



CONTENTS

From the President's Desk	1
Executive Council Meeting	4
145 th Meeting	4
Regional Chapters Meeting	4
33rd Annual General Body Meeting and Foundation Day Celebrations	5
Presentation of the Newly Elected Fellows	5
Workshop on Plant Health Management	5
Annual General Body Meeting	6
Presidential Address	7
NAAS Felicitation Function	8
Prof. M.S. Swaminathan Foundation Day Lecture	9
NAAS Programs	10
Brainstorming Sessions	10
Activities of the Regional Chapters	11
Barapani	11
Hyderabad	12
Karnal	12
Lucknow	13
Ludhiana	14
Palampur	15
Pune	16
Varanasi	16
Activities of NAAS-YUVA	17
Publications	17
Programs 2026	17
Obituaries	18

Editors

Dr. R.K. Jain
Dr. R.K. Pal

From the President's Desk

Atmanirbharta in Fertilizers: Two-Pronged Strategy for Nutrient Sovereignty



The achievement of food security in India is one of the great successes of science-led development. Fertilizers/plant nutrients, along with improved varieties, irrigation, mechanization and supportive policy, helped to transform the country from a food-deficit nation into a leading agricultural power. The next challenge, however, is more complex: the same nutrient economy that supported self-sufficiency must now be redesigned to reduce import dependence, restore soil health, improve nutrient-use efficiency, contain fiscal stress and build long-term strategic resilience. Fertilizer nutrient consumption in India has increased from ~3.38 million tonnes (Mt) in the early 1960s to >33 Mt today, while foodgrain production has risen from about 82 Mt to 376.6 Mt. Yet, this success carries a warning. Fertilizer use has grown much faster than output, and crop response per kg of nutrient has declined sharply.

India imports nearly 90% of its phosphorus (P) and almost the entire potassium (K) requirements. Urea consumption has crossed 38 Mt, while domestic urea production remains dependent on imported natural gas, which accounts for nearly 70% of urea production cost, and ~80-85% of gas used by the urea industry is imported. Fertilizer subsidies increased from Rs. 16,127 crore in 2004-05 to Rs. 1.77 lakh crore in 2024-25, with fertilizer imports causing foreign-exchange outflow of whopping US\$8.29 billion. *Atmanirbharta* in fertilizers must therefore mean strategic nutrient resilience, not merely higher domestic production.

A realistic national strategy must have two mutually reinforcing prongs. The first is to reduce avoidable chemical fertilizer consumption by improving soil health, nutrient-use efficiency and better crop-system design. The second is to boost indigenous nutrient production through new fertilizer technologies, domestic mineral resource activation, circular nutrient flows and biological inputs. These two prongs must be supported by strong policy and a whole-of-government approach.



I. Reducing Avoidable Chemical Fertilizer Consumption

The first route is not the abrupt fertilizer reduction, but a scientifically guided reduction of inefficient and environmentally damaging use while protecting yield. India must move from fertilizer-volume to nutrient-performance security.

The foundation is soil health-based fertilization. India has issued about 25.17 crore Soil Health Cards and established 8,272 soil testing laboratories. Soil mapping at 1:10,000 scale has covered nearly 29.0 million ha (Mha), and 1,987 village-level fertility maps have been prepared. The next step is to convert this diagnostic infrastructure into field-level decisions through soil-test-based fertilization, customized nutrient blends, integrated nutrient management and digital advisories linked to soil organic carbon, pH, salinity, texture, irrigation status, crop history and yield targets.

Nutrient imbalance must be corrected with urgency. The $N:P_2O_5:K_2O$ ratio has reached about 10.9:4.4:1 in recent years, with N alone accounting for ~67% of total nutrient use. Nutrient-use efficiency also remains low, only 30-50% applied N, 15-25% P and 50-60% K may be recovered by crops. Remaining nutrients are lost through leaching, runoff, volatilisation, denitrification, fixation or immobilization. This is not an economic loss only but often has adverse environmental consequences. Decades of imbalanced fertilization, inadequate organic recycling and loss of soil organic carbon have compromised key soil functions too, where biological activity & nutrient-buffering capacity declined and soils have become less efficient to convert fertilizer inputs into crop output.

Crop diversification is another major pathway. Diversification (redesigning cropping systems to improve resource-use efficiency and farm income) towards pulses, oilseeds, millets, fodder crops, horticulture and legumes can improve biological N contribution, reduce pressure on fertilizers and water, and strengthen nutritional security. Fertigation and precision water management are equally important because nutrient losses are closely linked with irrigation methods and soil moisture dynamics. Under the PMKSY: Per Drop More Crop component, nearly 11.1 Mha have been brought under micro-irrigation, creating a strong platform for fertigation in horticulture, vegetables, sugarcane, cotton and other high-value systems.

A new frontier is biological nitrification inhibition (BNI), which can retain N longer in NH_4^+ form and reduce NO_3^- leaching and N_2O emissions. BNI-active crop varieties, improved N placement, and better soil-

water management can together support low-nitrifying production systems. This is an area where plant breeding, soil microbiology and nitrogen-cycle science must converge. Nutrient efficient varieties should become a mainstream breeding priority. Research on BNI in wheat is already in advance stage in India. Even an illustrative 10% improvement in crop recovery would mean roughly 2.2 Mt more N is used productively. Breeding for NUE must target root architecture, nutrient uptake, rhizosphere interactions, nutrient remobilisation and yield per unit nutrient absorbed.

Natural farming and organic/natural-resource-based systems also have a place in this strategy where they contribute to reducing input costs, improving soil biology and resilience. The National Mission on Natural Farming, with an outlay of Rs 2,481 crore, targets 0.75 Mha through 15,000 clusters, one crore farmers and 10,000 bio-input resource centres. However, it should be positioned scientifically as a soil restoration and low-input pathway for sustainable agriculture towards impact at scale.

A national nutrient intelligence system is now essential. Such a system should integrate Soil Health Cards, fertilizer sales, AgriStack, remote sensing, crop models, weather, irrigation data, organic carbon monitoring and field-level advisories to identify areas of excessive N use, deficient P or K application, high nutrient-loss risk and poor fertilizer response. This would allow India to manage fertilizer demand through evidence, prediction and targeted advisories, rather than through broad administrative controls.

II. Boosting Indigenous Production and Domestic Nutrient Sources

The second route is to strengthen country's domestic nutrient supply base. Indigenous production must include green ammonia, coal gasification, nano and enhanced-efficiency fertilizers, indigenous minerals, organo-minerals, recycled nutrients and biologicals, along with conventional fertilizer plants.

Indigenous production must begin with assured access to critical nutrient resources and feedstocks. India has already secured about 8.6 Mt of fertilizers through long-term global arrangements, while domestic P & K fertilizer production increased from 15.95 Mt in 2014-15 to 21.12 Mt in 2024-25. DAP (Diammonium phosphate) imports from China declined from 2.22 Mt in 2023-24 to 0.84 Mt in 2024-25, showing the value of diversified sourcing. These gains should be institutionalised through overseas investments, joint ventures, equity participation in P and K resources, assured shipping channels and strategic nutrient reserves.



Advanced fertilizer technologies must form a central component of indigenous supply strengthening. Green ammonia is a long-term strategic opportunity. National Green Hydrogen Mission, with an outlay of Rs 19,744 crore, targets at least 5 Mt of green hydrogen per year by 2030, which can be linked with fertilizer manufacturing to decarbonise NH_3 production and reduce dependence on imported fossil feedstocks. Coal gasification provides another pathway for feedstock security. The Talcher coal gasification-based ammonia-urea project, with planned production of 1.27 Mt year⁻¹ of neem-coated urea, uses indigenous coal from Talcher fields blended with petcoke to handle high-ash coal, and includes 2,200 tonnes day⁻¹ NH_3 and 3,850 tonnes day⁻¹ urea capacity. At the national level, the Rs 37,500 crore surface coal/lignite gasification scheme supports the target of gasifying 100 Mt of coal by 2030, helping reduce import dependence on LNG, urea, ammonia and methanol. Transport Integrated Gasifier (TRIG) technologies are also relevant because they are designed for low-rank, high-moisture and high-ash coals, reportedly up to about 50% ash, and can generate syngas for chemicals and fertilizers. In parallel, nano-fertilizers and enhanced-efficiency fertilizers have scaled rapidly, with cumulative sales of about 1,600 lakh 500 ml bottles of Nano Urea and Nano DAP. However, these technology pathways must advance with rigorous attention to multi-location agronomic validation, farmer economics, quality regulation, carbon management, water use, ash/slag handling, life-cycle emissions and techno-economic performance.

Indigenous mineral sources offer a long-term opportunity for reducing P and K import vulnerability. India has about 2,662 Mt of glauconite, 280 Mt of rock phosphate and 16,000 Mt of polyhalite. Being low-grade resources, they cannot directly replace imported fertilizers in raw form, but grinding, partial acidulation, microbial solubilisation, composting and organo-mineral formulations can make them part of a domestic P and K strategy. Organic wastes represent India's largest dispersed domestic nutrient reserve and a major opportunity for circular nutrient economy. The country generates ~762.8 Mt of crop residues containing 4.55, 0.53 and 6.61 Mt of N, P and K, respectively. About 667.7 Mt of animal waste additionally adds 4.49 Mt N, 1.77 Mt P and 3.31 Mt K. When agro-industrial and other organic wastes are included, the national organic-waste nutrient potential is about 10.6 Mt N, 2.6 Mt P and 10.2 Mt K annually. Processing these resources into composts and other products can reduce imports, restore soil carbon, create rural enterprises and recycle nutrients back to soils.

Biologicals must also be strengthened. Under suitable soil-crop-strain conditions, biofertilizers can supplement about 25% of chemical fertilizer requirement, while improving nutrient availability, rhizosphere functioning and soil biological activity. Future research must prioritise location-specific strains, biofilm formulations, nitrogen-fixing endophytes, microbiome-informed products, and where scientifically and regulatorily appropriate, genome-edited microbes, with strong biosafety, quality-control and field-performance standards.

III. Policy Framework

Fertilizer policy must continue to protect farmer affordability and food security, but support should progressively shift from fertilizer volume to nutrient performance. DBT has linked subsidy release to actual PoS-based sales; neem-coated urea has improved nitrogen discipline; PM-PRANAM rewards states for reducing chemical fertilizer use while Market Development Assistance of Rs 1,500 per tonne for FOM (Fermented Organic Manure), LFOM (Liquid Fermented Organic Manure) and PROM (Phosphate Rich Organic Manure) from GOBARdhan/CBG (Compressed Bio-Gas) systems supports recycled nutrient products. These instruments should be integrated into an outcome-oriented nutrient mission.

IV. Whole-of-Government Approach

Implementation may follow three phases: foundational reforms during 2025-2030, scaling of validated technologies and domestic resources during 2030-2040, and a nutrient-sovereign ecosystem by 2047. This mission requires a whole-of-government approach. Various departments and ministries of Govt of India such as Fertilizers, Agriculture, ICAR, Coal, Mines, New and Renewable Energy, Environment, Jal Shakti, DBT, DST, CSIR, NITI Aayog, States, industry and farmer institutions must align policy, research, finance, standards and extension under one mission framework. For the NAAS fraternity, the task is to provide independent scientific leadership on evidence standards, NUE metrics, soil-health indicators, technology-readiness pathways, biosafety norms and policy options. *Atmanirbharta* in fertilizers must become a science-led national mission, moving India from fertilizer security to nutrient sovereignty, from import dependence to resource efficiency, and from soil mining to soil regeneration. The country has all elements in place for a nutrient sovereign nation.

M.L. Jat
President



Executive Council Meeting

145th Meeting

The 145th meeting of the Executive Council (EC) was held in hybrid mode on June 03, 2026 under the chairmanship of Dr. M.L. Jat (President). The key agenda items discussed during the meeting were as follows:

- Revised draft of the Academy Bye-Laws, Rules and Regulations reviewed.
- Identified Dr. Rai Singh Kookana (Australia) as Convener of the Academy Global East chapter.
- Reviewed preparations for the Academy participation in the World Food Prize Foundation Event 2026. Ten high school students selected under the NAAS-YUVA initiative will represent India.
- Proposal to organize the Agricultural Science Congress once every three years will be placed before the General Body (GB) for consideration.
- Recommended the proposal to institute NAAS-MAHYCO Award for Science Excellence for Agricultural Development (cash prize of ₹1 lakh and a citation) to be placed before the GB for consideration.
- Advised the Secretariat to initiate the election process for the office bearers and EC members, whose tenure will end on December 31, 2026.
- Reviewed the status of Academy's approved programs for 2026.
- Approved Annual Report and audited accounts for 2025–26.
- Reviewed the progress of the Academy's journal Agricultural Research.
- The Council decided the felicitation of Padma Awardees, Industry Leaders and Media Personnel during the Academy Foundation Day Program for 2026.
- Reviewed the status of Smt. Kanak Aggarwal NAAS Girls Scholarship, and recommended creation of a new category of fellowship as "Distinguished Fellow" for consideration during GB meeting.

Regional Chapters Meeting

A meeting of the Conveners of Regional Chapters (RCs) of the Academy was held in virtual mode on May 26, 2026 to review the progress of activities undertaken by them. The meeting was chaired by Dr. M.L. Jat (President). Dr. Ashok K. Singh (Secretary) initiated the meeting by welcoming the participants and outlined the meeting's objective. Subsequently, Conveners of the respective RCs presented an overview of the activities undertaken during the previous year and the first quarter of 2026 along with financial status, experiences, challenges, and proposed activities for the remainder of the year.

During the discussion, the following points emerged:

- Need for greater decentralization and empowerment of RCs to enhance regional engagement, outreach, and stakeholders participation.
- Focus on region-specific agricultural issues and organize programs addressing the major agricultural priorities and challenges of the states under their jurisdiction.
- Explore opportunities for resource mobilization through collaborative conferences, workshops, scientific events, institutional partnerships, and sponsorship support.
- Promote awareness among farmers regarding scientific basis of nutrient management, efficient fertilizer use, and soil health improvement and organize programs related to water conservation, water-use efficiency, sustainable farming practices, and climate-resilient agriculture.
- Nutrition awareness, nutrition security, healthy food consumption, and nutrition-sensitive agriculture were recognized as important areas for future outreach programs.
- Career opportunities, entrepreneurship, innovation, and leadership development for students and youth in agriculture identified as important focus areas.
- Observe important national and international days related to agriculture, science, education, environment, and sustainability involving youth and school children.
- Identify a common national theme for deliberation by all RCs while incorporating regional perspectives, with the objective of preparing a



consolidated document at the end of the year. The national theme for the current year is “*Women in Agriculture*”. The RCs should organize programs highlighting Women’s contributions to agricultural development and food systems.

- Innovative outreach programs such as quizzes, poster competitions, student exposure visits, awareness campaigns, and science communication activities to be encouraged.
- Importance of digital technologies and social media in disseminating scientific information and enhancing public outreach was highlighted.

- Share brief reports and high resolution photographs after every event for publication in the Academy’s Newsletter and dissemination through social media platforms.
- RCs having multi-state jurisdiction advised to establish state-wise and chapter-wise communication groups for better interaction and information sharing.
- Need for stronger networking among Fellows, universities, research institutions, Krishi Vigyan Kendras (KVKs), and other stakeholders within the jurisdiction of each RC.

33rd Annual General Body Meeting and Foundation Day Celebrations

Presentation of the Newly Elected Fellows

A dedicated scientific session on “*Presentation of the Newly Elected Fellows*” was organized on June 04, 2026. The session provided a platform for the newly elected Fellows to present their research contributions and share innovative strategies for addressing emerging challenges in Indian agriculture. The session was chaired by Dr. M.L. Jat (President), and co-chaired by Dr. P.K. Joshi & Dr. B.S. Dhillon (Vice-Presidents).



The presentations highlighted cutting-edge research on accelerating genetic gains in major crops, technology-driven solutions for resilient horticulture, transforming the livestock sector through research and innovation, engineering solutions for sustainable aquaculture, carbon farming for climate-resilient resource management, next-generation crop protection using bioactive compounds, microbial consortia & genomic tools, digital transformation of agriculture through artificial intelligence, the Internet of Things & virtual reality, and the contribution of social

science research in advancing sustainable & organic agriculture. The discussion underscored the importance of innovation, sustainability, climate resilience and interdisciplinary approaches in shaping the future of Indian agriculture.

Presentations by the Foreign and Pravasi Fellows enriched the session with global perspectives on agricultural research and development. The speakers highlighted the role of systems science in strengthening food security and emphasized agricultural innovation, resilient food systems & evidence-based research for sustainable development. These deliberations reinforced the value of international collaboration in addressing global agricultural challenges and advancing science-led solutions for food & nutritional security.

Workshop on Plant Health Management

A workshop on “*Plant Health Management*” was organized in hybrid mode by the Academy on June 04, 2026, which was chaired by Dr. M.L. Jat (President), with Dr. P.K. Joshi and Dr. B.S. Dhillon (Vice-Presidents)





as co-chairs, while Prof. Anupam Varma (INSA Emeritus Scientist) served as Convener to deliberate on various aspects of plant health management through a series of technical presentations and discussion.

The program commenced with welcome address by Dr. B.S. Dwivedi (Secretary), followed by opening remarks by Dr. M.L. Jat. Setting the context for the workshop, Prof. Anupam Varma highlighted the key issues related to plant health management. A presentation on National Plant Health Mission by Dr. D.K. Yadava (DDG-CS, ICAR) and Dr. Poonam Jasrotia (ADG-PP&B, ICAR) outlined the proposed mission and its significance.

The technical session featured presentations on rethinking plant diseases through plant physiology and system dynamics, insect pest management for growing healthy crops, soil-plant-microbe continuum for plant health management, and soil health in the context of plant health.

The workshop further included presentations by 25 contributory speakers representing diverse areas of expertise, followed by an extensive general discussion, providing participants with an opportunity to exchange views on the issues presented during the technical sessions.

Annual General Body Meeting

The 33rd Annual General Body Meeting (AGM) of the Academy was held in hybrid mode on June 05, 2026 under the chairmanship of Dr. M.L. Jat (President). At the outset, two minutes silence was observed in remembrance of 16 esteemed Fellows - Dr. D.K. Pal, Dr. K. Raghu, Dr. (Ms.) Uma Lele, Prof. Ajit Varma, Dr. Mata Prasad Pandey, Dr. Kamarath Viduran Devaraj, Dr. P. Pushpangadan, Prof. Anil Kumar Srivastava, Dr. Madhav Dhananjaya Gadgil, Dr. Rameshwar Prasad Sharma, Dr. Rajendra Prasad, Dr. E.A. Siddiq, Dr. Harindra Singh Balyan, Dr. Dendi Damodar Reddy, Dr. Khub Singh, and Dr. Ram Sakal, who passed away since the last AGM in 2025.



Dr. B.S. Dwivedi (Secretary) then welcomed the President, Past-Presidents, Vice-Presidents, Office Bearers, Executive Council Members, Fellows, Associates, Awardees, and Foreign & Pravasi Fellows. In his introductory remarks, Dr. Jat emphasized the significance of AGM in guiding the Academy's future initiatives.

Firstly, minutes of 32nd AGM and Action Taken Report were confirmed. Thereafter, Dr. Ashok K. Singh (Secretary) presented his report for 2025-26, highlighting the major programs, achievements, and



initiatives undertaken by the Academy. Dr. R.K. Jain (Editor) in his report presented the progress of the Academy's publications, while Prof. Karimbhai Maredia (Foreign Secretary) presented the Academy's international collaborations and activities.-

GB was informed that the Academy organized brainstorming sessions, strategy workshops and consultations; strengthened the activities of its 12 Regional Chapters, and conducted five NAAS-YUVA programs focused on youth engagement & leadership development. The Academy also participated in



the World Food Prize 2025 event in the USA and organized an international workshop on Agricultural Cooperatives. In addition, 33 Fellows (including one Foreign Fellow and three Pravasi Fellows), 12 Associates, and six Young Scientist Awardees were inducted.



Several important agenda items, including the institution of the NAAS–MAHYCO Award for Science Excellence for Agricultural Development; revision in periodicity of the Agricultural Science Congress from two to three years; establishment of NAAS International Chapters; and activities of the Academy for 2026 were approved. The Annual Report and the Balance Sheet & Audited Accounts (2025–26), along with the appointment of auditors (2026–27), presented by Dr. Rajender Parsad (Treasurer), were also approved. Subsequently, Academy's publications were released and newly elected Fellows & Associates were admitted along with Institutional Membership Certificate.

Presidential Address

Dr. M.L. Jat (President) in his address outlined his vision for the Academy through the framework of six “Gs” - Greetings, Gratitude, Good News, Grand Challenges, GEMS, and Generation Z. He congratulated the newly elected Fellows & Associates of the Academy for their outstanding contributions to agricultural science and expressed confidence that they would continue to serve the nation through scientific excellence and innovation. He also conveyed his deep gratitude to the Fellowship for reposing faith in him and acknowledged the visionary leadership, pioneering scientists, & agricultural stalwarts whose efforts laid the strong foundations upon which Indian agriculture stands today.



Highlighting record levels of food grain production, he emphasized that these achievements are the result of sustained investments in agricultural research made over the past several decades. The substantial gains being witnessed today are the outcome of

scientific interventions undertaken 10–20 years ago, underscoring the long-term nature of agricultural research. Despite increasing climatic uncertainties, including droughts, floods, heat stress, and other extreme weather events, Indian agriculture has demonstrated remarkable resilience. However, scientific community must remain focused on addressing the grand challenges confronting Indian agriculture. He identified soil degradation, water scarcity, climate change, biodiversity loss, malnutrition, and declining youth engagement in agriculture as key concerns requiring urgent scientific attention. He stressed that research priorities must be aligned with these challenges and guided by the national vision of Viksit Bharat and Atmanirbhar Bharat by 2047. Referring to the aspiration of building a \$30 trillion economy by 2047, he stressed that agriculture and allied sectors need to make a substantially larger contribution, necessitating strategic investments, innovation, and science-led policy support.

Highlighting the dependency of India on imports of fertilizers, he emphasized the need for attaining self-reliance in plant nutrition. Focused research required on the use of biologicals, local sources of nutrients, organo-mineral fertilizers, and new kinds of fertilizers. Although there has been some amount of research done on fertilizer usage, more emphasis should be made on developing fertilizer products.

The President urged the scientific community to move beyond terminological differences and focus on outcomes. He argued that the ultimate objective should be improving soil health, enhancing biodiversity, increasing carbon sequestration, conserving water resources, building climate resilience, and improving farmers' livelihoods. In this context, he highlighted the important role that Academy can play in facilitating evidence-based scientific discourse and consensus-building on emerging agricultural paradigms.





He advocated shifting research priorities beyond yield maximization towards improving resource-use efficiencies and sustainability. Breeding crop varieties with enhanced nutrient-use efficiency should become a major research priority to ensure long-term agricultural sustainability and environmental stewardship.

Dr. Jat also underscored the importance of adopting a systems-based approach to agricultural research. He argued that many contemporary challenges cannot be effectively addressed at the individual plot or commodity level and require integrated landscape-scale solutions. He called for moving beyond disciplinary silos and strengthening interdisciplinary and transdisciplinary research efforts. Referring to the success of the All India Coordinated Research Projects (AICRPs), he emphasized the need for stronger collaboration across disciplines and institutions to address complex agricultural challenges.

He emphasized the growing need to strengthen the agriculture-health interface by referring to ongoing collaborative efforts between ICAR and ICMR. He highlighted the launch of the SEHAT (Science Excellence for Health through Agricultural Transformation) initiative, aimed at generating scientific evidence linking agricultural interventions with improved health outcomes. Stressing the principle that “Food is Medicine,” he called for greater research on biofortified crops, nutritional quality, and clinical validation of nutrition-sensitive agricultural technologies to support policy interventions and public health outcomes.

Introducing the concept of GEMS (Genotype × Environment × Management × Socio-science interactions), he highlighted the importance of integrating biological, environmental, management, and social dimensions in agricultural research. He stressed that future innovations must be responsive not only to scientific opportunities, but also to societal needs, farmers’ aspirations, and market demands. He emphasized that solutions must be location-specific and tailored to India’s diverse agroecological and socioeconomic conditions, recognizing that a “one-size-fits-all” approach is unlikely to succeed.

Focusing on the future generation of agricultural professionals, he highlighted the mentorship of Generation Z, emphasizing the urgent need to strengthen agricultural higher education, capacity building, and mentorship. He called for reimagining agricultural education in light of rapid technological advancements and changing societal needs. Stressing

the importance of quality education, experiential learning, and practical exposure, he encouraged Fellows of the Academy to actively mentor young scientists and students. He noted that such mentorship would significantly contribute to building the human capital necessary for achieving the goals of Viksit Bharat.

He also highlighted the importance of strengthening the Academy itself through enhanced engagement of Fellows, stronger regional chapters, and expanded partnerships. He appreciated the efforts of the Academy’s leadership and committees and encouraged greater participation from Fellows in mentoring, outreach, and policy advocacy activities. He observed that regional chapters provide a valuable platform for engaging with local scientific communities and nurturing emerging talent across the country.

Emphasizing the growing importance of global cooperation, He advocated expanding international partnerships and enhancing India’s leadership in global agricultural discourse. He referred to ongoing efforts to organize a Global South–North Leaders’ Conclave and stressed that NAAS can play a significant role in fostering international scientific collaboration, knowledge exchange, and capacity building.

Concluding his address, Dr. Jat called upon the Fellowship to collectively strengthen the Academy, expand national and international partnerships, and contribute to evidence-based policy formulation and farmer-centric innovations.

NAAS Felicitations Function

The Academy’s Felicitations Function was organized on June 05, 2026 at the A.P. Shinde Symposium Hall, NASC Complex, New Delhi. The program commenced with a welcome address by Dr. Ashok K. Singh (Secretary), followed by felicitations of distinguished awardees by Dr. M.L. Jat (President).

During the function, Padma Awardee Fellows, Dr. P.L. Gautam (Former DDG, ICAR) & Dr. Ashok K. Singh (Former Director, IARI) and a farmer, Shri Shrirang Devaba Lad, were felicitated in recognition of their contributions. The occasion also recognized the contributions of industry leaders and media persons, with felicitations of Dr. Meenesh Shah (Chairman & Managing Director, NDDB); Sh. Dileep Sanghani (Chairman, IFFCO); Sh. Sanjeeb Mukherjee (Agriculture Editor, Business Standard); and Dr. Meena Kumari (Special Representative, Delhi Bureau, Rajasthan Patrika, New Delhi).



The program also included the felicitation of the NAAS Young Scientist Awardees and the NAAS–Dhanuka Awardees, recognizing excellence and outstanding contributions to their respective fields. The function concluded with remarks by Dr. M.L. Jat (President), followed by formal vote of thanks by Dr. B.S. Dwivedi (Secretary).



Prof. M.S. Swaminathan Foundation Day Lecture

Prof. M.S. Swaminathan Foundation Day Lecture-2026 was delivered by Dr. R.S. Paroda (Founder Chairman, TAAS) on the theme '*From Food Security to Farmers' Prosperity*' on June 05, 2026. During his lecture, Dr. Paroda emphasized that while India has successfully achieved food security, the next national mission should focus on ensuring farmers' prosperity, placing the farmer at the centre of agricultural development. He highlighted that the future of Indian agriculture must move beyond increasing production to



enhancing farmers' income, dignity, sustainability, and resilience.

While drawing attention to India's recent achievements in agricultural production, Dr. Paroda stressed that there is a need to shift from a production-centric approach to one that ensures income stability, value addition, climate resilience, efficient resource use, market linkages, and sustainable management of natural resources.

He outlined five pillars for reimagining Indian agriculture: post-production farmer prosperity; climate-smart agriculture; technology with inclusion, nutrition security, and youth & women as leaders of change. He emphasized the importance of promoting Farmer Producer Organizations (FPOs), climate-resilient crop varieties, diversification towards millets, pulses & oilseeds, precision agriculture, artificial intelligence, genomics, digital advisory systems, and regenerative agriculture. He further advocated strengthening the role of women & youth in agriculture by improving their access to land, technology, markets, credit, extension services, and entrepreneurship opportunities.

Highlighting the need for institutional reforms, Dr. Paroda called for mission-oriented research, interdisciplinary science, stronger extension systems, climate-smart agriculture, enhanced collaboration among research institutions, government agencies, private enterprises, startups & farmer organizations, and greater investment in agricultural research & education. He concluded by envisioning an agricultural future where farmers function as knowledge entrepreneurs; villages emerge as vibrant bio-economy hubs; agriculture remains climate resilient; and every farmer lives with dignity, security & prosperity, describing this as the true tribute to the legacy of Prof. M.S. Swaminathan. The session concluded with the Chairman's (Prof. Ramesh Chand, Former Member, Niti Aayog) remarks, followed by felicitation of the Speaker & Chairman, and vote of thanks by Dr. B.S. Dhillon (Vice-President).



NAAS Programs

BRAINSTORMING SESSIONS

Roadmap for Atmanirbharta in Fertilizers (Convener: Dr. A.K. Nayak, DDG (NRM), ICAR; Co-Convener: Dr. B.S. Dwivedi, Secretary, NAAS)

The Academy organized a brainstorming session (BSS) on “*Roadmap for Atmanirbharta in Fertilizers*” on April 14, 2026 in hybrid mode under the chairmanship of Dr. M.L. Jat (President) and Dr. J.C. Katyal (Former Vice-President) & Dr. P.K. Joshi (Vice-President), as co-chairs.



The session featured extensive deliberations with participation from government, research institutions, farmers’ organizations, and fertilizer industry representatives, covering policy frameworks, research priorities, field-level challenges, and industry perspectives. Key recommendations included a multi-pronged strategy involving development of smart and alternative fertilizers, efficient use of indigenous resources, promotion of biologicals, precision nutrient management, and strengthening extension systems. Participants also highlighted the need for policy reforms such as bringing urea under nutrient-based subsidy, repurposing subsidies as incentives for good agricultural practices, promoting direct benefit transfer, and launching a mission mode program on integrated nutrient supply and management to reduce dependence on mineral fertilizers and ensure long-term food security.

Rainfed Maize in India: A Strategic Roadmap for Sustainable Productivity by Amrit Kaal 2047 (Convener: Dr. H.S. Jat, Director, ICAR-ILMR, Ludhiana; Co-Conveners: Dr. S.L. Jat & Dr. Bhupender Kumar, ICAR-ILMR, Ludhiana)

The Academy organised a BSS on “*Rainfed Maize in India: A Strategic Roadmap for Sustainable*



Productivity by Amrit Kaal 2047” on April 27, 2026 in hybrid mode under the chairmanship of Dr. M.L. Jat (President) and Dr. S.K. Vasal (FNAAS) as co-chair.

The session brought together leading scientists, breeders, agronomists, industry stakeholders, and policy experts to address: (i) the challenge of low productivity in India’s rainfed maize system where nearly 70% of cultivation occurs but yields remain below global averages and (ii) to develop a comprehensive six-pillar roadmap focusing on climate-resilient hybrids, water & nutrient management; mechanisation; post-harvest systems and strengthened seed & policy frameworks with the long-term vision of achieving 100–110 Mt of maize production by 2047 and positioning India as a global leader in food, feed, & bioenergy security.

Enhancing India’s Agricultural Competitiveness in Changing Global Trade Dynamics (Convener: Dr. Pratap S. Birthal, Former Director, NIAP, New Delhi; Co-conveners: Dr. Shiv Kumar & Dr. K.S. Aditya, NIAP, New Delhi)

The Academy organized a BSS on “*Enhancing India’s Agricultural Competitiveness in Changing Global Trade Dynamics*” on May 14, 2026 in hybrid mode under the chairmanship of Dr. M.L. Jat (President)





and Dr. P.K. Joshi (Vice-President) as co-chair. The session began with a welcome address by Dr. Ashok K. Singh (Secretary), followed by Dr. Pratap S. Birthal and Dr. K.S. Aditya's presentations on agricultural competitiveness under evolving global trade dynamics. In his opening remarks, Dr. Jat stressed the importance of addressing agricultural trade challenges through research reorientation and strategic planning. The deliberations highlighted the need for adopting global value chain approaches, strengthening traceability and testing infrastructure, enhancing institutional preparedness for sustainability standards, integrating farmers with global food safety systems, and promoting export-oriented policies. Dr. P.K. Joshi concluded the session by outlining strategic priorities for improving India's agricultural competitiveness.

Reimagining Climate Resilience in Rainfed Agricultural Landscapes (Convener: Dr. V.K. Singh, Director, ICAR-CRIDA, Hyderabad; Co-convenor: Prof. P.V. Vara Prasad, Distinguished Professor, Kansas State University, USA)

The Academy organized in hybrid mode a BSS on "*Reimagining Climate Resilience in Rainfed Agricultural Landscapes*" on June 27, 2026. The session was chaired by Dr. M.L. Jat (President) and co-chaired by Dr. B. Venkateswarlu (Former Director, ICAR-CRIDA, Hyderabad).



The event brought together representatives and stakeholders from the National Agricultural Research and Education System (NARES), international centers,

ministries /departments, NGOs and progressive farmers. The session commenced with a welcome address by Dr. Ashok K. Singh (Secretary). He emphasized the vital role of climate resilience in safeguarding Indian agriculture. Setting the context of BSS, Dr. Singh emphasised that rainfed and dryland farming accounts for nearly 45% of India's net sown area and 40% of national food production, yet remains highly risk-prone across 307 vulnerable districts. He underscored the urgent need to transition beyond fragmented, beneficiary-oriented pilot projects towards a unified institutional mechanism. Dr. Jat, in his opening remarks, stressed on having a clear understanding of landscape approach and translate contingency plans into a dynamic dashboard.

The panelists including experts and progressive farmers deliberated on scaling innovations from technologies to landscape transformation, water security, small farm mechanization, climate-adaptive livestock, agricultural emissions mitigation, socio-economic feasibility and policy frameworks to buffer severe climate shocks in rainfed regions of the country.



Following an active open discussion, Dr. Venkateswarlu summarized the major takeaways. He underlined the need for convergence of relevant programs for scaling of climate resilient technologies. Dr. Jat concluded the session highlighting the necessity to formulate a dedicated National Climate Action Platform for Agri food Systems for an effective data ecosystem and climate science delivery.

Activities of the Regional Chapters

Barapani Chapter

- Observed "*World Environment Day*" on June 05, 2026 jointly with ICAR Research Complex for NEH Region, Barapani (Meghalaya) under the theme "*Inspired by Nature-For Climate-For Our Future.*"

The program included plantation & cleanliness drives, inter-collegiate extempore competitions on environmental issues, and a valedictory session. Around 230 students from five colleges participated, along with NAAS Fellows, Associates,



and ICAR scientists from the Northeast. The event highlighted environmental conservation, climate action, and community responsibility, with key messages emphasizing collective efforts towards a cleaner environment and a sustainable future.

Hyderabad Chapter

- Organized in collaboration with ICAR–Indian Institute of Rice Research (ICAR-IIRR), Hyderabad three-days training program on “*Computational Approaches to Primer Designing for Rice Genomics Research*”. The program brought together 70 participants from agricultural universities, central universities, and research institutions across the country, with 80% women participants. It featured expert lectures and hands-on training on contemporary computational tools and methodologies for rice genomics research, providing a platform for scientific learning, skill enhancement, and networking among young researchers.



- Organized 12th International Day of Yoga on June 21, 2026 in collaboration with ICAR–National Academy of Agricultural Research Management (ICAR-NAARM) and ICAR-IIRR under the theme “*Yoga for Healthy Ageing*”. Around 60 participants, including NAAS Fellows and Associates, scientists, faculty, and staff participated in the common yoga protocol and wellness session. The program also included the felicitation of newly elected NAAS Fellows and Associates from Hyderabad and



a plantation drive, during which nearly 1,300 ornamental plants were planted to promote environmental sustainability and healthy living.

- Organized an awareness and technology dissemination program on “*Khet Bachao Abhiyan*” on June 23, 2026 in collaboration with ICAR-IIRR at Saidapur Village, Yadagirigutta Mandal (Telangana). The program promoted sustainable nutrient management and climate-resilient rice cultivation through farmer awareness and interactive training on soil test-based fertilizer recommendations. As part of the program, 80 kg of DRR Dhan 90 (low soil nitrogen-tolerant rice variety) seed was distributed to 50 farmers for demonstration and adoption. The event also witnessed participation from local government representatives, Farmer Producer Organizations (FPOs), NGOs, and community members, highlighting the importance of sustainable and profitable rice production.



Karnal Chapter

- Organized guest lecture on “*Livestock Sector with Special Reference to Animal Genetic Resources: Opportunities in Viksit Bharat @ 2047*” on June 29, 2026 in collaboration with ICAR–National Bureau of Animal Genetic Resources (ICAR-NBAGR), Karnal in hybrid mode. The lecture was delivered by Dr. N.H. Mohan (Director, ICAR-NBAGR) and



attended by around 60 scientists, including NAAS Fellows and Associates. The program highlighted opportunities and challenges in the livestock sector, conservation of animal genetic resources, advanced breeding and cryopreservation technologies, greenhouse gas emissions, and strategies for sustainable livestock development, followed by discussions on policy interventions for youth engagement in agriculture and conservation of endangered indigenous animal breeds.

- Organized a BSS on “*Exploring Carbon Credit Market for Farmers: Present Status, Challenges and the Way Forward*” on May 17, 2026 in association with the Kisan Chamber of Commerce (KCC), at Arsh Gurukul Vidyapeet, Kurukshetra. Around 30 progressive farmers and KCC Executive Committee members participated in the deliberations, which focused on opportunities and challenges in implementing carbon credit schemes for farmers.



Lucknow Chapter

- Organized an awareness program on “*World Environment Day*” on June 05, 2026 in collaboration with ICAR–National Bureau of Fish Genetic Resources (ICAR-NBFG), Lucknow in hybrid mode under the theme “*Inspired by Nature — For Climate — For Our Future.*” The program was attended by around 120 researchers, students, and scientists



and featured lectures by eminent NAAS Fellows and experts on environmental protection, biodiversity conservation, pollution control, and sustainable development. The event also highlighted the role of scientific research in achieving environmental sustainability and concluded with a plantation drive to reinforce the collective commitment towards ecological conservation.

- Organized an awareness program on “*Sustainable and Balanced Use of Fertilisers*” on June 20, 2026 in collaboration with ICAR-NBFG, Lucknow. The program aimed at promoting soil health management, balanced fertiliser application, and sustainable agricultural practices through expert lectures and interactive discussion. 258 participants, including 164 farmers (147 men and 17 women), along with scientists, technical officers, research scholars, and students, participated. The deliberations emphasized soil test-based nutrient management, integrated nutrient management, balanced fertiliser use, and eco-friendly farming practices to enhance productivity, conserve natural resources, and ensure long-term agricultural sustainability.



- Organized a BSS on “*Climate-Smart Horticulture and Medicinal Plant Cultivation in the Terai-Himalayan and Gangetic Plains: Techniques, Value Addition and Market Linkages*” on June 30, 2026 in collaboration with ICAR-NBFG, Lucknow in hybrid mode. The session brought together 30 participants, including 13 NAAS Fellows, 11 experts, and 6 progressive farmers to deliberate on climate-smart horticulture, medicinal and aromatic plant cultivation, value addition, entrepreneurship, and market linkages. The discussion focused on government initiatives, commercialization of technologies, biodiversity conservation, essential oil-based enterprises, research–extension–industry linkages, and policy



recommendations to enhance farmers' income and promote sustainable agricultural development.

Ludhiana Chapter

- Translated NAAS Policy Papers, PP-87, (*Abiotic Stress Management with Focus on Drought, Flood and Hailstorm*), and PP-133 (*Agrivoltaics for Sustainable Crop and Energy Production*) into Punjabi to facilitate wider dissemination of knowledge among regional stakeholders.



- Organized an awareness program on “*Soil Health and Balanced Nutrient Management*” on April 6, 2026 in collaboration with Punjab Agricultural University's Krishi Vigyan Kendra (KVK), Sangrur, under the guidance of the Directorate of Extension Education, PAU, and ICAR-ATARI, Zone-I, Ludhiana, at Village Bhalwan, Sangrur. The programme was attended by more than 60 farmers and focused on soil testing, balanced fertilizer application, green manuring, sustainable nutrient management, and improved paddy cultivation practices.



- Organized an awareness program on “*Importance of Soil Testing*” on April 16, 2026 in collaboration KVK, Bahawal, Hoshiarpur, and the Department

of Agriculture and Farmers Welfare at Village Saila Kalan. The program was attended by 32 farmers and farm women and focused on scientific crop production, balanced fertilizer use, residue management, soil sampling techniques, and government support schemes to promote sustainable agricultural practices.

- Organized an awareness program on the “*Importance of Balanced Use of Fertilizers and Soil Testing in Agriculture*” for school students on April 30, 2026 in collaboration with PAU's KVK, Sangrur. Around 60 students from PM Shri GSSS (Boys), Moonak participated in the program, which



covered soil and water testing, integrated nutrient management, scientific sampling techniques, nutrition, and career opportunities in agriculture, along with exposure visits to the mushroom, beekeeping, biogas, and seed production units.

- Organized an awareness program on “*Nutritional Management of Anaemia*” on May 22, 2026 at KVK, Bahawal, Hoshiarpur. The program created awareness among farm women and farmers on balanced diets, iron-rich foods, kitchen gardening, and nutrition-based interventions for the prevention and management of anaemia, encouraging the adoption of healthy dietary practices.



- Organized an awareness program on “*Water Conservation*” on June 30, 2026 in collaboration with KVK, Bahawal, Hoshiarpur, at Village Chaggran, Hoshiarpur, under the Khet Bachao Abhiyan. The programme, attended by 29 farmers, promoted efficient water management practices, including drip and sprinkler irrigation, laser land levelling, rainwater harvesting, soil moisture conservation, and other resource-conserving technologies to enhance water-use efficiency and sustainable agricultural production.



Palampur Chapter

- Organized an educational visit on April 6, 2026 in collaboration with the CSIR-Integrated Skill



Initiative and Viksit Bharat to CSIR-Institute of Himalayan Bioresource Technology (CSIR-IHBT), Palampur for 39 B.Sc. and M.Sc. Botany students and two faculty members from the Central University of Jammu. The participants were introduced to advanced research facilities and ongoing work in plant sciences, biotechnology, bioresources, and translational research, while also being apprised of NAAS initiatives promoting scientific awareness and capacity building.

- Organized another educational visit on April 24, 2026 for 67 students and 14 faculty members from institutions in Punjab and Himachal Pradesh. The program showcased innovation-driven research, scientific infrastructure, and skill development initiatives, fostering experiential learning and scientific awareness among students and faculty.
- Organized one-day training-cum-awareness program on “*Aromatic Crop Cultivation and Processing Technologies*” on April 29, 2026 in collaboration with the CSIR Aroma Mission, CSIR-Institute of Himalayan Bioresource Technology (CSIR-IHBT), and NTPC Koldam, Bilaspur. The program trained over 150 women farmers on improved cultivation practices, processing technologies, value addition, and livelihood opportunities in aromatic crops.



- Organized National Science Day awareness program on May 28, 2026 at Jawahar Navodaya Vidyalaya, Paprola. The program engaged students and teachers through an interaction on the objectives and activities of NAAS, including the NAAS YUVA program and opportunities available for young students. It highlighted the role of agricultural science, innovation, and scientific research in ensuring food and nutritional security,



while encouraging students to pursue careers in agriculture and contribute towards nation-building.

- Organized an awareness session during the CSIR–Integrated Skill Initiative (Phase III) training program on “Plant Tissue Culture” in June 2026. The program engaged 18 participants from six states and Union Territories and highlighted the applications of plant tissue culture and micropropagation for sustainable agriculture, biodiversity conservation, and livelihood enhancement, while creating awareness about the outreach activities of NAAS.

Pune Chapter

- Organized a lecture on “Intellectual Property Rights in Agriculture” on June 01, 2026 in hybrid mode in collaboration with ICAR–National Research Centre for Grapes (ICAR-NRCG), Pune. The lecture, delivered by Dr. S. K. Sharma (Former Vice-Chancellor, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur) was attended by NAAS Fellows, Associates, scientists, and staff of ICAR-NRCG. It highlighted the role of intellectual property rights in promoting agricultural research, innovation, technology commercialization, and effective management of research outputs through patents, plant variety protection, geographical indications, trademarks, copyrights, and technology transfer.



- Organized four days trainers’ training program for young grape growers on June 8–11, 2026 in collaboration with the Maharashtra State Grape Growers’ Association (MRDBS) and ICAR–National Research Centre for Grapes (ICAR-NRCG), Pune, as part of the Khet Bachao Abhiyan. The program trained 40 young farmers from major grape-growing districts of Maharashtra on advanced viticulture techniques, bio-intensive pest and disease management, rational fertilizer



use, AI-based vineyard management, and other sustainable grape production practices.

- Organized one-day workshop on “Rational Use of Fertilisers in Horticultural and Field Crops” on June 12, 2026 in collaboration with ICAR-NRCG, Pune, as part of the Khet Bachao Abhiyan. Conducted in hybrid mode, the workshop promoted balanced fertilizer use, sustainable nutrient management, and soil health conservation. Scientists from various ICAR institutes shared experiences and emphasized evidence-based fertilizer application practices to improve input-use efficiency, enhance farm profitability, and support long-term agricultural sustainability through interactive deliberations.



Varanasi Chapter

- Organized ‘World Environment Day’ celebration on June 05, 2026 in collaboration with ICAR–Indian Institute of Farming Systems Research and the Institute of Agricultural Sciences, Banaras Hindu University (BHU) at the ReNew Centre, Paniyara Village, Varanasi. The program on “Women Farmers Champion Green Agriculture”, brought together more than 100 progressive farmers, including a large number of women farmers, and featured a farmers’ awareness program and Dhaincha seed distribution. The deliberations highlighted sustainable farming practices, green manuring, soil restoration, natural resource conservation, and initiatives such as Khet Bachao Abhiyan and Hari Khad to promote environmentally sustainable agriculture.



Activities of NAAS-YUVA

NAAS-YUVA Selection Drive for Global Youth Institute (GYI) 2026 Event Participation

The NAAS-YUVA successfully organized two rounds of the 2nd NAAS-YUVA Selection Drive for GYI 2026 event, an initiative of the World Food Prize Foundation, USA, aimed at identifying talented school students with a keen interest in agriculture, food security, sustainability, and global development. The nationwide selection drive was launched in April 2026 through extensive publicity using social media platforms,

newspapers, and wide circulation among schools & educational institutions across the country, generating an enthusiastic response from students.

Of 5,912 students registered from different parts of India to participate in the competition, shortlisted students through these two rounds will proceed to the final stage of the selection process, which will determine India's delegation for participation in the GYI 2026 at the World Food Prize Foundation, Des Moines, Iowa, USA.

Publications

Policy Paper (PP)

PP-143: Horticultural Innovations to Enhance Exports from India

PP-144: Enhancing Efficiency and Sustainability of Farmer Producer Organizations in India: Challenges and Strategies

PP-145: Harnessing the Functional Plant Microbiomes for Next Generation Plant Health Management Strategies



PP-146: Water Security: Is Quantum or Management the Issue?

PP-147: Innovative Approaches for Sustainable Crop Residue Management

PP-148: Managing Emerging Environmental Contaminants in Aquaculture and Fisheries

Policy Brief

Policy Brief 14: Best Practices in Agricultural Cooperatives in the Global Arena: Empowering Cooperatives in India for Sustainable Economic Growth and Rural Transformation.



Programs 2026

Brainstorming Sessions

- Nutraceuticals and Functional Foods: Potential, Policy Challenges and Regulatory Framework
- Climate Resilient Aquaculture Systems and Practices: Policy Perspective
- Enhancing Oilseed Production: Policies and R&D Initiatives
- Preventing the Use of Spurious Pesticides in Agriculture
- Future of Next Generation Small Farms: Ensuring Profitability and Viability
- Cross-cutting Conversations for Diet Diversity: Harnessing Agriculture for Nutritional Wellness of the Nation

Strategy Workshops

- Harnessing Global Wisdom in Innovations and Education Domains to Develop Strategies for Higher Agricultural Education Institutions towards Viksit Bharat 2047
- Organic Fruits and Vegetables: Profitability and Certification Challenges
- Leveraging Bioproducts Processing for Livestock and Poultry Sector Waste towards Circular Bioeconomy
- Deep Sea Fisheries: Prospects, Challenges and Policy for Commercial Exploitation



Obituaries



Prof. Kumud Ranjan Sarkar
(1939-2026)

The agricultural research community lost one of its most respected geneticists and teachers with the passing of Prof. Kumud Ranjan Sarkar.

A pioneering maize geneticist, an exceptional educator, and an inspiring mentor, Prof. Sarkar devoted his life to advancing maize genetics research and nurturing generations of students. His scientific contributions, coupled with his extraordinary humility and unwavering commitment to teaching, have left an enduring imprint on countless students and faculty members in India.

Prof. Sarkar was born on January 02, 1939 in the village of Narayanpur, Burdwan district, West Bengal. He studied at Burdwan Raj College before obtaining his B.Sc. (Agriculture) from the State College of Agriculture, Calcutta, in 1958. He earned his M.Sc. from the Indian Agricultural Research Institute (IARI), New Delhi in 1961.

Driven by an exceptional aptitude for genetics, he proceeded to the University of Missouri, Columbia, USA, where he pursued doctoral research under the legendary maize geneticist, Prof. Edward H. Coe Jr., between 1961 and 1965. His pioneering work on the genetics of maternal haploid induction in maize, especially using “Stock 6” that revolutionized doubled haploidy in maize, brought him international recognition and paved the way for doubled haploid technology in maize. He subsequently undertook postdoctoral research with Prof. John Laughnan at the University of Illinois, Urbana, USA during 1965–1966, further strengthening his expertise in maize genetics.

Although he had excellent opportunities to pursue a successful career in the United States, Prof. Sarkar chose to return to India in 1966, motivated by a deep commitment to contribute to agricultural education and research in his homeland. He began his academic career as a Lecturer at Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, West Bengal, before joining the IARI in 1968, where he would spend the remainder of his professional life.

Over the next three decades, Prof. Sarkar served IARI with remarkable distinction in several capacities: Assistant Professor of Genetics (1968–1969), Geneticist (1969–1976), Principal Scientist (1976–1999), Professor of Genetics (1987 and 1993–1999), and Head of the Division of Genetics (1987–1988 and

1997–1998). He retired from IARI in January 1999 after more than thirty years of dedicated service.

Prof. Sarkar’s scientific interests covered a wide spectrum of genetics, cytogenetics, and maize breeding. He made pioneering contributions to in vivo haploid induction, doubled haploid technology, chromosome behaviour during meiosis in haploid maize, the genetics of mutable alleles affecting anthocyanin biosynthesis, and the genetic regulation of photosynthetic efficiency. His studies on meiosis in haploid maize provided valuable insights into chromosome pairing, and genome evolution.

One of his enduring scientific contributions was his extensive work on the genetic basis of kernel pigmentation patterns governed by the R locus in maize. His investigations into somatic variegation and the genetic behavior of complex alleles such as *R-stippled* (*R-st*), *R-Navajo* (*R-nj*), and *R-marbled* (*R-mb*) significantly advanced our understanding of transposable element-mediated gene regulation and mutable gene systems in maize. His research combined rigorous experimentation with deep genetic insight, earning him recognition both nationally and internationally.

Equally remarkable was Prof. Sarkar’s contribution as a teacher. He was among the earliest recipients of the IARI Best Teacher Award in 1993, a recognition that reflected his extraordinary ability to inspire students. The celebrated course GEN100: Elements of Genetics, taught by him at IARI, became legendary among students from diverse disciplines. Possessing exceptional clarity of thought, he transformed complex concepts into simple, elegant explanations that kindled curiosity and fostered a lifelong appreciation for genetics.

Prof. Sarkar believed that education extended far beyond classroom lectures. He devoted immense time and energy to mentoring young scientists, encouraging independent thinking, scientific integrity, and intellectual curiosity. He actively promoted curriculum development and introduced several new teaching courses in the Division of Genetics. Through the dedication of teachers like him, IARI earned national and international recognition as one of the world’s leading institutions for agricultural research and higher education.

During his academic career, Prof. Sarkar supervised the research of over 30 M.Sc. and Ph.D. students, many of whom went on to become distinguished scientists, educators, and administrators in India and abroad. His influence continues through the achievements of his students, who carry forward his commitment to excellence in research and education.



His contributions were recognized through numerous honors. He was among the earliest Fellows of the National Academy of Agricultural Sciences (NAAS) in 1993 and received the Dr. Joginder Singh Memorial Award of the Indian Society of Genetics and Plant Breeding in the same year for his outstanding contributions to maize genetics. He was also elected Fellow of the Society of Geneticists & Breeders, the Indian Society of Genetics & Plant Breeding, and the Indian Society of Agricultural Sciences.

Despite his many achievements, Prof. Sarkar remained remarkably humble and approachable. He was a man of simple habits, immense scholarship, and quiet dignity. His office and laboratory were places where students felt welcome to discuss ideas, ask questions, and debate scientific concepts. Rather than providing ready answers, he encouraged them to think critically, question accepted ideas, and pursue every observation to its logical conclusion. Many remember his informal conversations on the history of maize genetics and the pioneering scientists whose discoveries shaped the discipline. These conversations reflected not only his encyclopedic knowledge but also his genuine love for science.

Outside the laboratory, Prof. Sarkar possessed equally rich intellectual interests. He was an ardent follower of cricket and maintained meticulous records of cricket statistics long before the digital era. An avid reader, he was often seen during lunch breaks quietly reading books or novels on the lawns of the Division of Genetics. These moments captured the essence of his personality—a scholar who found joy in continuous learning.

Perhaps the most remarkable aspect of Prof. Sarkar's life was his complete absence of personal ambition for power or position. His greatest satisfaction came from teaching, mentoring young minds, and advancing scientific knowledge. In an era increasingly driven by recognition and competition, he remained steadfastly committed to scholarship, integrity, and service — a combination that made him not only an exceptional scientist but also an exemplary human being.

Prof. Kumud Ranjan Sarkar's legacy extends far beyond his research publications, awards, and academic positions. He will be remembered not only as an eminent geneticist but also as a compassionate mentor, a gifted teacher, and a gentleman of rare humility and wisdom. His passing marks the end of an era, but his ideals, values, and scientific legacy will continue to illuminate the path for future generations.

Dr. B.M. Prasanna

*Managing Director, Borlaug Institute for South Asia (BISA);
CIMMYT Distinguished Scientist & Regional Director for
Asia, NASC, New Delhi*



Dr. Ram Sakal

(1942 - 2026)

The agricultural science fraternity deeply mourns the passing of Dr. Ram Sakal, an eminent soil scientist, distinguished teacher, and Fellow of the National Academy of Agricultural

Sciences (NAAS), who passed away on May 27, 2026. With his demise, the country has lost a pioneering scientist whose outstanding contributions to soil fertility, soil chemistry, and plant nutrition significantly advanced sustainable agricultural production in India.

Born on July 31, 1942, at Varanasi, Uttar Pradesh, Dr. Sakal completed his B.Sc. (1963) and M.Sc. (1965) from Banaras Hindu University, Varanasi, and obtained his Ph.D. in Soil Science from Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, in 1972.

Dr. Sakal devoted more than three decades of distinguished service to Rajendra Agricultural University, Pusa (now Dr. Rajendra Prasad Central Agricultural University, Pusa), where he served in various capacities from Subject Matter Specialist to Chief Scientist. He also served as Principal Investigator of the All India Coordinated Research Project (AICRP) on Micro- and Secondary Nutrients and Pollutant Elements in Soils and Plants, Chairman of the Postgraduate Department of Soil Science, Officiating Director of the Sugarcane Research Institute, and Nodal Officer for the European Economic Community Project on Reclamation and Development of Alkali Lands in Bihar.

His research focused on soil fertility, soil chemistry, and plant nutrition, with special emphasis on micro- and secondary nutrients. His pioneering investigations enhanced the understanding of nutrient deficiencies, balanced fertilization, and soil fertility management across diverse agro-ecological regions of India. His work contributed significantly to sustainable crop production, while his guidance to numerous postgraduate students and young scientists strengthened human resource development in soil science.

In recognition of his outstanding scientific contributions, Dr. Sakal received several prestigious honours, including the B.P. Singh Award for Outstanding Research in Agricultural Sciences (1998), the S.N. Ranade Memorial Lifetime Achievement Award for Excellence in Micronutrient Research (2000), the TSI–FAI Award on Plant Nutrient Sulphur (2000), and the ICAR Chaudhary Devi Lal Outstanding Award (2001) for the AICRP on Micro- and Secondary Nutrients and Pollutant Elements in Soils and Plants.

His professional excellence was recognized through his election as Fellow of the Indian Society of Soil Science (1989), Fellow of the National Academy of Agricultural Sciences (2002), and Fellow of the Indian Society of Agricultural Chemists (2001).



Dr. Sakal will be remembered as an outstanding scientist, dedicated teacher, inspiring mentor, and compassionate human being whose contributions greatly enriched soil science and agricultural research in India. May his soul rest in eternal peace.

Dr. Shiva Nath Suman

Associate Professor-cum-Senior Scientist, Post Graduate College of Agriculture, RPCAU, Pusa, Samastipur, Bihar



Dr. Khub Singh

(1943 - 2026)

Dr. Khub Singh (b. August 1943) joined the Indian Council of Agricultural Research (ICAR) in September 1969 and served with distinction at the Indian Veterinary Research

Institute (IVRI), Izatnagar, and the Central Institute for Research on Goats (CIRG), Makhdoom. In May 1997, he assumed charge as the founding Director of the ICAR-National Institute of Animal Nutrition and Physiology (NIANP), Bengaluru, and led the Institute until his superannuation in August 2004.

Whenever I reminisce about Dr. Khub Singh, I am reminded of a television commercial in which a man decides to build a house on a rocky piece of land despite widespread skepticism. Discouraged by relatives, he is eventually reassured by an engineer who tells him that with a strong foundation and the right materials, even the most challenging terrain can support a magnificent structure. In many ways, this story mirrors Dr. Khub Singh's remarkable journey at NIANP.

It is almost unbelievable today that when Dr. Khub Singh took charge as the Director of NIANP, there was not even a dedicated room for him to begin his work. Established in November 1995, the Institute was then functioning from a small building of the Southern Regional Station of the National Dairy Research Institute (SRS, NDRI), Bengaluru with minimal laboratory facilities, while only routine administrative activities were being managed by its Head.

Dr. Khub Singh literally began from scratch. Possessing remarkable resolve, unwavering determination, and extraordinary patience, he embraced the challenge with complete commitment. Soon after assuming office, he shared a clear and inspiring vision with his colleagues. He encouraged, motivated, and carried

them along as partners in building the Institute. He understood that only a robust institutional framework could enable the organization to grow into a centre of excellence capable of addressing the nation's emerging challenges in animal nutrition and physiology.

Driven by this singular vision, Dr. Khub Singh transformed an empty and inhospitable site into a vibrant research institution. Under his leadership, the administrative block, state-of-the-art laboratories, residential quarters, and other essential infrastructure were planned and completed in a remarkably short period, especially considering the scale of the project and the numerous challenges encountered. His resilience, administrative acumen, perseverance, and ability to inspire confidence among his colleagues were the hallmarks of this extraordinary achievement.

A visionary far ahead of his time, Dr. Khub Singh was also deeply concerned about the impact of environmental change on livestock production. Recognising the importance of sustainability long before climate change became a global priority, he established the Division of Bioenergetics and Environmental Sciences alongside the Nutrition and Physiology Divisions. This pioneering initiative has since made significant contributions to research on climate change, environmental sustainability, and mitigation strategies in the livestock sector.

Today, NIANP, Bengaluru stands as one of the country's premier research institutions in animal nutrition and physiology. A substantial part of this success is undoubtedly rooted in the vision, foresight, and tireless efforts of Dr. Khub Singh. The seed that he sowed with such dedication has grown into a flourishing institution of national and international repute, serving generations of scientists and contributing immensely to livestock research and development.

The scientific fraternity has lost an exceptional institution builder, an inspiring leader, and a visionary administrator. I consider myself fortunate to have had the privilege of working with him and witnessing first-hand his unwavering commitment to excellence and institution building.

Dr. Khub Singh's legacy will continue to inspire future generations of scientists and administrators. May his noble soul rest in eternal peace.

Dr. R. Bhatta

DDG (Animal Sciences), ICAR, New Delhi

Editors: R.K. Jain and R.K. Pal

Published by: Executive Director, on behalf of the National Academy of Agricultural Sciences, NASC, Dev Prakash Shastri Marg, New Delhi 110012; Tel. (011) 25846051; Email: naas-mail@naas.org.in; Website: <http://naas.org.in>