



CONTENTS

From the President's Desk	1
New Year Get-Together 2025	4
Executive Council Meeting	4
140 th Meeting	4
NAAS Programs	5
Brainstorming Session (BSS)	5
Other Activities	6
Activities of the Regional Chapters	7
Barapani	7
Karnal	7
Varanasi	8
Activities of NAAS-YUVA	8
Publications	9
Forthcoming Programs	10
Obituaries	10

Editors

Dr. V.K. Baranwal
Dr. R.K. Jain

From the President's Desk

Indian Agriculture: Shortage to Surplus



India's agricultural transformation from a state of scarcity to surplus is an inspiring story of change, resiliency, and progress. Scientific advancements, progressive policies, and the unwavering spirit of Indian farmers have contributed to

this remarkable story. Today, India stands as a global agricultural powerhouse, showcasing the potential for growth through innovation and perseverance.

India's agricultural sector has historically faced numerous challenges, including food imports through a 'ship-to-mouth' approach. However, the Green Revolution in 1960s, brought about by high-yield crop varieties, enhanced irrigation methods, and the utilization of chemical fertilizers, laid the groundwork for India's progress towards agricultural self-sufficiency and decreased reliance on outside food sources.

Today, agriculture sector employs 52% of the workforce and provides livelihood to 54% of the population. The sector contributes 18% to the nation's GDP. Over the years, India has witnessed multiple agricultural revolutions, each driving significant growth:

- **Green Revolution (Crops):** Seven-fold increased food grain production since 1950-51.
- **White Revolution (Milk):** World's largest milk producer, 13-fold output from 17 million tons (Mt) in 1951 to 231Mt in 2023.
- **Blue Revolution (Fish):** 23-fold increase in fisheries production over the past decades.
- **Golden Revolution (Horticulture):** Production rose 14-fold from 25 Mt in 1950-51 to 355.30 Mt in 2022-23.

The achievement of these revolutions can be attributed to the 4Ps framework: Path breaking Science; Progressive Farmers; Political Will; and Partnerships Innovations in agricultural science, including farm automation/ smart farming, digital technology, superior varieties and live stocks,



coupled with government policies. Collaboration among research institutions, policymakers, and the private sector ensured that these innovations reach farmers at the grassroots level.

While India's achievements in agriculture are noteworthy, several challenges still remain. Issues such as low productivity, high production costs, and the impact of climate change continue to pose significant risks. Increasing temperatures, unpredictable rainfall, and resource depletion threaten long-term agricultural stability. Moreover, fluctuations in market prices impact farmers' incomes, highlighting the necessity for more robust price stabilization systems. Looking ahead, India aims for even greater agricultural advancements by 2047, with objectives of 520 Mt of food grains and 950 Mt of horticultural produce, and milk and fish production of 550 Mt and 40 Mt respectively. By enhancing water and nitrogen usage efficiency, expanding 70% farm mechanization, and minimizing post-harvest losses, agricultural sector is set to become even more sustainable and resilient.

Thrust Areas Driving India's Agricultural Transformation: To address evolving consumer needs, producers' profitability, and environmental resilience, a strategic multi-faceted approach is essential. The following key thrust areas are driving this transformation:

1. **Addressing Consumers' Need and Producers' Profit:** For sustainable agricultural development, customer requirements must be the primary focus. This includes improved quality, nutrition, storage, and affordable pricing. Nutrition-enriched crops are the foundation of a healthier future. Development of 171 bio-fortified crop varieties, including wheat, maize, rice, pearl millet, finger millet, small millets and pluses addresses essential nutrient requirements like iron, zinc, protein, and vitamins. These crops covering 16.0 million hectares have a major impact on public health and global food security.
2. **Nature-Friendly and, Climate-Resilient Agriculture:** It's essential to strike a balance between productivity and environmental sustainability. Climate-smart farming methods and environment friendly agriculture techniques lessen the ecological impact. Setting-up automated, sensor-based, AI-driven model small holder farms shall improve efficiency and adaptability, providing scalable options for future agriculture. Adopting climate-smart agriculture ensures carbon, water, and energy. Sustainable farming practices replenish natural resources, fostering long-term agricultural health and productivity.
3. **Social Equality and Inclusion:** There is a need to understand gender empowerment and invest in robust data, methods and analysis to understand and address women's empowerment; identify challenges and create opportunities for women and youth; and strengthen the capacity of women and youth towards food system transformations.
4. **Generating Newer Knowledge:** Advancing agricultural science is fundamental to India's agricultural growth. Genome editing enables the development of crop varieties with desirable traits for improving yield, nutrition, and stress tolerance. Speed breeding reduces generation time so that a greater number of crops can be harvested in a year under controlled environment and ensuring a steady food supply. Key initiatives should include: (i) Basic and strategic research enabling transformation with understanding the interactions of various components of food systems; (ii) Upstream research improving resilience to stresses and enhancing biological nitrogen fixation; and (iii) Holistic research approach analysing 'farm to fork' process for sustainable food system intensification.
5. **Efficient Delivery:** Effective delivery systems are essential for agricultural success. Key initiatives should include: (i) Strengthening the delivery systems to develop food information systems and improve traceability through blockchain technology to ensure transparency and efficiency; (ii) Developing supply systems to promote regional supply chains, alternatives, and strengthen the seed system for greater resilience and sustainability; and (iii) Climate-Smart villages to Co-design farm systems that enhance adaptive capacity and scale up the use of climate-smart technologies. Krishi Vigyan Kendras (KVKs) bridge research and practical implementation. Acting as district-level hubs, they provide advisory services, and capacity-building of farmers for technology adoption to ensure agricultural advancement. Digitizing services like land records, water management, and fertilizer distribution streamlines operations and enhances decision-making capabilities.
6. **Policy and Market Development:** For long-term success, policies should promote farmers prosperity and market stability. Key actions include:



- (i) **Formulating Policies for Food System Transformation:** Create policies that promote farmer prosperity with profitable food systems in different regions.
 - (ii) **Establishing Agri-Business & Innovation Platforms:** Support startups and innovators to drive agricultural technology commercialization.
 - (iii) **Developing Agri-Information Systems:** Use of simulation and DSS for crop planning, input optimization, and early warning systems using AS and ICTs to enhance decision-making.
 7. **Strengthening Education for Global Agriculture and Export:** Education and global collaboration are key to advancing India's agricultural exports. Key focus areas include:
 - (i) Global agricultural practices to improve local farming.
 - (ii) Agricultural needs in other countries to address global challenges.
 - (iii) International trade rules and standards for agricultural exports.
 8. **Human Resource Development:** Attracting and retaining skilled talent is essential for agricultural innovation. Key initiatives include:
 - (i) **Strengthening the Science Base:** Attracting best staff with succession planning.
 - (ii) **Innovative Training:** Flexible training modules for various stakeholders, both in online and offline mode.
 - (iii) **Partnership for Capacity Building:** Collaborate with leading global education organizations to enhance agricultural training.
 9. **Partnerships for Impact:** Collaboration is key to sustainable growth. Key areas include:
 - (i) **Integration:** Promoting collaboration across national and international Institutions.
 - (ii) **South-South Cooperation:** Developing partnerships with Asia and African countries for mutual growth.
 - (iii) **Networking:** Leveraging multi-network collaborations for sustained innovation in public-private partnerships.
 10. **Resource Generation:** Resource generation is critical to sustaining agricultural progress. Key strategies include:
 - (i) **Diversifying the Funding Base:** Real-time tracking of opportunities from major agri-producers and philanthropic organizations.
 - (ii) **Exploring Funding for Quality and Resilience:** Secure funding from industries, Govt. Dept., States, and international donors.
 - (iii) **Consolidating Resources:** Ease of doing business, integrated operational structure and improve the use of available funds.
- In conclusion, the evolution of agriculture in India from shortage to surplus highlights the impactful influence of science, policy changes, and determination of its farmers. The future of Indian agriculture lies in sustainability, climate resilience, and adoption of cutting-edge technologies. As India progresses, its agricultural sector will not only meet the demands of its large population but will also play an essential role in enhancing global food security, reinforcing its role as a key player in the world's agricultural landscape. The path ahead, with a focus on sustainable practices and inclusive growth, holds immense potential for India to lead the way in global agriculture.

Himanshu Pathak
President



New Year Get-Together 2025

New Year Get-Together of the Academy was held on January 06, 2025, in hybrid mode, bringing together esteemed Fellows and Associates, to celebrate the achievements of 2024 and chart the course for the year ahead.



Dr. W.S. Lakra (Secretary) extended a warm welcome to the newly elected office-bearers, including Dr. Baldev Singh Dhillon as Vice President; Prof. Karimbhai M. Maredia as Foreign Secretary; and Executive Council Members, Dr. A. Gopalakrishnan and Dr. P.S. Minhas. He also acknowledged the contributions of the outgoing members, whose dedication has strengthened the Academy's mission.

The key milestones of 2024 included: creation of NAAS YUVA (Youth United for Visionary Agriculture); launch of Smt. Kanak Aggarwal NAAS Girl Students Scholarship for promoting gender inclusivity and helping meritorious girl students in agricultural sciences; and Prof. M.S. Swaminathan Foundation Day Lecture to commemorate the legacy of Prof. M.S. Swaminathan, cementing the Academy's dedication to agricultural development and innovation.

Visionary address by Dr. Himanshu Pathak (President) and distinguished Past-Presidents, Prof. R.B. Singh and Dr. T. Mohapatra emphasized agricultural innovation, policy advocacy, and sustainable practices as key drivers for future growth. Their insights underscored the importance of interdisciplinary collaborations and technological advancements in shaping the agricultural landscape.



Future action plan for 2025 included: XVII Agricultural Science Congress to be held at G.B. Pant University of Agriculture and Technology (GBPUA&T), Pantnagar, from February 20-22, 2025 with a focus on "Frontier Sciences and Technologies in Agriculture for Developed India"; enhanced engagement with young researchers through NAAS-YUVA; new policy papers; and increased collaborations with National & International academies.

The theme for the year 2025 "Agri-Food Innovations for Rural Transformations" underscores the Academy's dedication to leveraging scientific progress for the betterment of rural communities and the agricultural sector.

Publications, including NAAS Year Book and Planner 2025, showcasing the Academy's accomplishments and future aspirations were also released. The event concluded with a vote of thanks by Dr. Ashok K. Singh (Secretary).



Executive Council Meeting

140th Meeting

The 140th meeting of the Executive Council (EC) was held in hybrid mode on February 19, 2025, at

GBPUA&T, Pantnagar, under the Chairmanship of Dr. Himanshu Pathak (President). Besides EC members, special invitees participated on specific agenda items. After brief welcome address, agenda items were



deliberated upon by the EC and the important points emerged during the meeting were:

- Dr. W.S. Lakra (Secretary) provided update on the revision of Bye-Laws and Rules & Regulations of the Academy. The revised version will be presented in the next EC meeting.
- Dr. P.K. Joshi presented the status of the NAAS publication entitled “Road Map for Indian Agricultural Research, Education and Extension during Amrit Kaal-2047”, which is expected to be released during the AGM in June 2025.
- Dr. M.S. Chauhan (Convener, XVII ASC) and Dr. A.S. Nain (Organizing Secretary, XVII ASC) presented the status of preparations for the Congress to be held during February 20-22, 2025. With 2,400 registered attendees and 1,600 abstracts received, the Congress was expected to have record participation. Former Lt. Gen. Gurmit Singh, Honourable Governor of Uttarakhand, will be the Chief Guest and Shri Pushkar Singh Dhami, Chief Minister, Uttarakhand,

will inaugurate the Agri Expo 2025 during the Congress.

- The Academy sponsored 50 students to attend the Congress through the NAAS-YUVA infographic competition.
- Dr. Lakra presented the final technical program of the Congress. The event will feature the first Dr. Verghese Kurien Memorial Lecture by Dr. Meenesh Shah (Chairman, NDDDB), along with Dr. A.B. Joshi Memorial Lecture and other plenary sessions.
- Dr. Soumya Swaminathan (Chairperson, MSSRF), will be invited to deliver the Prof. M.S. Swaminathan Foundation Day Lecture during the AGM in June 2025. In addition, two industry leaders and two media personnel will also be felicitated.
- The Academy will organize national-level conference in late 2025 on the theme “Agri-Food Innovations for Rural Transformation”.
- Prof. Karimbhai M. Maredia (Foreign Secretary) suggested Academy’s participation in the World Food Prize (WFP) Foundation event in Iowa (USA) in October 2025.
- Dr. Haritha Bollinedi (Convener, NAAS-YUVA) presented an over-view of 2025 activity plan.
- NAAS Institutional Membership to be extended to foreign Universities, particularly Michigan State University, USA.

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

NAAS Programs

BRAINSTORMING SESSION (BSS)

“Policy Interventions for Accelerating Indian Farm Mechanization to Achieve the Goal of 75% Level by 2047” (Convener: Dr. S.N. Jha, DDG, ICAR; Co-convener: Dr. K.P. Singh, ADG, ICAR)

A BSS on “Policy Interventions for accelerating Indian Farm Mechanization to achieve the goal of 75% level by 2047” was organized in hybrid mode on January 21, 2025. The session was Chaired and Co-chaired by Dr. Himanshu Pathak (President) and Dr. Baldev Singh Dhillon (Vice President) respectively.

Following Dr. W.S. Lakra (Secretary)’s welcome address, Dr. S.N. Jha (Convener) presented the status



and policy interventions for accelerating Indian Farm Mechanization to achieve the goal of 75% level by 2047. Dr. Pathak emphasized upon the need for a holistic approach for mechanization. He emphasized



the importance of using the right machine for the right purpose, at the right time, and for the right crop. He also pointed out the challenges of maintaining machines and the need for a comprehensive approach to the whole food system.

The participants discussed the challenges in achieving the goal of 75% level mechanization by 2047, including the lack of clear policies, inadequate infrastructure, and insufficient trained personnel at district, block and panchayat levels. They also highlighted the need for a shift in focus towards post-harvest mechanization; and mechanization for irrigation and drainage, which is currently neglected under mechanization activities of the state. Suggestions for addressing these challenges included the establishment of Directorate/ Department of Agricultural Engineering in each State; appointment of Agricultural Engineers in sufficient numbers at State Secretariat, Districts, Blocks etc. Establishment of a National Institute for Agricultural Robotics and AI in NAREES and Agricultural

Dr. Himanshu Pathak (President) in his opening remarks thanked everyone for their participation and highlighted the importance of Regional Chapters in promoting agricultural science and addressing regional issues.

Subsequently, Conveners of the Regional Chapters presented an overview of the activities organized during 2024-25 along with financial status, and their plan of



Engineering colleges in each Agricultural/Horticultural Universities to cater the need-based manpower in high-tech/precision agriculture and mechanized agriculture looking at the availability of labour and machines respectively by 2047. The session was concluded with vote of thanks by Dr. K.P. Singh (Co-convenor).

OTHER ACTIVITIES

Regional Chapters' Conveners Meeting

A meeting of the Conveners of the Regional Chapters was held on February 20, 2025 at GB Pant University of Agriculture & Technology, Pantnagar in hybrid mode to review the progress of activities conducted by the Regional Chapters. The meeting was chaired by Dr. Himanshu Pathak (President). Following welcome address by Dr. Ashok K. Singh (Secretary),

activities for 2025-26. After detailed deliberations, the following action points to be undertaken by Regional Chapters emerged:

- To prepare a full-year calendar of planned activities.
- To identify regional challenges and opportunities in agriculture. Also organize a BSS on the NAAS theme-2025 "Agri-food innovations for rural transformation".
- To celebrate National Science Day on February 28, 2026.
- To organize programs on career opportunities in agriculture and agribusiness for school and college students.
- To organize joint events with Professional Agricultural Societies in their regions.
- To share their annual budget utilization certificate/status and requirements with NAAS headquarter.
- NAAS headquarter to prepare a comprehensive calendar of Regional Chapters activities and timely release of funds to Regional Chapters.

Dr. Ashok K Singh (Secretary) concluded the meeting with vote of thanks and encouraged everyone to continue their efforts in advancing agricultural science and addressing regional challenges.



Activities of the Regional Chapters

Barapani Chapter

The NAAS Barapani Chapter organized a BSS on February 17, 2025 on “Circular Economy in Agriculture: Step towards Green and Clean Economy” in collaboration with ICAR-Agricultural Technology Application Research Institute (ATARI), Zone VI, Guwahati and ICAR Research Complex for NEH Region, Umiam at Software Technology Parks of India (STPI), Guwahati.



The event aimed at promoting sustainable agricultural practices by integrating circular economy principles and preparing a structured roadmap for waste reduction, resource efficiency, and environmental sustainability. 43 experts/scientists and other stake holders from different agencies, including Dr. K.M. Bujarbaruah (Former Vice-President, NAAS), Smt. Vandana Srivastava (Director, STPI, Guwahati), and Dr. Thakuria (Dean, CAU, Imphal) attended the session.

Karnal Chapter

- The NAAS Karnal Chapter organized a New Year get together of Karnal based Fellows on January 11, 2025 at the G.S. Foundation for Research, Education and Development (GSFRED), Karnal to identify regional problems of agriculture and the required research, development and policy interventions. Visit to GSF Research Farm was also arranged.



- Organized Fellows and Progressive Farmers interaction with Dr. Gurdev Khush, World Food Prize Laureate at GSFRED on March 03, 2025. In his brief address, Dr. Khush raised the issues of declining ground water level; burning of crop residues; environment pollution; vulnerability of region to climate change; need for diversification from rice – wheat cropping system to oilseeds, pulses and other less water requiring crops and adoption of integrated farming system to double farmers income.

Varanasi Chapter

- The NAAS Varanasi Chapter arranged a meeting of the Fellows and Associates on January 25, 2025





at Banaras Hindu University (BHU), Varanasi to chalk out the activities of the Chapter for the year 2025.

- Organized a BSS in collaboration with the School of Biotechnology, Institute of Science, BHU on 'Approaches for Sustainable New-Gen-Agri-Biotech Applications' on March 11, 2025 in hybrid mode. Prof. Kankana Kundu, Centre for Microbial Ecology and Technology (CMET), Faculty of Bioscience Engineering, Ghent University, Belgium, delivered an insightful lecture on 'Microbial resource management: an approach to develop microbial-based solutions for a better world'.
- Organized one-day training program for the tribal farmers of Sonbhadra district (Uttar Pradesh), on March 12, 2025 at Banwasi Sewa Ashram, Govindpur, Sonbhadra. Dr. RS Meena highlighted various ongoing activities in the region done by his team during the last two years. The event was chaired by the Convener, Prof. Madhoolika Agarwal. She highlighted the role of sustainable cultivation practices for reducing pollution while increasing

farm outputs and sustainability. An exhibition was also arranged for highlighting the significance of using locally available and lesser-utilized species such as leafy vegetables, vegetables, fruit, and tubers for diet supplementation and diversification. Also, the seeds of high-quality seasonal vegetables and fodder grass were distributed to farmers. An interactive session regarding the ongoing developmental activities, cultivation and pest management of vegetable crops, and the medicinal attributes of crops, as well as the distribution, significance, and importance of wild edibles, was conducted with the help of Ms. Shuba Prem (Director).



Activities of NAAS-YUVA

“Ethics in Research Publications” (Convener: Dr. Haritha Bollinedi)

A webinar on “Ethics in Research Publications” was organized on January 31, 2025. The presentation made by Prof. S.C. Lakhotia, Banaras Hindu University, Varanasi, included: (i) the ethical considerations in academic publishing, particularly focusing on the roles of authors, editors, reviewers, and publishers; (ii) need for quality research publications in Indian Journals with proper peer review; (iii) concern for over reliance on impact factor, open access journals by commercial publishers, predatory journals etc. He also emphasized that research should be valued as social service rather than a commercial enterprise.

“Infographic Competition” (Convener: Dr. Haritha Bollinedi)

NAAS-YUVA organized an Infographic Competition to encourage critical thinking among students on key agricultural issues, including food and nutrition security; climate-smart agriculture; water management; women's contributions to agriculture; and technological advancements in Indian agriculture. The competition also aimed at enhancing students' presentation skills

NAAS-YUVA
(National Academy of Agricultural Sciences-
Youth United for Visionary Agriculture)
organises

INFOGRAPHIC COMPETITION

TOPIC EMPOWERING INDIAN AGRICULTURE: VISION 2047 FOR VIKSIT BHARAT

THEMES

1. Food and Nutritional Security in 2047
2. Climate-Smart Agriculture
3. The Circular Economy in Agriculture
4. Water Management
5. Women in Agriculture
6. Technological Innovations in Indian Agriculture

Who can participate?
Students pursuing agricultural sciences (BSc, MSc, and PhD) in ICAR Institutes and State Agricultural Universities can take part in the competition.

How to participate?

- Select the theme and design your infographic on the topic given
- Be creative
- Ideas should be original
- Describe your infographic in 300 words
- Don't forget to add a list of co-authors, if any

File formats

- Digital files in JPEG or PDF formats are only accepted.
- The images should be of high quality and good resolution
- Beginner by scanning the QR code and submit the infographic file along with the abstract infographics
- without the abstract will not be considered for evaluation

Evaluation criteria

- Innovative use of graphics and overall visual attractiveness
- Relevance and accuracy of the information
- Uniqueness and originality
- Clarity and ease of understanding

LAST DATE OF SUBMISSION:
30 JANUARY, 2025

TO PARTICIPATE

• 1st Prize: Certificate and memento (Travel grant to participate in XVI Agricultural Science Congress 2025 being held at Pant Nagar)

• 2nd Prize: Certificate and memento

• 3rd Prize: Certificate and memento

SCAN THE QR



and prepare them for future roles as scientists, entrepreneurs, policymakers, and leaders.

Competition received 347 entries from students across India. After initial screening by the NAAS-YUVA committee, 50 entries were shortlisted and were subsequently evaluated by a panel to select the top three awardees.

The top three winners: Ms. Simranjot Kaur from Punjab Agricultural University; Mr. Dhanraj from Indian Agricultural Research Institute (Hyderabad hub); and Mr. Pritam Roy from National Dairy Research Institute, made presentations and additionally 50 shortlisted students were invited to participate in the XVII Agricultural Science Congress (ASC), held at Pantnagar during February 20-22, 2025, providing them an opportunity to engage with leading scientists and experts.

Dr. A.K. Singh (Secretary) appreciated NAAS-YUVA and the students for their infographic designs and presentations. Dr. Maredia (Foreign Secretary) also



acknowledged the students' efforts. The session concluded with a vote of thanks by Dr. Prabina Mehar (Co-Convenor).

Publications

NAAS Year Book and Planner 2025



Policy Paper (PP)

PP-131: Smart Animal Farming: Perspective Planning

PP-132: Strategies and Policies for Enhancing the Global Footprint of Indian Spices

PP-133: Agrivoltaics for Sustainable Crop and Energy Production



Strategy Paper (SP)

SP-20: Strategy for Upscaling Carbon Farming in India





Forthcoming Programs

- Preparing Future Ready Youths for Entrepreneurship Development in Agriculture
- Enhancing Efficiency and Sustainability of Farmer Producer Organizations in India
- Precision Irrigation Systems Using AI and IOT
- Harnessing the Functional Plant Microbiome for Next-Generation Plant Health Management
- Marine Nutraceuticals for Boosting Bio-Economy in India
- Semio-Chemicals Driven Pest Management Strategy
- Managing Emerging Environmental Contaminants in Aquaculture and Fisheries
- Horticultural Innovation to Enhance Export Promotion
- Organic Farming for Sustainable Agriculture
- Genome Editing in Agriculture – Prospects and Challenges
- Innovative Approaches for Crop Residue Management
- Fisheries Research and Development Priorities for Partnership in South Asia

Obituaries



Dr. Satish Kumar Raina
(1947-2025)

Dr. Satish Kumar Raina, age 78 years, passed away on March 03, 2025. He was an embodiment of excellence in research and teaching in Science.

He was born in Srinagar, Kashmir on June 25, 1947. He was educated at DAV High School, Srinagar (1961); S.P. College, Srinagar; G.G.M. Science College, Jammu (1961-66); and R.B.S. College, Agra (1969). He acquired Ph.D. from Indian Agricultural Research Institute and Agra University in 1977.

He was one of the pioneers of rice haploid culture and genetic transformation of rice. He worked as a Visiting Scientist at International Rice Research Institute, Manila, Philippines (1987-89), Swiss Federal Institute of Technology, Zurich, Switzerland (1995); and John Innes Centre, Norwich, UK (1996). He served as Professor (Molecular Biology and Biotechnology) at National Research Center on Plant Biotechnology, IARI, New Delhi (2000-2005). He took voluntary retirement and joined as Director and Chief Advisor, Nath BioGene (India) Ltd., Chhatrapati Sambhaji Nagar, where his tireless efforts led to the commercialization of GFM Bt-cotton in 2006 and recently in Philippines (2023).

Dr. Raina also served as Consultant, International Atomic Energy Agency, Vienna, Austria, (1992), National Horticultural Board (1995) and Agricultural Products and Export Development Agency, New Delhi (1996). Besides NAAS, Dr. Raina was Fellow of Indian National Science Academy (INSA).

He is survived by his beloved wife and two sons. Dr. Raina leaves behind a legacy of an inspiring teacher, dedicated scientist and dynamic personality. He will be deeply missed but fondly remembered by all who had the privilege of knowing him.

Dr. R.C. Bhattacharya

Director

*National Institute of Plant Biotechnology (NIPB)
New Delhi*



Dr. Krishan Lal Chadha
(1936 to 2025)

Dr. Krishan Lal Chadha, a titan in the field of Horticulture, and former Vice President of the National Academy of Agricultural Sciences (NAAS), breathed last on March 23, 2025. Dr. Chadha was a great mentor and an able administrator of international repute. With his demise, an era of horticultural research, development, policy, and management enriched with his sound scientific knowledge, and vision for science led horticulture development for food and nutrition secure India has ended.

Born in Bhopalwala, Sialkot (now in Pakistan), he pursued his graduation and Masters in Agriculture/Horticulture at Punjab University and earned his Ph.D. degree from Indian Agricultural Research Institute (IARI), New Delhi. During his professional inning spanning over six decades, he held several key positions, including Assistant Horticulturist at IARI; Fruit Specialist at Punjab Agricultural University; and Senior Horticulturist at Indian Institute of Horticultural Research (IIHR), Bengaluru. He played a crucial



role as Project Coordinator (Fruits) and Head of the Central Mango Research Station (now ICAR-CISH), Lucknow. Subsequently, he provided leadership by serving as Director, IIHR, Bengaluru; First Horticulture Commissioner of India; Executive Director, National Horticulture Board; Deputy Director General (Horticulture Sciences) and ICAR-National Professor. He also served as Adjunct Professor in Horticulture at IARI (2011-2017). His research contribution included release of the high-yielding regular-bearing clone of Dashehari mango (Clone 51); establishment of National Germplasm Repository of 760 mango genotypes; management of physiological disorders like fruit-drop, malformation and black tip in mango, citrus decline; identification of mango dwarfing rootstocks; high-density planting in pineapple; development of sampling techniques and nutrient guides for many fruit crops and Field gene, pollen and cryo-banks in Horticultural crops.

Dr. Chadha has been instrumental in shaping India's horticultural R&D landscape by establishing National Research Centres (9) during the VIII Plan on citrus, banana, grape, arid horticulture, onion and garlic, oil palm, cashew, spices, & MAPs and National Institutes (4), such as CITH, Srinagar; IIVR, Varanasi; IISR, Calicut; and CIAH, Bikaner. As Chairman of the Working Groups on Horticulture and Member Secretary of one Five-Year Plan (Planning Commission, now NITI Ayog), he secured substantial government funding for flagship programmes, namely, Hi-Tech horticulture, Micro-irrigation, High-density planting, Micro-propagation and Development of F1 hybrids in vegetables through the NAREES on Horticulture. A prolific writer, he was instrumental in bringing out *Advances in Horticulture* (13 volumes) and *Handbook of Horticulture*.

His contributions were well recognized as he was elected as Vice President (NAAS) and President of several professional societies including Indian Society of Vegetable Sciences. As President, he was instrumental in elevating the Horticultural Society of India to the level of Indian Academy of Horticultural Sciences in 2019. He also served as Vice-Chairman of the Board of Trustees, International Potato Centre, Lima and consultant for FAO, USAID, and the World Bank. He was honoured with several distinguished fellowships and awards, including IFFCO US Awasthi Award (2021), Padma Shri (2012), NAAS BP Pal Memorial Award (2005) and Borlaug Award (1984).

His initiatives and dedication have brought a paradigm shift in horticulture R&D in India, catalysing fast growth and bringing the sector to the national focus in achieving food and nutritional security, employment generation, besides improving incomes of the small and marginal farmers. He is fondly referred to as the 'Father of Golden Revolution' by different organizations and horticultural fraternity in the country. The void created in Indian Horticulture with the demise of Dr. Chadha will never be filled, but his tireless efforts, unwavering dedication, and unrelenting passion for horticulture will continue to inspire and motivate the younger generation in the field of horticulture in India.

Dr. Sanjay Kumar Singh
DDG (Horticulture Sciences), ICAR

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

Published by: Executive Director, on behalf of the National Academy of Agricultural Sciences, NASC, Dev Prakash Shastri Marg, New Delhi 110012; Tel. (011) 25846051-52, Fax. 25846054; Email: naas-mail@naas.org.in; Website: <http://naas.org.in>