger and malnutrition have predominance of smallholder farming. The pathway to increase the food production in these regions needs to be revisited in the light of shrinking natural resources, accesses to modern agricultural technologies and declining number of rural workers. It is required to use new technologies not just to produce more food but also to address the environmental impact of food production.

Challenges in Transforming Agri-food Systems

Climate Change and Environmental Degradation: Extreme weather events such as droughts, floods and heatwaves severely reduce crop yields and increase the risks of food insecurity. Agriculture contributes to



environmental challenges, including greenhouse gas emissions (GHGs), with food systems responsible for about a third of global emissions. Additionally, agriculture accounts for 70% of freshwater use and contributes for the cause of deforestation and biodiversity loss.

Food Insecurity and Malnutrition: Micronutrient deficiencies, referred to as “hidden hunger,” remain a critical issue, particularly in developing regions. A double burden of malnutrition is evident globally, with many people either not consuming enough calories or consuming diets high in processed foods that lack essential nutrients, leading to poor health outcomes, like stunting in children, anaemia in women and increased rate of non-communicable diseases. Millions of people suffer from malnutrition, due to either insufficient food intake or poor diet quality.

Pressure on Natural Resources: Land, water, and energy resources are becoming increasingly scarce due to population growth, urbanization, and environmental degradation. Agriculture is a major driver of land use change and water depletion, contributing to soil erosion, pollution, and loss of ecosystems. The depletion of soil nutrients and biodiversity poses long-term risks to agricultural sustainability.

Food Loss and Waste: Approximately one-third of the food produced globally is lost or wasted, representing a significant inefficiency in the food system. This waste exacerbates food insecurity and is a major contributor to GHG emissions. Reducing food waste is crucial to improving food availability and minimizing the environmental impact.

Smallholder Farmers’ Vulnerability and Socio-economic Inequities: A large proportion of the world’s food, especially in developing countries, is produced by smallholder farmers, many of whom face challenges related to access to technology, markets, and financial resources. These farmers are the most vulnerable to climate shocks and market volatility, limiting their ability to improve productivity and profitability. Moreover, rural poverty, gender inequities, and a lack of access to modern agricultural technologies further hinder the transition to sustainable and resilient food systems.

Initiatives to Build Resilient and Sustainable Agri-food Systems

Food system transformation is mainly focusing on sustainability, equity, nature-positive practices, and resilience. These transitions emphasize shifting diets towards healthier options, creating fair economic conditions for food producers, reducing the environmental footprint, and building resilience against future disruptions. Building a resilient and sustainable agri-food system requires addressing various interconnected issues that affect the availability, accessibility, and affordability of food. Some of the key

initiatives that aim to foster resilience and sustainability in food systems are described.

Climate-Smart Agriculture: Climate-Smart agriculture integrates practices that improve agricultural productivity, adapt to climate change, and reduce emissions. These practices include crop diversification, conservation agriculture, and the adoption of drought-resistant crop varieties. Agroforestry, soil conservation, and water-saving technologies are also central to Climate-Smart agriculture, helping to mitigate climate risks while enhancing resource use efficiency. Indian Council of Agricultural Research (ICAR) has initiated National Innovations on Climate Resilient Agriculture (NICRA) project to meet the climate change challenges in crop, livestock and fish production.

Promotion of Bio-fortified and Nutritious Crops: Bio-fortified crops are developed to contain higher levels of essential nutrients such as iron, zinc, and vitamins, which address micronutrient deficiencies. These crops are crucial in combating hidden hunger and malnutrition, particularly in vulnerable populations like children and pregnant women. These varieties have been brought under seed chain to make the bio-fortified food grain available to public distribution system. It is estimated that the bio-fortified crop varieties are grown in more than four million ha in India. Production of adequate quantity of breeder seed and its conversion to foundation and certified seed would be essential to increase area under bio-fortified crops. Differential procurement and supply of bio-fortified grains through public distribution system and mid-day meal scheme in a targeted manner would go long way in addressing malnutrition. The major aim is to provide food from the bio fortified varieties to schoolchildren or to include in school meal. Concerted efforts of ICAR with national and international initiatives have led to the development of 150 varieties of bio-fortified cereals, pulses and oilseeds and other crops. One such recent major initiative was the release of bio-fortified varieties by Hon’ble Prime Minister of India on August 11, 2024.

Diversification of Food Systems: Diversified food production systems, incorporating a range of crops, livestock, fisheries, and aquaculture, can improve resilience by reducing dependence on a single source of income or food. The diversified food production systems would require high levels of public and private sector investment in transportation, storage and market development. Dietary diversity and economic growth will bring diverse socio-economic group of farmers (including smallholders) to participate in relevant markets to increase their income. Youth particularly young women as entrepreneurs to build start-ups would find enough opportunity to create wealth and enhance farmer’s income. The design of such programs and the effectiveness of delivery system hold the key to achieve better nutrition through social support programs.



Promotion of Millets and Traditional Crops: Millets and other traditional crops, which are naturally resilient to drought and require fewer resources, are being promoted as part of efforts to diversify diets and make agriculture more sustainable. In India, initiatives by ICAR and Nutri-hub aim to scale up the production and consumption of bio-fortified millets, contributing to enhanced dietary diversity, better nutrition and climate resilience. Millets, pulses, and other nutrient-dense foods are being promoted for their adaptability to various climate conditions and their nutritional benefits.

Precision Agriculture: New agricultural technologies, including precision farming, remote sensing, and drones, allow farmers to optimize inputs like water, fertilizers, and pesticides, minimizing waste and environmental impact. Advances in seed technology, such as genetically modified crops and drought-resistant varieties are critical in increasing yields and resilience against climate shocks. ICAR has established incubators to nurture innovation in various fields.

Improving Agricultural Infrastructure and Market Access: Investment in rural infrastructure such as roads, storage facilities and irrigation systems is essential to enhance smallholder farmers' access to markets, reduce food loss and ensure the timely delivery of inputs. Financial support, insurance schemes, and access to credit are also needed to enable farmers to adopt sustainable practices and recover from climate-related disasters.

Sustainable Livestock and Fisheries Development: India has one of the world's largest livestock populations. Therefore, the animal sector has enormous potential to contribute to food, nutrition, and livelihood security. At ICAR, research activities on animal science are mainly oriented towards conserving indigenous livestock germplasm, faster multiplication of superior germplasm, increasing overall livestock productivity by using tools from frontier sciences, and enhancement of nutrient bioavailability of crop residues and other feed/fodder sources. Moreover, we need to focus on non-bovine milk and aquatic foods to maintain nutritional diversity in food system. Food diversity is required to maintain better gut health and traditional fermented produce maintain gut microbiome to fulfil various micronutrients.

Milk and milk-based products are important source of nutrition as it serves as wholesome food. ICAR is also working on non-bovine milk and goat milk is the front-runner in non-bovine milk production sector. South-Asian region produces highest amount of goat milk. Goat milk fulfils the nutrient requirement of growing children and pregnant mothers in all disadvantaged regions. There is a scope to enhance goat milk as part of daily consumption. Sustainable practices in livestock management, including improving feed quality and adopting regenerative grazing practices help reduce

GHG emissions and enhance soil health. In fisheries, sustainable aquaculture practices and conservation of freshwater and marine ecosystems are essential to ensure the long-term viability of fish stocks, which are crucial for global food security.

Circular Economy in Agriculture: Adopting a circular economy approach involves reducing waste, reusing agricultural by-products and recycling nutrients back into the soil. For instance, using crop residues for bioenergy or animal feed can minimize waste and improve farm sustainability.

Policy and Governance: Governments and international organizations play a crucial role in setting policies that support sustainable agriculture, provide incentives for adopting eco-friendly practices, and promote food system resilience. India's National Nutrition Mission (POSHAN Abhiyan), along with supplementary food programs such as ICDS (Integrated Child Development Services) and mid-day meals, aim to tackle malnutrition by providing nutrient-rich food to vulnerable populations. Social protection measures, including crop insurance, food distribution programs, and disaster relief efforts, are crucial to building resilience in vulnerable communities. These safety nets help buffer the impact of climate shocks and economic disruptions on food security.

Gender-Inclusivity: Addressing gender inequality in agriculture is essential as women are the major agricultural workforce, but have limited access to resources, education, and decision-making power. Projects like "Sustainable Approaches for Nutritional Security" focus on empowering women farmers and improving their participation in agri-food systems.

Conclusion

Building resilient and sustainable agri-food systems requires addressing the complex challenges of climate change, food insecurity and environmental degradation while promoting innovation, equity, and inclusiveness. Successful transformation depends on collaborative efforts among governments, private sectors, researchers and farmers, with a focus on protecting vulnerable populations and ensuring equitable access to food and resources. By adopting innovations such as climate-smart agriculture, bio-fortification and nature-positive practices, and by addressing systemic issues like food waste and socio-economic inequalities, the global community can work towards creating agri-food systems that meets the needs of the present and future generations within planetary boundaries and will be resilient, sustainable and equitable.

Himanshu Pathak
President



Executive Council Meeting

138th meeting

The 138th meeting of the NAAS Executive Council (EC) was held in hybrid mode on September 19, 2024 under the Chairmanship of Dr. Himanshu Pathak, (President, NAAS). Besides the EC members, Conveners of the Sectional Committees participated on specific items and subsequently the agenda items were deliberated upon by the EC.

- Dr. P.K. Joshi, (Vice-President, NAAS) provided update on the NAAS publication entitled “Road Map on Indian Agricultural Research, Education, and Extension during Amrit Kaal 2047.” It was anticipated that the publication would be finalized within the next three months. Dr. Joshi was advised to include recent recommendations from the Government of India in the document.
- Dr. W.S. Lakra (Secretary, NAAS), presented an overview of the preparations along with technical programme for the XVII Agricultural Science Congress, scheduled for February 20-22, 2025 at Pantnagar.
- Dr. Lakra, on behalf of Dr. Rajeev K. Varshney (Foreign Secretary, NAAS), also presented the status of the International Borlaug Dialogue to be organized in collaboration with the World Food Prize Foundation. The event scheduled for October 2024 will focus on the theme “Seeds of Opportunity: Bridging Generations and Cultivating Diplomacy.”
- The ongoing efforts on revising the Bye-Laws and Rules & Regulations of the Academy were

reviewed. Dr. K.M. Bujarbaruah (Vice-President, NAAS) informed that the final version of the revised document would be presented in the next EC meeting.

- Recommendations of the Sectional Committees and the Conveners’ Group for finalizing the Academy’s Fellowships, Associates, and Young Scientist Awards for 2025 were considered and it was also suggested that a committee be formed to review the guidelines, proforma, and scorecard for future selections.
- Recommendations of the Judging Committees for NAAS Recognition, Memorial and Endowment Awards for the biennium 2023-2024 were also considered.
- The EC prepared a panel for the election of Office-bearers and Members of the Executive Council 2025.
- The Council proposed Dr. Madhoolika Agrawal (Head, Department of Botany, BHU, Varanasi) as the new Convener of the Varanasi Chapter and expressed its appreciation for the contributions of the outgoing Convener, Dr. T.K. Behera (Director, IIHR, Bengaluru).
- Lastly, the Council discussed various administrative matters, including the NAAS scoring of journals and approved changes in the authorized signatories for NAAS’s FCRA bank account with the State Bank of India.

The meeting concluded with vote of thanks to the Chairman and Members of the Executive Council.

NAAS Programmes

BRAINSTORMING SESSIONS

“Agrivoltaics in India” (Convener: Dr. A. K. Sikka, IWMI, Country Representative India and Bangladesh; Co-Conveners: Dr. P. Santra, Head, NR Division, CAZRI, Jodhpur; and Dr. Rajbir Singh, ADG, NRM)

The Academy organized a brainstorming session on “Agrivoltaics in India” in hybrid mode on August 20, 2024 under the Chairmanship of Dr. Himanshu Pathak (President, NAAS). Dr. Pathak in his opening remarks outlined the specific goals and expectations from the session. This was followed by a presentation from

Dr. Sikka, who provided an overview of the status, challenges, opportunities, key questions related to Agrivoltaics in India, and anticipated outcomes from the session.

The session featured two panel discussions that addressed critical aspects of Agrivoltaics. The first panel discussion, moderated by Sh. Shilp Verma and Dr. Rajbir Singh, explored topics such as the India-specific definition of Agrivoltaics, the status of its adoption, advantages of agrivoltaics systems over ground-mounted photovoltaic (PV) systems, and the environmental and social impacts. The second panel discussion, moderated by Dr. P. Santra and Dr.



Rajbir Singh, focused on identifying suitable areas and commodities for Agrivoltaics, the role of farmers in the expansion of this technology, opportunities and challenges, the need for capacity-building programs, and donors' perspectives on Agrivoltaics. The session was concluded with the address of Dr. K.M. Bujarbaruah (Vice President, NAAS).

“Cellular Fish Meat Production: Prospects and Challenges” (Conveners: Dr. C.N. Ravishankar, Director, ICAR-Central Institute of Fisheries Education (CIFE), Mumbai; and Dr. A. Gopalakrishnan, Former Director, ICAR-Central Marine Fisheries Research Institute (CMFRI), Kochi)

The Academy organized a brainstorming session on “Cellular Fish Meat Production: Prospects and Challenges” in hybrid mode on September 20, 2024. The session was chaired by Dr. K.M. Bujarbaruah (Vice-President, NAAS). This was the first brainstorming



session convened on cellular fish meat in the country represented by the amalgamation of delegates from diverse backgrounds public and private organisations. Dr. W.S. Lakra in his welcome address discussed about the Global excitement in cellular aquaculture. Dr. K.M. Bujarbaruah (Vice-President, NAAS) provided his insights on cultivated meat and the need for international collaboration.



Dr. Jena (DDG, Fisheries) made remarks regarding the relevance of cellular fish meat in the current context along with challenges ahead to continue cellular fish meat work. Dr. M. Goswami, (ICAR-CIFE, Mumbai) delivered the lead talk on Cultivated Seafood: Development, Challenges & Safety Issues based on the initiative of ICAR-CIFE, Mumbai for cultivated seafood research in the country through an international project approved by ICAR. This was followed by presentations from speakers representing CMFRI, Kochi; Atal Incubation Centre, CCMB Hyderabad; Good Food Institute, India; Neat Meatt Biotech Pvt. Ltd., New Delhi; HiMedia Pvt. Ltd., Mumbai; IIT Madras and National Research Centre on Mithun, Medziphema, Nagaland. Potentials of cultivated seafood as a future alternative protein source to meet the growing demand of the human population and other regulatory and safety challenges related to cultivated seafood production were nicely deliberated in the brainstorming session. The session ended with the remarks of Chair, Dr. K.M. Bujarbaruah (Vice-President, NAAS).

“Water Security: Is Quantum or Management the Issue” (Convener: Dr. Anil K. Singh, Former VC, RVSKVV, Gwalior; Co-Convener: Dr. K. Palanisami, Former Director, CARDS, Tamil Nadu Agricultural University TNAU)

The Academy organized a brainstorming session on “Water Security: Is Quantum or Management the Issue” in hybrid mode under the Chairmanship of Dr. Himanshu Pathak, President (NAAS) on August 09, 2024. The convener emphasized upon, water security as a pressing issue in India, where agriculture heavily relies on water resources for both irrigated and rainfed systems. With over 75% of the nation's water supply directed towards irrigation, the efficiency of this usage remains alarmingly low at 35-40%. Compounded by rising population demands, urbanization, and climate change, the gap between



water supply and demand continues to widen. Experts from various Institutions discussed critical factors such as sustainable groundwater management, modern irrigation technologies, and the need for integrated approaches to wastewater management. The discussion underscored the urgency for coordinated efforts to enhance water security across all sectors and the following issues emerged:



- Development of sustainable water management policies by effective inter-departmental coordination and strict regulatory mechanisms to ensure responsible usage and conservation.
- Integration of modern irrigation technologies such as drones, sensors, AI, and IoT into irrigation systems for better assessment, monitoring, and management of water resources.
- Efficient water allocation in agriculture leading to significant water savings for other uses.
- Groundwater management and community engagement for sustainability.
- Wastewater management as a resource for irrigation, especially in peri-urban areas.
- Increased water storage capacity to address the challenges of urbanization and the increasing intensity of rainfall events.
- Enhancing the management and productivity of tank-based irrigation systems
- Implementation of regular water auditing for economic viability and environmental sustainability.
- Importance of policy interventions social incentives and penalties for misuse of water resources .
- Addressing the future water requirements by taking into account the impact of climate change on agricultural and irrigation requirements.

STRATEGY WORKSHOP

“Crop Protection Solutions: Group MRL & Minor Uses of pesticides” (Convener: Dr. P.K. Chakrabarty, Former Member, ASRB & ADG PP&B; Co-Convener: Dr. Vandana Tripathy, Network Coordinator, All India Network Project on Pesticide Residues)

A strategy workshop on “Crop Protection Solutions: Group MRL & Minor Uses of pesticides” was organized in hybrid mode on July 12, 2024 under the Chairmanship of Dr. Himanshu Pathak, (President, NAAS) to discuss the challenges due to off label use of pesticides in India. Participants from ICAR, DAC, GMUF-USA, industry, and associations attended the meeting due to the importance of pest management, biosafety, production, and international trade of agricultural commodities. These factors rely on Good Agricultural Practices (GAPs) and the use of pesticides within Maximum Residue Limits (MRL)



for each crop. Further, India aspire during “Amrit Kaal,” to increase its horticultural trade share from less than 1% to at least 10%. Achieving this goal requires the development of Group MRLs, where a single MRL can be applied across similar crops instead of individual ones. This approach would be more affordable for industries, particularly for minor crops, and needs regulatory support and incentives to succeed.

Dr. Pathak (President, NAAS) appreciated the concerns and need for harmonization of MRL of pesticides and ameliorating the menace due to off-label use of pesticides. He advised that the harmonization of group MRL and its justification should be based on scientific reasoning uncompromising with human and environmental safety.



Subsequently, the presentations made by Dr. Chakrabarty and Dr. Tripathy were followed by the remarks of Dr. P.K. Singh, (Agriculture commissioner), Dr. T.R. Sharma (DDG, Crop Sciences) and Dr. N.K. Krishna Kumar (DDG, Horticulture Sciences). They unequivocally supported the need for mandatory restrictions on off-label use of pesticides, their mitigation through development of group MRL, and minor use of pesticides. This was followed by a panel discussion and the panellists supported adoption of crop grouping and development of group MRL, based on scientific reasonings and without compromising with biosafety concerns.

To promote and encourage applicants (chemical manufacturers/ registrants) to register agricultural pesticide products on minor crops, it was recommended:

1. Incentivization with provisions of data-protection, data-bridging, reduced data requirements, data waivers, fast-track approvals, acceptance of international data for registrations.
2. Harmonization of stringent national MRL's and adoption of Codex MRL's to minimize trade concerns.
3. Collaboration with Global Minor Use Foundation for minor use programmes to find effective solutions for off- label pesticide use.
4. Redefining of criterion for identification of minor crops using GEMS food clusters for Asian group.

OTHER ACTIVITIES

“NAAS-PAAS Editors’ Workshop”

The National Academy of Agricultural Sciences (NAAS) in collaboration with the Professional Association of Agricultural Societies (PAAS) organized a Workshop in hybrid mode on August 8-9, 2024 to enhance the quality and impact of journals associated with PAAS.

Dr. Pathak (President, NAAS) in his introductory remarks, laid emphasis on the role of publications

in research, as the key metric in evaluating scientific contributions. He highlighted India's position as the fourth-largest publisher in biological sciences, including agriculture, and stressed the need to improve the quality of English language usage in scientific publications beside scientific content.

Prof. Anupam Varma, (Editor-in-Chief, Agricultural Research), expressed gratitude to Dr. Pathak for his initiative and efforts to improve agricultural science journals.

The workshop included presentations by Ms. Deepshika Chauhan, (Editor, Springer) on “Attributes of High Impact Factor Journals,” and by Dr. Aruna T. Kumar, Directorate of knowledge Management in Agriculture (DKMA) on “Experience of DKMA in Improving the Quality of Agricultural Sciences Journals”.



The issues deliberated during the workshop included:

- **Self-Reliance of Journals:** Need for journals to be self-sustaining was emphasized.
- **Merger of Journals:** Discussed the scope for merging journals from societies in the same discipline to create zonal journals so as to reduce redundancy.
- **Training for Scientific Writing:** NAAS to organize training programs for Ph.D. students and young scientists to improve their scientific writing skills.
- **Combating Predatory Journals:** Societies to discourage predatory journals that charge for publication and report such journals to the Academy.
- **Article Transfer Mechanism:** To create a system for transferring manuscripts deemed unsuitable for a particular journal to another, with the author's permission.
- **Common Reviewer Database:** To create a common database for reviewers across disciplines.



- **Journal Graphics Improvement:** Academy to provide guidance on improving the quality of journal graphics and figures.
- **AI Policy Development:** NAAS to develop a policy on the use of AI in scientific writing and publishing.
- **Digital Archiving:** Exploration of options for the digital archiving of research data.
- **Journal Visibility:** Develop strategies to improve the international visibility and impact of Indian journals.
- **Support for Society Journals:** Academy to find ways to support and improve the quality of Society journals, including professional management and enhanced plagiarism checking services.

“NAAS-YUVA Launch Programme”

The Launching ceremony of NAAS-YUVA (Youth United for Visionary Agriculture) was held in hybrid mode on September 25, 2024 and the inaugural lecture on “The Role of Agricultural Education in Shaping a New India” was delivered by Prof. Madhura Swaminathan, Professor and Head, Indian Statistical Institute, Bengaluru. Before inviting Prof. Swaminathan to deliver the lecture,



Dr. Harita Bollinedi (Convener, NAAS-YUVA), explained the purpose and vision behind the creation of NAAS-YUVA.

Prof. Swaminathan in her address emphasized how smart agriculture, supported by technological advancements, could significantly improve the living standards of rural communities. She also stressed that NAAS-YUVA's activities should extend beyond agricultural universities to include institutions like IITs, fostering a broader collaboration for promoting agricultural education and harnessing technological knowledge. She further underscored the importance of empowering young minds in science, technology, and the humanities, expressing optimism about NAAS-YUVA's role as a platform for young researchers to exchange ideas and collaborate that address critical societal challenges.

Prof. R.B. Singh (Former President, NAAS), in his concluding remarks, advocated for expanding the STEM framework (Science, Technology, Engineering, and Mathematics) by including agriculture, and transforming it into “STEAM.” He was of the view that this would be essential for advancing agricultural education. Additionally, he suggested integration of agriculture into the school curriculum, aligning it with the New Education Policy framework. He also highlighted how technological innovations could play a key role in the entire agricultural process from plough to plate. He reminded the audience that agriculture is not only about growing crops but also about providing livelihoods to more than 50% of India's population.

More than 80 students representing three schools—St. Lawrence Public School, MR Vivekananda Model School, and Ramjas International School were benefitted by the programme.





Activities of the Regional Chapters

Bengaluru Chapter

The NAAS Bengaluru Chapter organized a lecture in hybrid mode on “Digital Disruption in Indian Agriculture” on July 17, 2024. The lecture was delivered by Dr. E.V.S. Prakasa Rao, (Scientist, CSIR Fourth Paradigm Institute, Bengaluru). Dr. Prakasa Rao talked on the importance of digital technologies in the Indian Agriculture as a fast emerging area. The potential of digital technologies in soils, crops, animals, poultry, fisheries and extension services was highlighted. Importance of data collection, analysis, AI including machine and deep learning, robotics was explained in the talk. The role of IoT and advances in internet connectivity and their importance in advisory services for all the stakeholders was discussed.

Cuttack Chapter

The NAAS Regional Chapter, Cuttack, in association with ICAR- National Rice Research Institute (NRI), Cuttack, the Campbell Scientific India Pvt. Ltd., Indian Society of Soil Science, Cuttack and Indian National Young Academy of Science, (East Zone) organized a workshop on “An introduction of eddy covariance technique from theories to instruments and to data processing” on June 07, 2024 in hybrid mode. 27 participants including faculty, students and technicals from ICAR-NRI and National Institute of Science Education and Research, Bhubaneswar were benefitted.



The Chief Guest's presentation, Dr Bai Yang (Sales Engineer, Campbell Scientific Inc., Logan, Utah), covered wide aspect of eddy covariance theory, turbulence, data collection, corrections, and gap filling.

Karnal Chapter

- The NAAS Karnal Regional Chapter organized a meeting in hybrid mode on July 20, 2024 at the GS Foundation for Research, Education and Development (GSFRED), Karnal to finalize activities and programs to be undertaken during the year and to have interaction with the stakeholders. It was also suggested that the activities of the Chapter and the technologies related to this region should be highlighted through various social media platforms including YouTube Channel and Facebook.



- An interactive session to sensitize school students about climate change was organised on September 3, 2024 at GSFRED, Karnal. More than 100 students of Adarsh Cambridge International School, Karnal were benefitted. A lecture about global perspectives of climate change, its impact on agriculture and allied sectors and coupling up strategies to make agriculture climate resilient was delivered. The students were also made aware about the Academy and its activities. The visiting students took keen interest in the discussion and also made their presentations in power point mode. Later on, the students were exposed to various experiments and demonstrations laid out at the GSF Research Centre on climate resilient agricultural practices.

Kolkata Chapter

“Mahila Matsyajibi Sammelan 2.0”

The NAAS Regional Chapter, Kolkata, in collaboration with Central Inland Fisheries Research Institute (CIFRI), organized the “Mahila Matsyajibi Sammelan 2.0” on August 17, 2024 in Sundarbans.



Dr. J.K Jena (DDG, Fisheries Science) presided the function and inspired the women fishers to utilize the available water resources in the Sundarbans to do the small-scale aquaculture. Mr. Sidhartha Sankar Dash (DGM, SBI, Kolkata) delivered a talk on the available schemes that can help the fisher women to access the credit facilities.

National Fish Farmers' Day, 2024

Kolkata Regional Chapter celebrated "National Fish Farmers' Day" in collaboration with ICAR-CIFRI on July 10, 2024. Shri Biplab Roy Chowdhury, Minister of Department of Fisheries, Government of West Bengal and Shri Gabriel D. Wangsu, Honourable Minister, Agriculture, Horticulture, Animal Husbandry & Veterinary & Fisheries, Food & Civil Supply, Legal Metrology & Consumer Affairs, Govt. of Arunachal Pradesh graced the occasion. About 150 fish farmers, including 17 women farmers and other stakeholders of the sector, such as Entrepreneurs, NGOs, and Researchers also participated. The primary goal of celebrating National Fish Farmers' Day is to increase public awareness of technologies that are beneficial



to the fishing sector. Observing days dedicated to fish farming can bring together scientists, fish farmers, and policymakers to address the inland fisheries issues assuring economic growth, livelihood support, and nutritional security.

The Institute honoured eleven progressive farmers from eight different states, viz. West Bengal, Bihar, Jharkhand, Odisha, Manipur, Kerala, Gujarat and Uttar Pradesh for their contribution to the development of the inland fisheries sector in their respective states.

- Kolkata Regional Chapter in collaboration with Indian Mycological Society (IMS) and Department of Botany, University of Calcutta, Kolkata organized a Workshop on "Agriculture in Digital Era" in hybrid mode on August 24, 2024.



Ludhiana Chapter

The NAAS Ludhiana Chapter in association with The Crop Improvement Society of India, Ludhiana organized a Special Lecture on "The World Rice Leader: Dr. Gurdev Singh Khush" by Dr. J.S. Sandhu (Former VC, SKNAU, Jobner) on September 26, 2024. Dr. Sandhu, narrated the journey of Dr. Gurdev Singh Khush as a student from a small school at Rurkee (district Jalandhar) to a Titan in the field of Agriculture Dr. Khush's long association with Dr. Darshan Singh Brar, Norman E. Borloug, Dr. M.S. Swaminathan, and Panjab Agricultural University were the highlights of his talk.





Publications

Policy Papers (PP)

PP-128: Ethics In Research Publication

PP-129: Greening of Indian Livestock Sector and Poultry Sector

PP-130: Multiple Uses of Solar Energy Agriculture and Agro-Processing



Forthcoming Programmes

Brainstorming Sessions

- Strategies and policy design for enhancing the global footprint of Indian spices (Convener: Dr. Prasath Duraisamy)
- Climate Adaptive Conservation of Aquatic Genetic Resources (Convener: Dr. U.K. Sarkar)
- Underutilized Wild Fruit & Vegetables for Nutritional and Health Security: Policy Perspectives (Convener: Dr. T.K. Behera and Co-convener: Dr. Oliver King, MSSRF)

Obituaries



Dr. Rattan Lal Yadav
(1949-2024)

Dr. Rattan Lal Yadav (74), left for his heavenly abode on July 07, 2024 in Delhi during a morning walk, was born in Manethi (district Rewari, Haryana) on November 11, 1949. He graduated from Hisar in 1970 and obtained his masters and PhD (Agronomy) degrees from GBPUA&T, Pantnagar in 1972 and 1976 respectively. Dr Yadav joined ICAR during 1976 as Scientist (S-1) at Indian Institute of Sugarcane Research (IISR), Lucknow, where he worked out the optimum dose and time of nitrogen application in sugarcane and efficient nutrient management for companion cropping with sugarcane to boost sugarcane productivity and profitability in sub-tropics. He did pioneering work for conserving soil organic carbon in sugarcane system through farm wastes and sugar industry bi-products. His technology for successful ratoon initiation during winters through the use of growth regulators brought him laurels and he was awarded INSA Young Scientist Medal (1981) and Prof. Hira Lal Chakravorty Award (1988). He had a short stint at CIMAP, Lucknow. His illustrious career was adorned with the positions of Head, Agronomy (1987-94) and Director, Indian Institute of Sugarcane Research (2003-2011). Dr Yadav took the reins of Directorate of Cropping System Research, Meerut during its fledgling stage (1994-2001) and developed the Institution as a world class organization. As

National Coordinator of NATP (ICAR), he showed his capabilities of handling and coordinating cutting edge research in agricultural sciences. He was associated with the formulation of 10th and 11th Five Year Plan as Member-Secretary and Member of NRM group on Indian Agriculture and Segar Sector. He was a prolific writer as evident from his publications that include more than 300 technical papers in reputed National and International journals and 10 books published on sugarcane agronomy and other aspects. Of several awards and recognition received, the prominent ones are: VASVIK Award, 1994; Govt of UP Vigyan Rattan Award, 2005; ANGRAU G. Narasimha Rao Endowment Lecture, 2006; Indian Society of Agronomy Gold Medal, 2006; Dr. M.S. Swaminathan Award 2010 of Krishi and Gramin Vikas Sewa Samiti; Lifetime Achievement Award, 2011, Bhartiya Krishi Anusandhan Samiti; He is survived by his wife and two daughters.

Dr. R. Vishwanathan
Director,

Indian Institute of Sugarcane Research, Lucknow



Prof. C. Ramasamy
(1947-2024)

Prof. C. Ramasamy, distinguished Professor of Agricultural Economics, was born on June 26, 1947 in Vagarai, Tamil Nadu. He served as Vice Chancellor of Tamil Nadu Agricultural University



for two consecutive terms during 2002-2008. Earlier during 1997-2002, he was the Director, Centre for Agricultural and Rural Development Studies (CARDS), TNAU. He also served as a Member in the State Planning Commission, Government of Tamil Nadu. He was a Visiting Research Fellow, International Food Policy Research Institute, Washington D.C. (1984-1987) and Visiting Researcher, International Rice Research Institute (IRRI), Manila and ICRISAT, Hyderabad. He received several research grants and published many research papers in National and International Journals. He was a mentor and guide to many economists worldwide.

As Vice Chancellor (TNAU), he is credited with many achievements, which include building the Centenary Building at TNAU, introduction of e-learning in TNAU, establishment of Directorate of Agribusiness Development, Department of Nano Technology, three new Regional Research Station and establishing 11 new KVKs in TNAU. He initiated six new undergraduate courses in agriculture and allied subjects, aligning with new technological advancements in agriculture. He

also introduced novel methods for admission to UG programs, sponsored by agro-industries and NRIs. He got a special grant of Rs. 50 crores from Government of India for the development of research and education in the University. He is instrumental in implementing a Dual Degree Program with Cornell University, USA through a grant from USAID and TATA TRUST, Mumbai. It's irrefutable that under his able stewardship, TNAU made a quantum leap in its growth trajectory.

He is a fellow of National Academy of Agricultural Sciences and two-time President of Indian Society of Agricultural Economics (2011 to 2015). In 2011, after retirement, he was associated with Agricultural Innovation Partnership Project funded by USAID, USA for promoting agricultural education in select Agricultural Universities in India and in few developing Countries. (2011-16)

He is survived by his wife Mrs Chandra and daughters Mrs. Saveetha and Mrs Priya.

Dr. Kuppannan Palanisami

*Former Director (CARDS),
Tamil Nadu Agricultural University, Coimbatore*

Announcement



XVII Agricultural Science Congress

“The XVII Agricultural Science Congress will be organized by the National Academy of Agricultural Sciences (NAAS) in collaboration with the GB Pant University of Agriculture and Technology (GBPUA&T) at Pantnagar, Uttarakhand during February 20-22, 2025.

The President (NAAS), warmly invites you to attend and actively engage in the Congress deliberations. The theme of the Congress is “Frontier Science and Technologies in Agriculture for a Developed India”.

Editors: Drs. V.K. Baranwal and R.K. Jain

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