

Proceedings

17th

NATIONAL SYMPOSIUM

of
Indian Agricultural Universities Association (IAUA)
on
Farm Mechanization and Agricultural Robotics for
Small and Marginal Farmers: Challenges and Opportunities
(SEPTEMBER, 25-26, 2025)



Organized by
Vasant Rao Naik Marathwada Krishi Vidyapeeth
Parbhani 431402 - (MS) India
&
Indian Agricultural Universities Association (IAUA)
NASC Complex, Pusa Campus, New Delhi, India



Proceedings 17th National Symposium of Indian Agricultural Universities Association (IAUA)

(SEPTEMBER, 25-26, 2025)

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Message

I am happy to know that Vasantao Naik Marathwada Krishi Vidyapeeth (VNMKV), Parbhani is hosting the 17th Indian Agricultural Universities Association (IAUA) National Symposium on "Farm Mechanisation and Agricultural Robotics for Small and Marginal Farmers: Challenges and Opportunities" on 25-26 September, 2025. The participation of Vice-Chancellors and representatives from agricultural and allied universities across the nation will make this a truly significant academic and policy-oriented gathering.

The theme of the Symposium is both timely and forward-looking. As Indian agriculture continues to face the challenges of climate change and resource constraints, innovations in farm mechanisation, robotics, artificial intelligence, and precision agriculture are not just desirable but essential. These technologies have the potential to reduce production costs and enhance farm productivity, particularly for small and marginal farmers. It is noteworthy that the Maha Agri-AI Policy 2025-2029 of Maharashtra, India's first comprehensive Artificial Intelligence policy for agriculture, was approved in June 2025 by Govt. of Maharashtra. This visionary policy aims to revolutionize the state's agricultural sector by integrating AI, drones, IoT, blockchain, and other emerging technologies to enhance productivity, promote climate resilience, and improve farmer incomes through data-driven and farmer-centric interventions.

I know that VNMKV is credited with climate-resilient technologies and crop improvement. Its recent 'A' grade accreditation by ICAR, New Delhi, is a recognition of its academic excellence and commitment to the welfare of the farmers. The organization of this prestigious symposium at Parbhani reflects the university's growing national and international stature.

I extend my best wishes for the grand success of the Symposium and for its meaningful contribution to the progress of Indian agriculture and the welfare of farmers.

Date : 22/09/2025

(Dattatray Bharne)

Minister of Agriculture
of Maharashtra



Tushar Pawar
Vice Chairman Maharashtra
Council of Agriculture Education
and Research, Pune



Message

I am delighted to learn that Vasantrao Naik Marathwada Krishi Vidyapeeth (VNMKV), Parbhani, will host the 17th National Symposium of the Indian Agricultural Universities Association (IAUA) on September 25-26, 2025. It is truly inspiring to see Vice-Chancellors and representatives from agricultural and allied universities across the country coming together to deliberate on the crucial theme, "Farm Mechanization and Agricultural Robotics for Small and Marginal Farmers: Challenges and Opportunities."

The emergence and integration of advanced farming technologies such as precision farming, drones, IoT-enabled farm machinery, and AI-driven decision-making tools are vital for enhancing productivity, ensuring food security, and improving farmers' incomes. This symposium provides an excellent platform for academic leaders and policymakers to collaborate on strategies for sustainable agricultural growth. Its emphasis on modern mechanization, robotics, and digital innovation will allow participants to explore solutions that are not only technically sound but also socially and economically viable for smallholder farmers. The discussions and outcomes are expected to generate actionable recommendations to strengthen mechanization support systems, promote entrepreneurship, and bridge technology gaps in rural areas.

I acknowledge with pride that VNMKV has made significant contributions in climate-resilient farming technologies, crop improvement, and extension services. Its recent 'A' grade accreditation by ICAR, New Delhi, is a testament to its academic excellence and its unwavering commitment to farmer welfare. Hosting this prestigious symposium in Parbhani further reinforces the university's growing stature at the national and international levels.

I extend my heartfelt congratulations to VNMKV, Parbhani, and IAUA for successfully bringing this important event to fruition. I am confident that the symposium proceedings will provide valuable guidance, foster greater collaboration among universities, and serve as a key reference for policymakers, researchers, and academicians to strengthening Indian agriculture.

Date : 22/09/2025

(Tushar Pawar)

Vice Chairman Maharashtra
Council of Agriculture Education
and Research, Pune



Prof. (Dr.) Indra Mani
Vice Chancellor,
VNMKV, Parbhani



FOREWORD

It is a matter of great pleasure that Vasantao Naik Marathwada Krishi Vidyapeeth, Parbhani organized 17th IAUA National Symposium 2025 in collaboration with Indian Agricultural Universities Association (IAUA), New Delhi during September 25-26, 2025. The main theme of the Symposium was "Farm Mechanization and Agricultural Robotics for Small and Marginal Farmers: Challenges and Opportunities". Gracious presence of all eminent Vice Chancellors of Agricultural Universities, esteemed scientists, researchers, policy makers and industry leaders stand as a testament to the importance of farm mechanization and latest digital technologies in agriculture and to make the country self-reliant on various aspects of agriculture in terms of food security.

The 17th National Symposium was featured with four technical sessions majorly focused on latest advancement in the field of farm machinery. Each session had a panel discussion to bridge the gap between challenges which the modern agriculture is facing and future strategy. The symposium also highlighted the latest research and development going on various agricultural universities to increase the mechanization followed by panel discussion.

Farm mechanisation and agricultural robotics present both significant challenges and promising opportunities for use of these technologies by small and marginal farmers. Limited landholdings, low capital investment capacity, and inadequate access to credit make it difficult for these farmers to adopt modern machinery and advanced robotic solutions. High costs of equipment, lack of customised modern technologies, and insufficient technical training further constrains mechanisation. However, opportunities lie in the development of affordable, compact, and multi-functional machines tailored to small farms, along with collaborative models like custom hiring centres and cooperatives that reduce individual investment burdens. Government support, targeted subsidies, and start-up innovations in low-cost robotics and precision farming tools can help bridge the mechanisation gap, improve productivity, and reduce drudgery, ultimately enhancing incomes and resilience among small and marginal farmers.

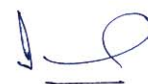
During the two days of symposium, the depth of knowledge was exchanged. It served as a valuable resource for researchers, policymakers and all those who are committed for advancement of agriculture. The outcomes of this symposium will definitely strengthen the mechanisation structures of Indian farmers. The proceeding summarizes the profundity of knowledge and ideas exchanged during the symposium. It serves as a valuable resource for all those individuals willing to change the agriculture landscape towards better future.

The symposium was inaugurated by Hon'ble Smt. Meghanatai Sakore-Bordikar, Minister of State for Public Health and Family Welfare, Water Supply and Sanitation, Energy,



Women and Child Development, and Public Works (Govt. of Maharashtra), and Guardian Minister of Parbhani District. She is entrusted with responsibilities across multiple key departments of the Government of Maharashtra, playing a significant role in advancing public welfare, infrastructure development, and social development initiatives in the state. Her unwavering commitment towards agricultural development, rural empowerment, and farmers' welfare has been a source of inspiration for the agricultural community across the region. Her valuable guidance and encouragement have significantly strengthened initiatives aimed at promoting innovation, mechanization, and sustainable growth in the agriculture sector. The inaugural function was graced by the presence of Hon'ble Dr. R. C. Agrawal, Former Deputy Director General (Education), ICAR, and Dr. M. S. Chauhan, Hon'ble Vice-Chancellor and Secretary-General of the Indian Agricultural Universities Association (IAUA). The august gathering included eminent Vice Chancellors of various agriculture university including Dr. Karbhari Kale, Dr. Dheer Singh and expert from various private as well public organizations.

I commend the organizers, speakers, and participants for their contributions to this momentous event. By working together, we can harness the power of different ideas and opinions to make more advanced tool and machineries, thus, making farming more productive and sustainable. I encourage to explore the contents of this volume and to engage in further discussions on the critical issues raised. I'm sure that the implementation of the recommendations of 17th IAUA National Symposium-2025 will definitely strengthen the farm mechanization, green energy and roadmap for affordable digital technologies.



Prof. (Dr.) Indra Mani
Vice Chancellor,
VNMKV, Parbhani



Dr. B. V. Asewar

Director of Instruction and Dean (F/A)
VNMKV, Parbhani



PREFACE

The Indian agricultural sector stands at a critical point where the convergence of mechanization, robotics, digital technologies, and sustainable energy solutions is essential to address the challenges faced by small and marginal farmers. Recognizing this imperative, the 17th National Symposium of the Indian Agricultural Universities Association (IAUA) on the theme "Farm Mechanization and Agricultural Robotics for Small and Marginal Farmers: Challenges and Opportunities" was jointly organized by Vasantao Naik Marathwada Krishi Vidyapeeth (VNMKV), Parbhani and IAUA, New Delhi, during 25-26 September 2025 at VNMKV, Parbhani.

This symposium provided a prestigious national platform for Vice-Chancellors of Agricultural Universities, senior scientists, researchers, policymakers, industry experts, entrepreneurs, progressive farmers, and academicians from across the country to deliberate on contemporary issues, emerging technologies, and future strategies for transforming Indian agriculture. With participation from 74 agricultural universities, the deliberations reflected a comprehensive and inclusive approach toward strengthening agricultural education, research, extension, and innovation ecosystems. The technical deliberations were structured across five focused sessions, covering:

- Government initiatives in new science and digital agriculture
- Farm mechanization through sensors, IoT, and robotics
- Agricultural drones, AI-ML, Big Data, and Large Language Models
- Green and alternative energy solutions including agrivoltaic
- NIRF ranking frameworks with special reference to agricultural universities

These sessions facilitated in-depth discussions on affordable mechanization, climate resilience, precision agriculture, renewable energy integration, data-driven decision-making, and institutional performance benchmarking. Emphasis was placed on developing low-cost, scalable, and farmer-centric technologies, strengthening custom hiring centres, fostering public-private partnerships, enhancing human resource capacity, and promoting Academia-Industry-Government-Farmer collaboration for effective technology adoption.

The symposium also generated actionable recommendations aimed at policy formulation, institutional reforms, curriculum integration, capacity building, and infrastructure development, particularly focusing on the needs of small and marginal farmers. These recommendations are expected to contribute meaningfully toward national missions such as Digital Agriculture, Climate-Resilient Farming, Clean Energy Transition, and Viksit Bharat 2047.



This volume of Proceedings documents the keynote addresses, technical deliberations, session highlights, recommendations, and major outcomes of the symposium. It serves as a valuable reference for researchers, policymakers, educators, students, and development practitioners committed to advancing sustainable, inclusive, and technology-enabled agriculture in India. The successful organization of this symposium reflects the collective efforts, vision, and leadership of the organizers, contributors, and participants. It is hoped that the knowledge and insights compiled in this volume will stimulate further research, innovation, collaboration, and informed decision-making, ultimately contributing to enhanced productivity, resilience, and prosperity for Indian farmers.



Dr. B. V. Asewar
Director of Instruction and Dean (F/A)
VNMKV, Parbhani



17th National Symposium of IAUA

17th National Symposium was jointly organized on “Farm Mechanization and Agricultural Robotics for Small and marginal Farmers: Challenges and Opportunities” by Vasantao Naik Marathwada Krishi Vidyapeeth, Parbhani and the IAUA, New Delhi during September, 25-26, 2025 at VNMKV, Parbhani, (MS) India. The event provided a platform to all Vice-Chancellors to discuss on innovative ideas pertaining to Mechatronics, Agricultural Robotics, Drones, AI-ML, Big-Data LLP, Ergonomics and Human safety for farm mechanization, development of energy farm power machinery tools, smart agriculture practices, precision farm management and adaptation of renewable energy technologies in modern agriculture and future scope and strategies for digital farming. The Sub-themes of the symposium were:

- New Science & Technologies in Agriculture: Govt. Initiatives
- Farm Mechanization: Sensors, IoT & Robotics
- Agricultural Drones and AI-ML, Big-Data, LLM
- Green and Alternative Energy
- NIRF Ranking with respect to Agricultural Universities

VNMKV - The Host University

Vasantao Naik Marathwada Krishi Vidyapeeth (VNMKV) formerly known as Marathwada Agricultural University was established on 18 May 1972 by the State of Maharashtra. VNMKV, Parbhani has a glorious legacy of agricultural research of more than 108 years as the Cotton Research Centre, Mahboob Bag, Parbhani was established in 1918. The mandate of the University is to impart education in agriculture and technology; conduct research and innovations as per the regional needs and transfer of technology to the farmers, industries and other end users. The University is also mandated with development of appropriate technologies for conservation of natural resources for sustainable use under the climate change situation. Since inception, the University released 161 varieties of food and horticultural crops, 57 implements and 1193 production technologies to cater to the needs of farmers leading to comprehensive agricultural development in Marathwada region.

The VNMKV, Parbhani is accredited by ICAR-NAEAB with Grade "A" (3.21/4.00) for a period of five years from 2023 to 2028. The University imparts degrees under the faculties of Agriculture, Agricultural Engineering, Food Technology, Community Science, Agricultural Business Management, Horticulture and Agricultural Bio-Technology. The University has initiated steps towards the implementation of the National Education Policy (NEP) 2020. University has also implemented syllabus based on VI Dean Committee. The university has secured a prestigious rank of 33 in IIRF ranking and placed among the top 10 agricultural universities by Agritell.com. More than 55 % of students placed in various organizations and industries through Student Placement Cell whereas other students joined higher education and entrepreneurship activities. The university has bagged the International Green University Award during 2023-24. The Centre of Excellence for Digital Farming Solutions for Enhancing Productivity by Robots, Drones and AGV's under National Agricultural Higher Education Project (NAHEP) was established in VNMKV with World Bank funding under aegis of ICAR. The center has been focusing on Mechatronics,



CAD/CAM/CAE, 3-D printing and instrumentation laboratories for Agri-bots, Agri-Drones and Agri-AGVs. The centre facilitated National and International training to students and faculties on advanced digital technologies. During 2023-24, 55 students and 25 faculty members completed their foreign training programme in leading International Universities.

Recently, the University acquired research funding worth of Rs. 70 crores from ICAR - DST, NASF, RKVY, RGSTC, GIZ and Maharashtra Chief Minister's funds to conduct research on digital agriculture, sustainable agriculture, biotechnology, organic and natural farming, use of drones in agriculture, nano fertilizer and agri-photovoltaic. The University has also developed strong collaboration with industries and National and International research organizations. Under CSR funding, Maharashtra Mechanization Centre at Parbhani, Centre for skill development of the farmers and rural youth at KVKs, and Marathwada Farmers Training Centre at Ch. Sambhajinagar (Aurangabad) are established with about Rs. 22.50 Cr fund. Recently, the Common Incubation Centre on Jaggery, spices and sugarcane juice processing under Pradhan Mantri Formalization of Micro food processing Enterprises (PMFME) scheme has started functioning in the University.

IAUA New Delhi

IAUA was established on 10 November 1967. The main objective of the association is to promote agricultural research, education and extension in the Universities and the States, thereby enabling rural development in the country. It also acts as a bureau of information to facilitate communication, co-ordination and mutual consultation among agricultural universities. Presently, IAUA has 74 member Universities, which includes 66 State Agricultural Universities, 4 Deemed to be Universities (IARI, New Delhi, IVRI, Izatnagar, NDRI, Karnal and CIFE, Mumbai), 3 Central Agricultural Universities (CAU, Imphal; Dr RPCAU, Pusa and RLBCAU, Jhansi) and One Central University with Agriculture Faculty (BHU, Varanasi). By specialization, there are 46 Agricultural, 7 Horticultural, 17 Veterinary and Animal Sciences and 4 Fisheries Science Universities as members in IAUA. All the SAUs and institutions (Deemed-to-be Universities and Central Agricultural Universities) in India, which provide an integrated programme of teaching, research and extension education in agricultural sciences are qualified to become regular members of the Association. The IAUA facilitates organization of conferences, seminars, workshops, lectures and research projects in agricultural and allied programs. The IAUA has, so far, organized 48 Vice Chancellor's Conventions, 16 National Symposium, 14 Brainstorming Sessions and 9 Regional Meetings on various issues of national importance and problems related to Agri-Research & Education.



PROGRAMME SCHEDULE

Venue: Main Campus, VNMKV, Parbhani, Maharashtra

Day 1: 25 th September 2025	
Inaugural Ceremony	
High Tea	
Technical Session I - New Science & Technologies in agriculture: Govt. Initiatives	
Co-Chair	Dr. Indra Mani , Vice Chancellor, VNMKV, Parbhani Dr. M. S. Chauhan , Vice Chancellor, GBPUAT, Pantnagar
Keynote Address-I	Speaker: Prof. Karbhari Vishvnath Kale , Vice Chancellor, Dr. Babasaheb Ambedkar Technical University, Lonere Topic: Application of Advanced Geospatial Technology for Precision Agriculture
Keynote Address-II	Speaker: Dr. Hemant Vasekar (IAS) , Director, SMART Project, Govt. of Maharashtra Topic: Driving Agribusiness and Rural Transformation in Maharashtra
Keynote Address-III	Speaker: Shri. Shrikant Andge , Deputy Secretary (Agriculture), Govt. of Maharashtra, (MD, AJAIC) Topic: New Science & Technologies in Agriculture-Government Initiatives (MahaAgri AI Policy 2025-2029)
Keynote Address-IV	Speaker: Shri. Vijay Kolekar , (Agronomist & Soil Science Specialist) Nanaji Deshmukh Krishi Sanjiwani Prakalp (PoCRA) Topic: Empowering small and marginal farmers through Maharashtra Climate Resilient Agriculture Mission
Panel Discussion	Panelists: Hon'ble VCs & Experts Moderator: Senior official from VNMKV, Parbhani
Lunch Break	
Technical Session-II: Farm Mechanization: Sensor, IoT & Robotics	
Co-Chair	Dr. Dheer Singh , Vice Chancellor, NDRI, Karnal Dr. Fakruddin , Director of Research, UHS, Bagalkot
Keynote Address -I	Speaker: Dr. Shivaram Kalyanakrishna , IIT Pawai Topic: Smart Robotic Technology for Agriculture
Keynote Address-II	Speaker: Dr. Syed Ismail , CEO Radiant Embedded Solutions & Director SIFA Sanpra Systems Topic: Automation in Sowing, Weeding and Harvesting Operations
Keynote Address-III	Speaker: Mr. S Arun Kumar , Research and Development Specialist, HEXAGON Topic: CIDA Centre for Innovation and Development in Sustainable Agriculture
Keynote Address-IV	Dr. Manjeet Singh , Dean, CAET, Punjab Agricultural University, Punjab Topic: Precision and Automation in Agricultural Machinery
Keynote Address-V	Speaker: Dr. Venkat Mayande , Former Vice Chancellor, Dr. PDKV Akola Topic: Farm Mechanization for Small and Marginal Farmers



Panel Discussion	Panelists: Hon'ble VCs & Experts Moderator: Senior official from VNMKV, Parbhani
Tea Break	
Technical Session-III: Agricultural Drones and AI-ML, Big-Data, LLM	
Co-Chair	Prof. Ravi R. Saxena , Vice Chancellor, MGAUV-Durg Dr. Manoj Kumar Gendley , Vice Chancellor, KU, Chhattisgarh Dr. S.R. Gadhak , Vice Chancellor, Dr. PDKV, Akola
Keynote Address-I	Speaker: Dr. Radhika Trikha , CEO of AWaDH, IIT Ropar (Punjab) Topic: Artificial Intelligence and Machine Learning in Agriculture
Keynote Address-II	Speaker: Prof. (Dr.) S. D. Gorantiwar , Former Director of Research, MPKV, Rahuri Topic: Latest Trends in Agricultural Drone Technology
Keynote Address-III	Speaker: Prof. (Dr.) Eshwar Rajshekharan , IIT, Bombay Topic: Application of Big-Data and LLM in Precision Agriculture
Panel Discussion	Panelists: Hon'ble VCs& Experts Moderator: Senior official from VNMKV, Parbhani
Day 2: 26th September 2025	
Technical Session-IV: Renewable and Solar Powered Machineries	
Co-Chair	Dr. Rajeshwar Singh Chandel , Vice Chancellor, Dr YSPUHF, Nauni
Keynote Address-I	Speaker: Dr. Indra Mani , Vice Chancellor, VNMKV Parbhani Topic: Agri-PV and Solar Powered Technologies
Keynote Address-II	Speaker: Dr. Mohd. Rihan , DG, National Institute of Solar Energy Topic: Future Strategies and Role of Agriculture Universities in Advancing Agriculture
Panel Discussion	Panelists: Hon'ble VCs& Experts Moderator: Senior official from VNMKV, Parbhani
Tea Break	
Technical Session-V: NIRF Ranking with respect to Agricultural Universities	
Co-Chair	Dr. Pervinder Kaushal , Vice Chancellor, VCSGUU of Horticulture and Forestry, Bharsar, Pauri, Garhwal (U.K)
Keynote Address-I	Speaker: Dr. R. C. Agrawal , Former DDG, ICAR New Delhi Topic: NIRF Ranking with respect toAgricultural Universities
Plenary Session	
	Presentation of Recommendations of Technical Sessions- I, II, III, IV & V
	Remarks by Co-Chair
	Concluding Remarks by Chair
	Vote of Thanks
	National Anthem
Lunch Break	
Visit to University Campus & Farms	
27th September 2025	
Departure of Hon'ble Vice Chancellors & Delegates	



INAUGURAL SESSION

The 17th National Symposium of the Indian Agricultural Universities Association (IAUA) was organized on September 25–26, 2025, jointly by Vasantrao Naik Marathwada Agricultural University, Parbhani, and the Indian Agricultural Universities Association, New Delhi, in coordination with a total of 74 agricultural universities across India. The theme of the symposium was “Farm Mechanization and Agricultural Robotics for Small and Marginal Farmers: Challenges and Opportunities.” The inaugural ceremony of the symposium was held on September 25, 2025

At the inauguration ceremony, the Hon’ble Minister of State and Guardian Minister of Parbhani, Smt. Meghana Sakore-Bordikar, stated that she views university students as progressive farmers and scientists, and that this should also be the objective of the university. She added that the effects of climate change are being felt across the country, with heavy rainfall causing significant crop losses. She emphasized the need for sustainable agricultural technologies to support farmers and stated that technology should be provided by adopting innovation.

She emphasized that the recommendations emerging from this symposium will be adopted by the state and central governments.



Smt. Meghana Sakore-Bordikar, Hon’ble Minister of State and Guardian Minister of Parbhani, Prof. (Dr.) Indra Mani, Hon’ble Vice-Chancellor, VNMKV Parbhani and Dr. R. C. Agrawal, Former DDG (Education), ICAR, New Delhi.

The Hon’ble Minister highlighted that the university is developing Artificial Intelligence (AI) based technologies, and many farmers are successfully implementing them. She further encouraged students to become entrepreneurs, citing her own experience as an organic farmer to motivate them towards entrepreneurship. She also suggested planning throughout the year to celebrate 2026 as the “International Year of Women Farmers”. She remarked that India could become the third-largest economy globally and that the youth have immense potential. Specially Hon. minister of state Meghnatai Bordikar mentioned the additional fund Rs. 50 crores will be allotted to the universities for training of students and faculties at International Institutes for Research & Education.



Prof. (Dr.) Indra Mani, Hon'ble Vice-Chancellor, VNMKV Parbhani Welcomed Guests

Hon'ble Vice-Chancellor Prof. (Dr.) Indra Mani, assured that the advices of Hon'ble State Minister, Smt. Meghna Sakore Bordikar, would be duly followed. Dr. Mani stated that to make the country's first **"MAHA VISTAAR-AI APP"** a project related to implement for AI Based Agriculture Policy (2025-29) with a fund of Rs. 500 crore has been approved, and a project with Rs. 1 crore has been sanctioned for climate research at the university, enabling farmers to access modern technology in a timely manner. He also emphasized the need to adopt integrated farming System practices involving agriculture, horticulture, and animal husbandry. He stressed that the aim is to transition from an agriculture-dominated country to a farmer-centered country, and the university is working with the ethos of **"Shatakari Devo Bhava"** (Treat the farmer as God). To promote entrepreneurship, university-developed products such as Biomix and Bio-Fertilizers will play a key role.

Former Deputy Director General (Education) Hon'ble Dr. R. C. Agrawal emphasized that for sustainable agriculture, human resource development is as very important. For Viksit Bharat 2047, a blueprint is essential, in which human resources development should get paramount importance. He further emphasized that the Central Govt. and this State Govt. should consult to speed up the trainings and exposure of students at UG & PG levels and also the young faculty to make them abreast with international scientists. Significant work has been carried out under the NAHEP projects, which will help develop competent scientists in the future.



Hon'ble Dr. R. C. Agrawal, Former DDG (Education), Indian Council of Agricultural Research, New Delhi welcomed by Dr. S. S. More, Head, Agril. Economics, VNMKV Parbhani

Hon'ble Vice-Chancellor and Secretary-General of the Association, Dr. M. S. Chauhan, stated that to overcome the current problems and challenges in the agriculture sector, there is a need for modern technology. For this purpose, the Indian Agricultural Universities Association organizes symposiums, Vice-Chancellors' conferences, and meetings to provide recommendations to the government. From this symposium, three to four key recommendations will be provided for incorporation into government planning processes, which will help in improving the welfare of farmers.





Dr. M. S. Chauhan, Hon'ble Vice-Chancellor, GBPUAT, Pantnagar and Secretary-General of the IAUA, New Delhi welcomed by **Dr. B. V. Asewar, DI & Dean, VNMKV Parbhani**

Hon'ble Vice-Chancellor Dr. Karbhari Kale also emphasized the importance of technological development for sustainable development. He stated that, in agriculture, priority should be given to the nutritional quality of production rather than artificial (hybrid) yield increases, and traditional components of food grains should be preserved.

Hon'ble Vice-Chancellor Dr. Dheer Singh stated that significant research by agricultural universities has brought about an agricultural revolution in the country. Milk production has increased significantly. Quality products such as Parbhani Shakti (sorghum), Godavari variety of pigeon pea, and Biomix



Dr. Karbhari Kale, Hon'ble Vice-Chancellor, DBATU, Lonere, Maharashtra welcomed by **Dr. S. S. More, Head, Agril. Economics, VNMKV Parbhani**

represent the true national-level identity of VNMKV. In the future, large sales centers, for these products should be established within the universities and in cities, which will promote entrepreneurship among students across the Marathwada region. He expressed hope that through such initiatives, the university will become number one at the national level. He also highlighted the importance of mechanization for sustainable agriculture and reviewed the work carried out under the **“Vikasit Krishi Sankalp Abhiyan.”** Despite the abundance of food grains in the country, hunger persists. The symposium will include significant discussions on the production and supply of quality agricultural products. Dr. Dheer Singh reiterated that the VNMKV, Parbhani is doing well in all directions and the University take initiative for a big commodity and products mall in PPP mode.



Dr. Dheer Singh, Hon'ble Vice-Chancellor, NDRI, Karnal addressing august gathering

Progressive farmer Mr. Chandrakant Dada Warpudkar shared his 25 years of experience across various agricultural universities in the country and highlighted the support farmers receive under the leadership of Hon'ble Vice-Chancellor Prof. (Dr.) Indra Mani through Vasantao Naik Marathwada Agricultural University. He also noted that although labour shortages and climate change currently have a significant impact on agriculture, their effect on orchards is comparatively lower. The inauguration ceremony was attended by Vice-Chancellors from various universities across the country. In the introductory remarks, the organizer of the symposium and Director of Education Dr. B.V. Asewar provided information about the event and presented an overview of the university's activities. The vote of thanks was delivered by Dr. Dinesh Kumar, Executive Secretary of the Association of Indian Agricultural Universities. The program was conducted by Dr. Veena Bhalerao. The event was attended by All Associate Deans, department Heads, Professors, Scientists, Officers, and students from Colleges of the Vasantao Naik Marathwada Krishi Vidyapeeth.



Mr. Chandrakant Dada Warpudkar, Progressive farmer addressing the august gathering



Glimpses of Inaugural Session



Arrival of Smt. Meghana Sakore-Bordikar, Hon'ble Minister of State, Govt. of Maharashtra



Dignitaries from various Agricultural Universities



Felicitation of the Dignitaries by Prof. (Dr.) Indra Mani, Hon'ble Vice-Chancellor, VNMKV Parbhani



Felicitation of the Dignitaries



Inaugural Session of National Symposium with Ended National Anthem



Participants of the National Symposium



TECHNICAL SESSION – I

New Science & Technologies in Agriculture: Govt. Initiatives

Co-Chairs	Dr. Indra Mani , Vice Chancellor, VNMKV, Parbhani Dr. M. S. Chauhan , Vice Chancellor, GBPUAT, Pantnagar
Rapporteurs	Dr. R.P.Kadam , Head & Professor, Dept. of Agril. Extension Education, VNMKV, Parbhani Dr. P.S.Kapse , Associate Professor, Dept. of Agril. Extension Education, VNMKV, Parbhani
Keynote Address -I	
Topic	Application of Advanced Geospatial Technology for Precision Agriculture
Speaker	Prof. Karbhari Vishvnath Kale , Vice Chancellor, Dr. Babasaheb Ambedkar Technical University, Lonere
Key Points	1. Prepare for the integration of quantum techniques in agriculture, which will revolutionize modeling, prediction, and farm-level decision-making. 2. Utilize hyper-spectral signatures for accurate identification of crops, insects, and pests to enable timely and targeted interventions. 3. Promote the use of geospatial and precision agriculture tools (GIS, remote sensing, UAVs) for real-time monitoring of crops, soil, and water resources.
Keynote Address -II (Online)	
Topic	Driving Agribusiness and Rural Transformation in Maharashtra
Speaker	Dr. Hemant Vasekar (IAS) , Director, SMART Project, Govt. of Maharashtra
Key Points	1. Strengthen FPOs and cooperatives to improve collective bargaining power and market linkages for value chain infrastructure development. 2. Expand digital platforms and markets for transparent, efficient, and inclusive agribusiness operations. 3. Encourage public-private partnerships (PPPs) to attract investment and innovation in rural enterprises. 4. Promote youth and women participation in agribusiness ventures through targeted training and incentives.
Keynote Address -III (Online)	
Topic	New Science & Technologies in Agriculture - Government Initiatives (MahaAgri AI Policy 2025 - 2029)
Speaker	Shri. Shrikant Andge , Deputy Secretary (Agriculture), Govt. of Maharashtra & MD, AIAIC
Key Points	1. Data collection from different stakeholders and integrating it to support AI-driven agricultural solutions is in progress. 2. Implementation of the MahaAgri AI Policy across crops for predictive pest/disease management and yield forecasting.



	3. Develop AI-enabled farmer advisory apps in local languages for inclusive access. 4. Foster collaborative research and innovation ecosystems involving academia, industry, and government.
Keynote Address-IV (Online)	
Topic	Empowering small and marginal farmers through Maharashtra Climate Resilient Agriculture Mission
Speaker	Dr. Vijay Kolekar , (Agronomist & Soil Science Specialist) Nanaji Deshmukh Krishi Sanjiwani Prakalp (PoCRA)
Key Points	1. Data collection from different stakeholders and integrating it to support AI-driven agricultural solutions is in progress. 2. Implementation of the MahaAgri AI Policy across crops for predictive pest/disease management and yield forecasting. 3. Develop AI-enabled farmer advisory apps in local languages for inclusive access. 4. Foster collaborative research and innovation ecosystems involving academia, industry, and government.

Session Highlights

- **Prof. Karbhari Kale** emphasized the emerging quantum techniques and hyperspectral signatures for precision agriculture.
- **Dr. Hemant Vasekar** briefed on the SMART Project, highlighting FPOs, digital platforms, and agribusiness promotion.
- **Shri. Shrikant Andge** presented the MahaAgri AI Policy 2025–2029, focusing on AI-driven solutions for crop management and farmer advisory services. He suggested the establishment of incubation centres at SAUs.
- **Dr. Vijay Kolekar** shared activities of PoCRA, including climate-resilient technologies, micro-irrigation, and community-based adaptation.

Observations by the Co-Chairs

- **Dr. Indra Mani** observed that for sustainable scaling up of agricultural innovations, the Triple Helix model of Academia–Industry–Government (AIG) integrated with Farmers is essential. This collaborative approach will ensure faster technology translation, wider adoption, and greater impact at the grassroots level.
- Also he has highlighted on scaling up advanced technologies requires the principle of “Collaborate – Innovate – Commercialize” to strengthen research, extension, and industry linkages for wider adoption.
- **Dr. M.S. Chauvan** highlighted the importance of introducing advanced and emerging technology in agriculture, including artificial intelligence, robotics and drones with a focus on developing and promoting solutions that cater to the specific requirements of local farming communities. IAUA also given priority on this technologies through different activities



Glimpses of Technical Session– I



Felicitation of the Co-Chairs



Engagement with Participant and Speakers of Technical Session – I



Participant and Dignitaries of Technical Session – I



TECHNICAL SESSION – II

Farm Mechanization: Sensors, IoT & Robotics

Co-Chairs	Dr. Dheer Singh , Vice Chancellor, NDRI, Karnal Dr. Fakruddin , Director of Research, UHS, Bagalkot
Rapporteurs	Dr. H. W. Awari , Chief Scientist, AICRP on Irrigation Water Management Centre, VNMKV, Parbhani Dr. V. K. Ingle , Assistant Professor, CAET, VNMKV Parbhani
Keynote Address -I	
Topic	Smart Robotic Technology for Agriculture
Speaker	Dr. Shivaram Kalyanakrishnan , IIT Pawai
Key Points	1. Dr. Shivaram asserted that while Artificial Intelligence and Robotic technology are mature and offer immense potential for agricultural productivity and sustainability, the main hurdle to adoption is a deficit in trained human resources. AI can be leveraged for sophisticated tasks like precision plant health classification and climate prediction, for real-time crop health monitoring, precision spraying, and autonomous decision making. 2. There are urgent needs to provide skilled professionals in both agriculture and embedded systems/robotics. 3. Agricultural and technical universities must collaborate immediately to establish localized training laboratories to address this critical skill gap. 4. There is need for agriculture – AI skill pipelines and localized agritech innovation (e.g. -Yantra outreach)
Keynote Address-II	
Topic	Automation in Sowing, Weeding and Harvesting Operations
Speaker	Dr. Syed Ismail , CEO Radiant Embedded Solutions & Director SIF A Sanpra Systems.
Key Points	1. The current mechanization gap and climate-driven challenges in Indian agriculture need to be addressed. 2. Robotics solutions for weed control, precision application, and affordability and service-base subsidy models are very important. 3. Significant food wastage (over 58 million Tonnes annually) necessitates efficient, automated harvesting and processing systems. 4. There is need of automation to focus on precision input delivery (sowing, weeding) to improve soil health, and on modern harvesting techniques to drastically reduce post-harvest losses and increase farmer profitability. 5. Small land holding farmers can be trained to handle the small tools machineries to enhance use of available power, to increase the per unit crop yield and reduce the per unit area cost as well as drudgery.



Keynote Address - III	
Topic	CIDSA Centre for Innovation and Development in Sustainable Agriculture
Speaker	Mr. S Arun Kumar , Research and Development Specialist, HEXAGON
Key Points	1. The challenges in agriculture in view of climate change situation all over the country and the climate smart solution for climate resilient agriculture were discussed. In this connection, use of Artificial Intelligence for weed identification, crop health monitoring, irrigation and fertigation management were emphasized. 2. An initiative taken by CIDSA (Centre for Innovation & Development in Smart Agriculture) with Government of Karnataka at University of Agricultural Sciences, GKVK, Bengaluru for establishment of seven pilot for Data Gathering and Recording Centre. CIDSA is multi-phased project that intends to build the skills of students/engineers for the agricultural industry through a series of well-structured engagement models to make them industry-ready and conduct industry connection programs which facilitate job placements and projects. 3. Dignitaries expressed the need to develop such Training cum Data Recording and Gathering Centre under every agricultural university at different locations as a future need of agriculture with industries collaborations like CIDSA. However, a strong need was felt to have a strong farmer connect in such initiatives otherwise objectives of innovation and development centres for sustainable agriculture will remain unfulfilled.
Keynote Address -IV	
Topic	Precision and Automation in Agricultural Machinery
Speaker	Dr. Manjeet Singh , Dean, CAET, Punjab Agricultural University, Punjab
Key Points	1. The pioneering work of PAU on precision and automated technology was presented. It was noted that the developed engineering technologies were adopted nationally. 2. Impact of precision tools like the Mat Type Nursery Seeder, which offers over 90% labor saving, and demonstrated state of the art systems like GNSS-based Auto-steering and UAV-Based Variable Rate Applications (VRA). 3. Scaling up of proven, cost-effective precision technology (HRD) institutions, such as the newly launched School of digital Innovations for Smart Agriculture (S-DISA) at PAU was presented. 4. Advances in sensor-guided implements, variable-rate sprayers, and data-driven automation to enhance input-use efficiency and reduce drudgery.
Keynote Address-V (Online)	
Topic	Farm Mechanization for Small and Marginal Farmers
Speaker	Dr. Venkat Mayande , Former Vice Chancellor, Dr. PDKV Akola



Key Points	1. He provided historical perspective on power availability Vs. productivity, calling for low-cost machinery, community hiring centres, and farmer cooperatives for shared ownership. 2. Dr. Mayande affirmed that small farms are economically viable and scale-neutral especially when supported by better technology, policy, and infrastructure. 3. He emphasized that the focus should be given on small, efficient and affordable robotic machinery adaptable to irregular plot shapes, citing lack of skills and policy constraints as key barriers. 4. He concluded that strengthening intermediaries like Custom Hiring Centres (CHCs) and FPOs is essential for shared, affordable access to advanced technology, urging for farm automation to become a reality for small farms within the next five to ten years. 5. He also expressed need of small tractors with multipurpose attachments for weeding, intercultural operations, spraying, harvesting and threshing for small and marginal land holding farmers. Machineries for land levelling and drainage need to be developed for profitable farming.
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Session Highlights

- **Dr. Shivaram kalyankrishna** asserted that while AI and robotics technology are mature and offer immense potential for agriculture, training a human resource is need of the hour.
- **Dr. Syed Ismail** focused on current mechanization gap and food wastage problems.
- **Dr. Arun Kumar** emphasized on the development of CIDS project for promoting smart agriculture.
- **Dr. Manjeet Singh** presented the pioneering work of PAU University for developing advanced machinery to solve modern agriculture problems.
- **Dr. Vyankat Mayande** focused on establishing and promoting CHCs and FPOs. He also expressed need to develop small tractors with multi-purpose attachments.

Observation by the Co-Chairs

- **Scalability and Cost:** Need for pay-per-use mechanization services and digital platform to improve access.
- **Capacity Building:** Training farmers and rural youth in IoT and robotics for operation and maintenance.
- **Policy Support:** Suggestions for service-based subsidies, collaborative research, industry models and farmer-friendly credit lines.
- **Environmental Stewardship:** Emphasis on reducing chemical inputs through precision application and conservation agriculture.



Glimpses of Technical Session– II



Felicitation of the Co-Chair



Engagement with Participant and Speakers of Technical Session – II



Participant and Dignitaries of Technical Session – II



TECHNICAL SESSION – III

Agricultural Drones and AI-ML, Big Data, LLM

Co-Chairs	Prof. Ravi R. Saxena , Vice Chancellor, MGAUV-Durg Dr. S.R. Gadakh , Vice Chancellor, Dr. PDKV, Akola Dr. Manoh Kumar Gendley , Director, VCKV, Anjora, Durg Chhattisgarh
Rapporteurs	Dr. Gopal Shinde , Head & Professor, Dept. of Farm Machinery and Power Engineering, CAET, VNMKV, Parbhani Dr. R. V. Jaybhaye , Head & Professor, Dept. of Agricultural Process Engineering, CAET, VNMKV, Parbhani
Keynote Address -I (Online)	
Topic	Artificial Intelligence and Machine Learning in Agriculture
Speaker	Dr. Radhika Trikha , CEO of AVaDH, IIT Ropar Punjab Representative
Key Points	1. Technologies developed by IIT Ropar, Punjab, including partnerships, MOUs, new start-up projects with activities, and research practices in AI and ML (Machine Learning) with deep knowledge and technology for a land-building system were presented. 2. The presentation also covered Government of India funding support for biodiversity, the project conference, and startup technology, including TRH AWaDH/Syngenta/DST funded activities. 3. The Co-chair inquired about potential collaborative possibilities with SAUs (State Agricultural Universities).
Keynote Address -II	
Topic	Latest Trends in Agricultural Drone Technology
Speaker	Prof. (Dr.) S. D. Gorantiwar , Former Director of Research, MPKV, Rahuri
Key Points	1. Drone SOP (Standard Operating Procedure)-System and the Digital Agri Mission Maharashtra policy 2025-29. 2. Machine Vision and Field Protection System. 3. Pest and Disease Detection System for DSS (Decision Support System). 4. Soil Test Crop Response-based Fertilizer Application.
Keynote Address -III	
Topic	Application of Big-Data and LLM in Precision Agriculture
Speaker	Prof. (Dr.) Eshwar Rajshekharan IIT, Bombay
Key Points	1. The impact of Climate and Anthropogenic changes and the necessity of building Big Data infrastructure to address them were discussed 2. The pathway for AI, ML, DL, LLM and the required integration into Agricultural Practices were presented. 3. Emphasized the need for continuous data research, logical interpretation, and field confirmation. 4. Wrong conception tends to 'hallucinations' in models, underscoring the necessity of a critical, model-centric database and precision-confirmative actions were emphasized.



Session Highlights

- Dr. Radhika Trikha presented on technologies developed by IIT Ropar, Punjab, including partnerships, MOUs, new start-up projects.
- Dr. S.D. Gorantiwar explained Drone Applications and the associated challenges in technology development.
- Dr. Eswar Rajshekharan focused on the applications of Big-Data, AI, and Large Language Modeling (LLM) for Precision Agriculture.

Observations by the Co-Chairs

- **Dr. M.S. Chauhan**, Vice Chancellor GBPUAT, Pantnagar asked about farmer integration and how poor farmers can specifically be benefited. The discussion pointed to the role of soil data, data interpretation, and SAU partnership being crucial.
- **Prof. (Dr.) Indra Mani**, Vice Chancellor, VNMKV, Parbhani explained the SOP development plan and the current state of Hand Tractor development.
- **Dr. S.R. Gadakh**, Vice Chancellor, Dr. PDKV, Akola specifically asked about how SOP operational costs can be cut down and emphasized the importance of battery development for increased endurance.

Glimpses of Technical Session– III



Technical Session-III in Progress





Engagement with Participant and Speakers of Technical Session – III



Engagement with Participant and Speakers of Technical Session – III



Engagement with Participant and Speakers of Technical Session – III



TECHNICAL SESSION –IV Green and Alternative Energy

Co-Chairs	Dr. Rajeshwar Singh Chandel , Vice Chancellor, Dr YSPUHF, Nauni
Rapporteurs	Dr. H. K. Kausadikar , Head, Dept. of ACSS, COA, Parbhani Dr. Kailash Dakhore , Metrology Project, VNMKV Parbhani
Keynote Address –I	
Topic	Agri-PV and Solar Powered Technologies
Speaker	Dr. Indra Mani , Vice Chancellor, VNMKV Parbhani
Key Points	1. There is growing need of Agrivoltaic systems as a sustainable solution. 2. India's vast solar potential and the need for climate-resilient farming amid increasing weather uncertainties were discussed. 3. The research conducted by VNMKV scientists in collaboration with GIZ to analyze the effect of AgriPV on various crop output were presented. 4. The technological and design aspects of AgriPV system and the factors influence the Agricultural productivity and Environment were emphasized.
Keynote Address –II (Online)	
Topic	Future Strategies and Role of Agriculture Universities in Advancing Agriculture
Speaker	Dr. Mohd. Rihan , DG, National Institute of Solar Energy
Key Points	1. The Indian government initiatives to promote clean energy were discussed. 2. The various aspects of the PK-KUSUM scheme were presented 3. There is need of collaboration between govt. bodies and various agricultural universities to analyze the feasibility of these systems for different crops.

Session Highlights

- AgriPV is an innovative system combining agricultural production and energy generation on the same land, offering a promising pathway toward sustainable agriculture.
- AgriPV systems enable farmers to harness clean energy while maintaining or even enhancing crop yield.
- AgriPV has its own challenges, continuous research & innovation on this field is crucial to increase the adoptability of the system.

Observations by the Co-Chairs

- In order to reduce the carbon footprint of agricultural sector and diversifying the income of farmers, AgriPV is a very good option. However, the various aspects of the AgriPV system need more research particularly its effect on yield of different crops has to be analyzed carefully.
- AgriPV systems present a balanced solution to meet the needs of farmers sustainably, promoting eco-friendly farming practices & ensuring energy security in rural areas.
- There is a need to establish Center of Excellence Agrivoltaics and collaboration among researchers from different domain.



Glimpses of Technical Session– IV



Engagement with Participant of Technical Session – IV



Engagement with Speakers of Technical Session – IV



Participant and Dignitaries of Technical Session – IV



TECHNICAL SESSION –V

NIRF Ranking with respect to Agricultural Universities

Co-Chairs	Dr. Pervinder Kaushal , Vice Chancellor, VCSGUU of Horticulture and Forestry, Bharsar, Pauri Garhwal (U.K) Dr. M. S. Chouhan , Vice Chancellor, GBPUAT, Pantnagar
Rapporteurs	Dr. Santosh Kadam , Central Library In-charge, VNMKV Parbhani Dr. G. M. Kote , Technical officer, DI & Dean office, VNMKV Parbhani
Speaker	Dr. R. C. Agrawal , Former DDG, ICAR New Delhi

Session Highlights

Dr. R. C. Agrawal elaborated in details, the criteria wise weightage of NIRF. He also presented the comparison between the NIRF Ranking methodology and the ICAR methodology. He made emphasis on the agricultural related criterion that is not included in the NIRF process like, crop varieties released, breeds & technologies developed for the farmers etc. Dr. Agrawal also highlighted the QS ranking process and also suggested the measures for the improvement in ranking process.



Dr. R. C. Agrawal, Former DDG, ICAR New Delhi



PLENARY SESSION

The 17th National Symposium of the Indian Agricultural Universities Association (IAUA), New Delhi, jointly organized by Vasantryao Naik Marathwada Krishi Vidyapeeth (VNMKV), Parbhani, and IAUA, was successfully concluded on 26th September 2025. The two-day event (25–26 September 2025) was held with the participation and coordination of 74 agricultural universities across India. The theme of the convention was “Farm Mechanization and Agricultural Robotics for Small and Marginal Farmers: Challenges and Opportunities.”

During the convention, in five different sessions, the Hon’ble Vice Chancellors of 15 agricultural universities across the country and senior-level scientists participated and held in-depth discussions on topics such as Mechatronics, Agricultural Robotics, Drones, Artificial Intelligence (AI-ML), Big data, Internet of Things (IoT), energy-efficient farm machinery, smart farming practices, precision farming management, and the use of new energy technologies.

Furthermore, deliberations were carried out on new science and technology initiatives including Government Initiatives (MahaVISTAR-AI, Nanaji Deshmukh Sanjivani Prakalp, Smart Project), farm mechanization (sensors, IoT, and robotics – machinery for small farmers, smart robotics, seed sowing mechanisms), agricultural drones, AI-ML, big data and LLM (Drone Technology, Artificial Intelligence, And Precision Agriculture), as well as green and alternative energy (Agri. P.V., solar energy, bio-energy, and renewable energy solutions for sustainable farming). Alongside these, detailed discussions were held on the National Institutional Ranking Framework (NIRF), evaluation parameters, and a comparative analysis of the Indian Council of Agricultural Research (ICAR) ranking system with the NIRF methodology. From these two day discussions, 20 recommendations were put forth, from five technical sessions expected to benefit small and marginal farmers.

The valedictory function was presided over by Hon’ble Vice Chancellor Prof. (Dr.) Indra Mani. Hon’ble Vice Chancellor of GBPUAT, Pantnagar and Secretary General of the Indian Agricultural Universities Association, Dr. M. S. Chauhan, and Hon’ble Vice Chancellor of PDKV (Akola) and MPKV (Rahuri), Dr. Sharad Gadakh Graced the occasion as chief guests On the dais Director of Education Dr. B.V. Asewar, Director of Extension Education Dr. R.D. Ahire, and Executive Secretary of the Association, Dr. Dinesh Kumar were also present.

On this occasion, Hon’ble Vice-Chancellor Prof. (Dr.) Indra Mani stated that this symposium has proved extremely important for establishing coordination among all the agricultural universities at the national level and for understanding each other’s working systems. He further mentioned that the hospitality, culture, and work practices of Vasantryao Naik Marathwada Agricultural University are receiving positive responses from everyone. Particularly, Maharashtra has been leading in this regard at the national level and has been consistently giving importance to it. With respect to hospitality, the university functions with the spirit of “**Atithi Devo Bhava**”, while for the service of farmers it follows the principle “**Shetkari Devo Bhava**”. He added, “Agriculture can exist without scientists, but scientists cannot exist without agriculture.” The recommendations that emerged from this convention will enable the university to undertake significant work for the agricultural development of Marathwada, directly benefitting the farmers.

Hon’ble Vice-Chancellor and Secretary General of the IAUA, Dr. M. S. Chauhan, praised the exemplary work of Vasantryao Naik Marathwada Agricultural University and expressed gratitude.



He highlighted that the positive changes and quality infrastructural development carried out by the university in the past three years are remarkable. He noted that this university has earned several recognitions, thereby creating its distinct identity at the national level. He emphasized that the cultural heritage in the university's jurisdiction is vast, while the coordination and simplicity seen among all its officers are commendable. He also appreciated that the university is working with the noble spirit of "Shetkari Devo Bhava". He remarked that through this symposium, important knowledge sharing has taken place on subjects such as drones, robotics, and mechanization, and that the recommendations made will certainly benefit farmers.

Hon'ble Vice-Chancellor Dr. Sharad Gadakh also stated that the recommendations emerging from this symposium are extremely useful, and that a concrete action plan will be implemented in the universities for their practical application. He further assured that the universities are committed to ensuring these recommendations reach farmers, students, and researchers.

The program began with welcome address by Director of Education, Dr. B.V. Asewar, followed by a vote of thanks from Association Secretary Dr. Dinesh Kumar. The proceedings of the program were conducted by Dr. Veena Bhalerao.



SUMMARY AND RECOMMENDATIONS

During the 17th IAUA National Symposium, 5 Technical Sessions were held. After the detailed interaction during the sessions, following actionable recommendations were emerged;

Technical Session I: New Science & Technologies in Agriculture: Govt. Initiatives

1. SAUs need to promote advanced agricultural technologies such as geospatial tools, hyperspectral monitoring, quantum techniques, and AI-driven solutions and integration of research, extension, and industry for effective farmer-centric application.
2. For sustainable scaling up of agricultural innovations, the Triple Helix model or Academia–Industry–Government (AIG) model integrated with Farmers is recommended for adoption by other SAUs across the country to ensure research and development.
3. SAUs should follow the principle of “Collaborate – Innovate – Commercialize” to make impactful research, extension, and industry linkages.

Technical Session II: Farm Mechanization: Sensors, IoT & Robotics

4. Farmer Service Centre/Custom Hiring Centre offering robotic sowing, weeding, and harvesting, spraying by drone, small tools and machineries for small and marginal farmers to be established and existing ones to be made functional.
5. Strengthen AI & Robotics Training in every Agricultural University to develop skilled manpower in the area of new agricultural technology to establish appropriate training laboratories and service centre to address this critical skill gap.
6. Encourage Public-Private Partnership for appropriate sensor and automation solutions.
7. Farmers should be empowered to adopt precision irrigation & nutrient management using IoT based irrigation and fertigation scheduling to save water and reduce fertilizer use.
8. SAUs need to develop low-cost, rugged robotics suitable for diverse crops and small landholdings.
9. Recognizing the future importance of data science and importance of data, every Agricultural university should establish Centre of Excellence of Data Science for future development of AI and Machine Learning look forward.

Technical Session III: Agricultural Drones and AI-ML, Big-Data, LLM

10. **Integration of Technologies and Institutions:** There should be an integration of AI, ML, and LLM for development in Agriculture, water, ecology, and biodiversity. This must be facilitated by strong collaboration between IITs and SAUs (Agricultural Universities).
11. **AI Integration with Ground-level Practices:** There should be a practical integration of AI with equipment, tools, sensors, and farmers' feedback to ensure cost-effectiveness, endurance, and long-life for actual field level applications.
12. **Future of Big Data and AI in Agriculture:** Agriculture is fundamentally a Big Data sector that is still largely unexplored. The development of an Agentic AI System is the way forward for development, and specialized AgriGen Tools should be continuously evolved over time in the future.



Technical Session IV: Green and Alternative Energy

13. AgriPV, an innovative system combining agricultural production and solar energy generation on the same land, offering a promising pathway toward sustainable agriculture should be promoted wherever possible to harness clean energy, maintaining/enhancing yield and land use.
14. Each university should have Agrivoltaics Centre of Excellence with task force group and private partnership.
15. Universities should go for research & field trials for crop data in under AgriPV.
16. Include AgriPV in training curriculum along with UG & PG courses module, generate data set for farming and policy formulations.
17. VNMKV AgriPV system at Manwath in collaboration with GIZ has developed SOPs, the same may be beneficial in adopting this new technology at different universities/Institutions.

Technical Session V: NIRF Ranking with respect to Agricultural Universities

18. In the research criterion of the NIRF, there is scope for the modifications, particularly for the Agricultural Universities. The following points should be considered-
 - Crop varieties released
 - Breeds developed
 - Seed/seeds Production
 - New technologies developed
 - New Farm Machinery and tools developed for the farmers
19. In the outreach criterion of the NIRF, there is scope for modifications, particularly for the Agricultural Universities. The extension activities conducted by the Agricultural Universities should be considered in outreach criterion.
20. The IAUA shall take immediate measures to the NIRF authorities for the incorporation of the Agricultural based benchmarks in the NIRF framework.



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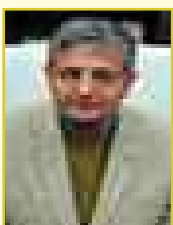
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