



INTERNATIONAL CONCLAVE ON

FUTURISTIC FARMING



December 20-21, 2023

Pune (MH), India



mpkv-cff2023.in

International Conclave on Futuristic Farming

"Futuristic farming" refers to the application of cutting-edge technologies and innovative practices in agriculture to enhance efficiency, productivity, profitability and sustainability to address the challenges posed by a growing population, environmental concerns, diminishing human resources for the strenuous tasks in farming along-with the need for increased food production. The definitive goal is to create a more resilient and efficient agricultural system for the future by developing the concept of an autonomous farms. Future farms are the autonomous farms wherein various tasks and operations are conducted with a significant degree of automation, reducing the need for direct human involvement. This future farms incorporate advanced technologies such as robotics, artificial intelligence, drones, IoTs, geo-informatics, block-chain for traceability, market intelligence, hyper-spectral imaging, spatial decision support systems for enabling the implementation of the concept of climate smart and precision agriculture to improve efficiency, productivity and profitability; enhance resilience, protect environment, reduce labor requirements, and optimize resource use on sustainable basis.

Hence, the **International Conclave on futuristic farming** is being organized to help create a collaborative and informed stakeholder community essential for driving the innovations, development and adoption of advanced agricultural practices for futuristic farms. The conclave consists of the consortium of six symposia that will play a pivotal role in initiating the process of shaping the future of agriculture by fostering collaborative innovations, development and adoption.

Place: Four Points by Sheraton Hotel, Pune (MH), India

Dates: 20-21 December, 2023

Consortium of International Symposia and Conference



International Conference on
Advanced Agricultural Technologies



International Symposium on
Drones for Agriculture



International Symposium on
Hyperspectral Imaging



International Symposium on
Indoor Farming



International Symposium on
IoT's for Agriculture



International Symposium on
Robotics in Agriculture



For details of: participation, registration, papers submission, technical programs, key dates, mode of payment, accommodation and other details; click the title of conference/ symposium or scan the QR code.

Automated Irrigation Systems

Internet of Things and Sensors



Indoor Farming: Hydroponics,
Aeroponics & Vertical Farming

Advanced Technologies

Drones and Hyperspectral Imaging

Robotics, AI and Precision Machineries



International Conference on Advanced Agricultural Technologies

🔧 Importance

India ranks second worldwide in farm output, but have low agricultural productivity. If we enhance our productivity, we can produce more, save land and water resources. At the same time, it is necessary to reduce the exposure of farmers to short-term risks, while also strengthening their resilience to adapt to longer-term stresses. Thus the goal of the scientists/researchers of the agricultural universities and institutes need to be to investigate and develop the advanced technologies for enabling the farmers to enhance the farm income in the realm of climate change and variability; and other uncertainties. The advanced agricultural technologies include climate smart and resilient, precision and digital technologies; and the real-time decision support systems. The CAAST-Centre for Advanced Agricultural Science and Technology being implemented under National Agricultural Higher Education Project (NAHEP) of the Indian Council of Agricultural Research (ICAR), New Delhi since 2018 in 16 Agricultural Universities and ICAR Institutes initiated the tasks of the development and dissemination of the advanced agricultural technologies. As a result of this initiative, these CAAST Projects conceptualized and developed various cutting-edge scientific and technological innovations to enhance various aspects of agriculture. These conceptualization and technologies are aimed and designed to improve efficiency, productivity, sustainability, and overall performance in the agricultural sector

The advanced agricultural technologies conceptualized and/or developed by the CAAST projects need to be deliberated on one platform for exploring the possibility of coupling or integrating these technologies along-with the technologies developed elsewhere in to package of practice for creating cohesive and effective systems. Though this process is complex but is crucial. Therefore, in order to discuss the advanced agricultural technologies developed by the CAAST projects on one platform along-with complementary technologies developed elsewhere with the various stakeholders of the system viz. farmers, students, researchers, practitioners, and industries; the **“International Conference on Advanced Agricultural Technologies”** is organized with following specific objectives,

🔧 Objectives

1. To educate farmers, researchers, industries and students about the advanced agricultural technologies conceptualized and developed by the CAAST Projects.
2. To provide a platform to meet, discuss and share ideas with other researchers; and explore the possibilities of developing the potential collaborations.
3. To demonstrate the advanced agricultural technologies through exhibits, and presentations.
4. To deliberate on challenges and concerns related to the adoption of advanced agricultural technologies, and potential solutions.
5. To deliberate on the possibilities of further conceptualization and development of the advanced agricultural technologies.

🔧 Themes

- Climate smart and resilient and conservation technologies
- Geo-informatics, real-time digital and precision technologies
- Intelligent systems
- Other advanced agricultural technologies



Programme and Technical Sessions

Date: 20 December, 2023

0830 to 0945 hrs	Breakfast and Networking
1000 to 1100 hrs	Inauguration
1100 to 1130 hrs	Hi-tea, Networking break
1130 to 1300 hrs	Key Note Session-I (Digital Technologies for Agriculture)
1300 to 1400 hrs	Lunch break
1400 to 1530 hrs	Technical Session-I (Climate smart and resilient and conservation technologies) CAAST Projects Presentations Presentations of accepted research and practioners papers
1530 to 1600 hrs	Poster presentation, Networking and hi-tea
1600 to 1730 hrs	Technical Session-II (Geo-informatics, real-time digital and precision technologies) CAAST Projects Presentations Presentations of accepted research and practioners papers

Date: 21 December, 2023

0930 to 1100 hrs	Technical Session-III (Intelligent systems) CAAST Projects Presentations Presentations of accepted research and practioners papers
0930 to 1100 hrs	Special Session Reflection of NAHEP Authorities, Vice Chancellors and NAHEP-PIU Unit and the Way forward
1100 to 1130 hrs	Poster presentation, Networking and hi-tea
1130 to 1300 hrs	Technical Session-IV (Other advanced agricultural technologies) CAAST Projects Presentations Presentations of accepted research and practioners papers
1300 to 1400 hrs	Lunch
1400 to 1530 hrs	Key Note Session-II (Digital Technologies for Agriculture)
1530 to 1600 hrs	Hi-tea, Networking
1600 to 1730 hrs	Concluding Session

Call for Papers

Category of papers

The papers are invited on one or more themes of the conference in following categories from:

- **Academician, Scientists and Researchers:** The research papers based on the development and applications of advanced agricultural technologies.
- **Entrepreneurs, Start-ups, Practioners and Industries:** The practioners/ description papers based on the developed and under-development advanced agricultural technologies.
- **Students:** The papers on the development of the concepts, framework and systems for the advanced agricultural technologies.
- **Others:** The papers on challenges, issues and policies; and measures for wider adoption advanced agricultural technologies.

Acceptance of the Papers and Form of the Presentations

The papers submitted for the Conference will be entered through the peered review process and depending on the comments from the reviewers, the accepted papers will be considered for the "Oral" or "Poster" presentations.

The Submission of the Papers

- **The format:** The formats of the papers to be submitted in various categories are available at <https://mpkv-cff2023.in/Home/icaat/1>
- The papers in the prescribed format need to be uploaded at <https://mpkv-cff2023.in/Home/icaat/1> and/or emailed to info@mpkv-cff2023.in

International Symposium on Drones for Agriculture

Importance

Drones, also known as Unmanned Aerial Vehicles (UAVs), play a significant role in modern agriculture due to their ability to mount various devices used for data collection and input application. Drones equipped with various sensors and cameras collect high-resolution data. These data can be used for real time identification of crops (crop acreage estimation), crop growth stages (crop growth monitoring), biotic stresses (early detection of crop diseases and pests and nutrient deficiency), abiotic stresses (providing the information about irrigation scheduling), crop health monitoring, yield estimation, crop insurance and risk assessment. Further drones also have applications for input applications such as spraying of chemicals (insecticides and pesticides); foliar application of nutrients, seeding etc. Due to capability of drones to cover large area aerially compared to ground vehicles; drones enable to collect the data and apply the inputs over large area timely and quickly. Thus, drones offer a powerful toolset for modern agriculture, allowing farmers to make data-driven decisions, increase efficiency, and ultimately improve the yield and sustainability of their operations. Further, drones complete hazardous and arduous tasks in faster, efficient and economical way. Applications of drones also have ability to make the farming attractive. In order to make the students, researchers, practitioners, farmers and industries aware about the advances in drone technologies that can be explored for agriculture; and bring them on one platform to deliberate about the enhanced possibilities of application of drones in Indian agriculture the **“International Symposium on Drones for Agriculture”** is organized with following specific objectives.

Objectives

1. To deliberate the role of the drone technology for judiciously and sustainably applying various inputs in agriculture (chemicals, nutrients and other) and real time data collection.
2. To discuss the advancements in agricultural drone technologies happening globally and locally and their potential applications in Indian context through national and global partnerships and collaborations.
3. To educate farmers, researchers, industries and students about the latest advancements in drone technologies and their potential benefits for agriculture sector.
4. To demonstrate drone based data collection and delivery systems and technologies through exhibits, and presentations.
5. To deliberate on the technology, policy, environment and regulatory developments globally and the challenges in introduction of drone based delivery and data collection systems.

Themes

- Drone based data collection systems (including sensors and cameras)
- Drone based input delivery systems (chemicals, nutrients and seeds)
- Advancement in drone technologies and their futuristic applications
- Challenges and opportunities; and policy measures for use of drones in agriculture



Programme and Technical Sessions

Date: 20 December, 2023

0830 to 0945 hrs	Breakfast and Networking
1000 to 1100 hrs	Inauguration
1100 to 1130 hrs	Hi-tea, Networking break
1130 to 1300 hrs	Key Note Session-I (Digital Technologies for Agriculture)
1300 to 1400 hrs	Lunch break
1400 to 1530 hrs	Technical Session-I (Drone based data collection systems including sensors and cameras) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers
1530 to 1600 hrs	Poster presentation, Networking and hi-tea
1600 to 1730 hrs	Technical Session-II (Drone based input delivery systems-chemicals, nutrients and seeds) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers

Date: 21 December, 2023

0930 to 1100 hrs	Technical Session-III (Advancement in drone technologies and their futuristic applications) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers
1100 to 1130 hrs	Poster presentation, Networking and hi-tea
1130 to 1300 hrs	Technical Session-IV (Challenges and opportunities; and policy measures for use of drones in agriculture) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers
1300 to 1400 hrs	Lunch
1400 to 1530 hrs	Key Note Session-II (Digital Technologies for Agriculture)
1530 to 1600 hrs	Hi-tea, Networking
1600 to 1730 hrs	Concluding Session

Call for Papers

Category of papers

The papers are invited on one or more themes of the Symposium in following categories from:

- **Academician, Scientists and Researchers:** The research papers based on the development of the drone technology and the drone-based data collection and delivery systems; SoPs for delivery (spraying, seeding etc.) and data collection system (mapping, surveying etc.)
- **Entrepreneurs, Start-ups, Practioners and Industries:** The practioners/ description papers based on the developed and under-development drones and drone based systems.
- **Students:** The papers on the development of the concepts, framework, model and SoPs.
- **Others:** The papers on challenges, opportunities, issues, regulatory framework and policy measures.

Acceptance of the Papers and Form of the Presentations

The papers submitted for the Symposium will be entered through the peered review process and depending on the comments from the reviewers, the accepted papers will be considered for the "Oral" or "Poster" presentations.

The Submission of the Papers

- **The format:** The formats of the papers to be submitted in various categories are available at <https://mpkv-cff2023.in/Home/isdag/2>
- The papers in the prescribed format need to be uploaded at <https://mpkv-cff2023.in/Home/isdag/2> and/or emailed to info@mpkv-cff2023.in





International Symposium on Hyperspectral Imaging

Importance

The electromagnetic radiation reflected, absorbed, or transmitted by the material at different wavelengths is known as spectral response or characteristics. As each material reflects, absorbs, or transmits light in a unique way depending on its surface properties; the spectral response is unique and hence it is also termed as the spectral signature. These unique spectral signatures of the material can be exploited for various applications. The traditional imaging captures the information that human eyes can see (visual range) i.e. in three bands of color (red, green, and blue). However, the hyperspectral imaging is a technique that involves capturing and processing information from across the electromagnetic spectrum in many more bands, often spanning the ultraviolet, visible, and infrared regions of the spectrum that human eyes cannot see. In hyperspectral imaging, each pixel in an image contains a spectrum of information rather than just color. This allows for a more detailed analysis of the objects or scenes being imaged. By analyzing the spectral characteristics of objects or surfaces, it is possible to identify and classify materials, monitor changes, and gain insights into the composition and health of different surfaces.

The ability of the hyperspectral imaging to capture detailed spectral information across a broad range of wavelengths makes this technique a powerful tool for various scientific, industrial, and commercial applications. It enables more appropriate analysis and interpretation of the data compared to traditional imaging methods; and hence being used for various applications in remote sensing, medical imaging, food quality inspection, forensic, mining; and military and defense. Hyperspectral imaging also offers a wide range of applications in agriculture, leveraging its ability to capture detailed spectral information from crops and soil. Some of the key applications include: land cover mapping, pest and disease detection, identification of nutrient deficiency, weed detection, biomass and yield estimation, drought monitoring, irrigation scheduling, soil moisture monitoring and genetic research. Hyperspectral imaging has the capability of early detection of abiotic and biotic stresses in plants and hence this technique has the potential for the development of early warning systems in agriculture. More importantly the ability of the spectral sensors to integrate with IoT enabled system makes the hyper-spectral imaging the significant applications for the real time, climate smart and precision agriculture.

In order to investigate the hyperspectral imaging technologies and explore further their various applications in agriculture for real-time, climate smart and precision agriculture; and to make the students, researchers, practitioners, and industries aware about the advances in hyperspectral imaging technologies; and bring them on one platform to deliberate on several aspects of hyperspectral imaging technologies, the **“International Symposium on Hyperspectral Imaging for Agriculture”** is organized with following specific objectives.

Objectives

1. To deliberate on various instrumentations including cameras and sensors required for the spectral imaging in agriculture.
2. To discuss on exploring various applications of hyper-spectral imaging for real-time, climate smart and precision agriculture.
3. To deliberate on the possibilities of integrating the hyper-spectral imaging techniques with other digital tools such as AI and ML; UAVs and IoTs.
4. To make aware researchers, industries and students about the latest developments and advancements in hyper-spectral imaging for agriculture and their potential benefits.
5. To provide a platform to meet, share ideas, and explore possible national and global partnerships and collaborations for potential applications of hyper-spectral imaging in Indian context.

Themes

- Spectral imaging applications for a-biotic stress management
- Spectral imaging applications for biotic stress management
- Computer vision and Instrumentations for the spectral imaging (lab, field and air-borne)
- Integration of spectral imaging with other digital technologies



Programme and Technical Sessions

Date: 20 December, 2023

0830 to 0945 hrs	Breakfast and Networking
1000 to 1100 hrs	Inauguration
1100 to 1130 hrs	Hi-tea, Networking break
1130 to 1300 hrs	Key Note Session-I (Digital Technologies for Agriculture)
1300 to 1400 hrs	Lunch break
1400 to 1530 hrs	Technical Session-I (Spectral imaging applications for abiotic stress management) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers
1530 to 1600 hrs	Poster presentation, Networking and hi-tea
1600 to 1730 hrs	Technical Session-II (Spectral imaging applications for biotic stress management) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers

Date: 21 December, 2023

0930 to 1100 hrs	Technical Session-III (Computer vision and Instrumentations for the spectral imaging (lab, filed and air-borne)) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers
1100 to 1130 hrs	Poster presentation, Networking and hi-tea
1130 to 1300 hrs	Technical Session-IV (Integration of spectral imaging with other digital technologies) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers
1300 to 1400 hrs	Lunch
1400 to 1530 hrs	Key Note Session-II (Digital Technologies for Agriculture)
1530 to 1600 hrs	Hi-tea, Networking
1600 to 1730 hrs	Concluding Session

Call for Papers

Category of papers

The papers are invited on one or more themes of the Symposium in following categories from:

- **Academician, Scientists and Researchers:** The research papers based on the applications of multi/hyper spectral imaging in agriculture, spectral instrumentations and their integration with other digital technologies.
- **Entrepreneurs, Start-ups, Practioners and Industries:** The practioners/ description papers based on the developed and under-development spectral imaging applications, instrumentations and tools.
- **Students:** The papers on the development of the concepts, framework and systems.
- **Others:** The papers on challenges, issues and policies; and measures for wider adoption spectral imaging technologies; possible advances in hyperspectral imaging.

Acceptance of the Papers and Form of the Presentations

The papers submitted for the Symposium will be entered through the peered review process and depending on the comments from the reviewers, the accepted papers will be considered for the "Oral" or "Poster" presentations.

The Submission of the Papers

- **The format:** The formats of the papers to be submitted in various categories are available at <https://mpkv-cff2023.in/Home/ishag/3>
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International Symposium on Indoor Farming

Importance

Indoor farming is the practice of growing crops or plants inside a controlled environment, typically within structures such as green-houses, poly-houses or net-houses; or even buildings. This method of cultivation is designed to optimize various environmental factors such as light, temperature and humidity; and application of inputs such as water and nutrient to create an ideal growing situation for plants. Indoor farming offers several advantages, including year-round crop production, reduced dependency on weather, and the ability to grow crops in urban areas too. It also allows for more sustainable and resource-efficient agriculture, as water and nutrients can be recycled, and the need for pesticides may be reduced. The various forms of indoor farming include hydroponics, aeroponics, vertical farming, soil-less cultivation etc.

Hydroponics: This is a technique of growing plants using a water-based nutrient solution rather than soil, and can include an aggregate substrate, or growing media, such as vermiculite, coconut coir, or perlite. As flowers, herbs, or vegetables are planted in inert growing media in controlled environment and supplied with controlled nutrient-rich solutions, oxygen, and water; there is rapid growth of plants and multi-fold enhanced yield of superior quality. Hydroponics eliminates soil and soil-borne pests and disease, so there is no need to use large amounts of pesticides.

Aeroponics: This is a technique of growing plants without soil. Instead, roots are suspended in the air and irrigated with a nutrient-dense mist. This differs from hydroponics, where plant roots are submerged in a solution of water and nutrients. The biggest advantage of aeroponics is that roots are exposed to air, thus there is never an issue of insufficient oxygen.

Aquaponics: This technique integrates aquaculture (raising fish) and hydroponics. Fish waste provides nutrients for the plants, and the plants help filter and purifies the water for the fish.

Vertical Farming: This is a method of cultivating crops in vertically stacked layers or vertically inclined surfaces. This type of farming aims to maximize the use of vertical space, often within an indoor environment, to grow crops in a controlled and efficient manner. Vertical farming can take place in buildings, warehouses, or dedicated vertical farming facilities.

Soil less cultivations: This is a practice of growing plants without the use of traditional soil. Instead, plants are grown in a nutrient-rich water solution, providing them with the essential minerals and nutrients needed for growth. This approach allows for precise control over the application of water and nutrients in controlled environment, leading to more efficient resource use and potentially higher crop yields.

However, there are certain limitations too for indoor farming. Stricter control of environment, irrigation and nutrigration is required. Other disadvantages include: high initial construction costs, high maintenance of the system, and high level of technical knowledge.

In order to make the students, researchers, practioners, farmers and industries aware about the advances in-door cultivation technologies; and their benefits and limitation; and bring them on one platform to deliberate about the enhanced adoption of in-door farming the **“International Symposium on Indoor Farming”** is organized with following specific objectives.

Objectives

1. To educate the farmers, researchers, industries and students about the various forms of indoor farming practices along-with their benefits and limitations, constraints and challenges in adoption.
2. To discuss various components of indoor farming practices for maintaining the desired environment in the structures and applying the inputs optimally.
3. To discuss the advancements in indoor farming technologies for maximizing the production of desired quality of crop produce.
4. To demonstrate indoor farming technologies through exhibits, and presentations.
5. To provide a platform to meet, share ideas, and explore potential collaborations for development and adoption of indoor farming practices.

Themes

- Hydroponics
- Aeroponics
- Vertical Farming
- Other soilless cultivation technologies



🏠 Programme and Technical Sessions

Date: 20 December, 2023

0830 to 0945 hrs	Breakfast and Networking
1000 to 1100 hrs	Inauguration
1100 to 1130 hrs	Hi-tea, Networking break
1130 to 1300 hrs	Key Note Session-I (Digital Technologies for Agriculture)
1300 to 1400 hrs	Lunch break
1400 to 1530 hrs	Technical Session-I (Hydroponics) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers
1530 to 1600 hrs	Poster presentation, Networking and hi-tea
1600 to 1730 hrs	Technical Session-II (Aeroponics) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers

Date: 21 December, 2023

0930 to 1100 hrs	Technical Session-III (Vertical Farming) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers
1100 to 1130 hrs	Poster presentation, Networking and hi-tea
1130 to 1300 hrs	Technical Session-IV (Other soilless cultivation technologies) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers
1300 to 1400 hrs	Lunch
1400 to 1530 hrs	Key Note Session-II (Digital Technologies for Agriculture)
1530 to 1600 hrs	Hi-tea, Networking
1600 to 1730 hrs	Concluding Session

🏠 Call for Papers

Category of papers

The papers are invited on one or more themes of the Symposium in following categories from:

- **Academician, Scientists and Researchers:** The research papers based on the development of the indoor farming practices, their components, optimization of environmental parameters and application of inputs.
- **Entrepreneurs, Start-ups, Practioners and Industries:** The practioners/ description papers based on the various forms of developed and under-development indoor farming technologies.
- **Students:** The papers on the development of the concepts, framework and components.
- **Others:** The papers on challenges and constraints; and policies and measures for wider adoption of various forms of in-door farming technologies.

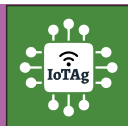
Acceptance of the Papers and Form of the Presentations

The papers submitted for the Symposium will be entered through the peered review process and depending on the comments from the reviewers, the accepted papers will be considered for the “Oral” or “Poster” presentations.

The Submission of the Papers

- **The format:** The formats of the papers to be submitted in various categories are available at <https://mpkv-cff2023.in/Home/infarm/4>
- The papers in the prescribed format need to be uploaded at <https://mpkv-cff2023.in/Home/infarm/4> and/or emailed to info@mpkv-cff2023.in





International Symposium on IoT for Agriculture

● Importance

The Internet of Things (IoT) refers to a network of interconnected things (devices or objects that are embedded with sensors, electronic components, and actuators), computer programs (software, simulation, and decision support systems), computer servers/clouds and internet connectivity capabilities; allowing them together to collect and exchange data over the internet, analyze, take decisions, trigger the decisions. IoT systems are currently being used in various sectors including industry automation, manufacturing systems, healthcare, smart homes, smart cities, security and surveillance, transport and logistics, energy management, supply chain and logistics. IoT technologies offer wide range of benefits including their capabilities to perform various tasks in real time with precision, improved productivity and efficiency, automation, performing hazardous tasks, monitoring the processes in real time. Hence IoT technologies are proving to be formidable for various applications in agriculture sector. In context of increased weather variability, more prominently experienced impact of climate changes, variability in soil and farm management systems; adoption of precision agriculture practices is becoming apparent for sustainable and environmentally secure agriculture; and IoT technologies offer all the capability required for the precision agriculture. IoT technologies have several applications in agriculture including monitoring of soil, crop and weather; irrigation management, livestock management, pest and diseases management, supply chain management, automation of farm machinery and equipments. IoT technologies have been developed for many of these applications. In order to explore IoT technologies further for real-time and precision agriculture; and to make the students, researchers, practitioners, farmers and industries aware about the advances in IoT technologies; and bring them on one platform to deliberate on several aspects of IoT technologies, the **“International Symposium on IoT for Agriculture”** is organized with following specific objectives.

● Objectives

1. To explore IoT enabled technologies for performing various operations and management systems in real time and with precision.
2. To educate farmers, researchers, industries and students about the latest developments and advancements in IoT enabled systems for agriculture and their potential benefits.
3. To provide a platform to meet, share ideas, and explore possible national and global partnerships and collaborations for potential applications of IoT technologies in Indian context.
4. To demonstrate IoT enabled technologies through exhibits, and presentations.
5. To deliberate on the measures for wider adoption of IoT enabled tools for real time and precision operation and management of the agricultural systems.

● Themes

- Sensors for IoT enabled systems
- IoT- irrigation water management systems
- IoT- Pest and diseases management systems



Programme and Technical Sessions

Date: 20 December, 2023

0830 to 0945 hrs	Breakfast and Networking
1000 to 1100 hrs	Inauguration
1100 to 1130 hrs	Hi-tea, Networking break
1130 to 1300 hrs	Key Note Session-I (Digital Technologies for Agriculture)
1300 to 1400 hrs	Lunch break
1400 to 1530 hrs	Technical Session-I (Sensors for IoT enabled systems) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers
1530 to 1600 hrs	Poster presentation, Networking and hi-tea
1600 to 1730 hrs	Technical Session-II (IoT-irrigation water management systems) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers

Date: 21 December, 2023

0930 to 1100 hrs	Technical Session-III (IoT- Pest and diseases management systems) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers
1100 to 1130 hrs	Poster presentation, Networking and hi-tea
1130 to 1300 hrs	Technical Session-IV (IoT- livestock and other management systems) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers
1300 to 1400 hrs	Lunch
1400 to 1530 hrs	Key Note Session-II (Digital Technologies for Agriculture)
1530 to 1600 hrs	Hi-tea, Networking
1600 to 1730 hrs	Concluding Session

Call for Papers

Category of papers

The papers are invited on one or more themes of the Symposium in following categories from:

- **Academician, Scientists and Researchers:** The research papers based on the development of components (things); and tools and technologies IoT enabled systems.
- **Entrepreneurs, Start-ups, Practioners and Industries:** The practioners/ description papers based on the developed and under-development IoT components and tools.
- **Students:** The papers on the development of the concepts, framework and systems.
- **Others:** The papers on challenges, issues and policies; and measures for wider adoption of IoT enabled technologies.

Acceptance of the Papers and Form of the Presentations

The papers submitted for the Symposium will be entered through the peered review process and depending on the comments from the reviewers, the accepted papers will be considered for the “Oral” or “Poster” presentations.

The Submission of the Papers

- **The format:** The formats of the papers to be submitted in various categories are available at <https://mpkv-cff2023.in/Home/iotag/5>
- The papers in the prescribed format need to be uploaded at <https://mpkv-cff2023.in/Home/iotag/5> and/or emailed to info@mpkv-cff2023.in





International Symposium on Robotics in Agriculture

🤖 Importance of Symposium

Robots are mechanical or electromechanical systems that are capable of performing tasks autonomously or semi-autonomously. Robots have a wide range of applications across various industries and sectors. The example includes: Manufacturing and Production, Healthcare and Medical, Logistics and Warehousing, Construction, Surveys, Mining and Exploration, Defense and Security, Space Exploration, Environmental Monitoring and Management, Energy Utilities, Entertainment and Leisure; and Food and Beverage. The use of robots leads to increased efficiency, cost savings, improved safety, and a more sustainable and technologically advanced approach to a wide range of tasks and processes. Additionally, robots can often perform the tasks in environments that may be hazardous or inaccessible to humans. The robots have the potential to perform various farming operations such as seeding, planting, weeding, spraying, and harvesting; and in turn can improve significantly the efficiency, productivity, and sustainability of farming practices. Lot of research and development efforts are currently aimed at creating robots that are versatile, adaptable, and capable of performing increasingly complex farming tasks. In order to make the students, researchers, practioners, farmers and industries aware about the advances in robotics technologies; and bring them on one platform to deliberate about the possibilities of application of robotics in Indian agriculture the **“International Symposium on Robotics in Agriculture”** is organized with following specific objectives.

🤖 Objectives

1. To educate farmers, researchers, industries and students about the latest advancements in agricultural robotics and their potential benefits.
2. To provide a platform to meet, share ideas, and explore potential collaborations.
3. To demonstrate cutting-edge agriculture robotic systems and technologies through exhibits, and presentations.
4. To deliberate on challenges and concerns related to the adoption of robotics in agriculture, and potential solutions.
5. To deliberate on measures necessary to ensure the safe and responsible deployment of agricultural robots.

🤖 Themes

- Artificial intelligence, machine learning and computer vision for agricultural robotics
- Robotics applications for farming operations (pre-harvesting)
- Robotics applications for farming operations (harvesting and post harvesting)
- Challenges and opportunities; and policy measures for the deployment of robots for agriculture



Programme and Technical Sessions

Date: 20 December, 2023

0830 to 0945 hrs	Breakfast and Networking
1000 to 1100 hrs	Inauguration
1100 to 1130 hrs	Hi-tea, Networking break
1130 to 1300 hrs	Key Note Session-I (Digital Technologies for Agriculture)
1300 to 1400 hrs	Lunch break
1400 to 1530 hrs	Technical Session-I (Artificial intelligence, machine learning and computer vision for agricultural robotics) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers
1530 to 1600 hrs	Poster presentation, Networking and hi-tea
1600 to 1730 hrs	Technical Session-II (Robotics applications for farming operations (pre-harvesting)) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers

Date: 21 December, 2023

0930 to 1100 hrs	Technical Session-III (Challenges and opportunities; and policy measures for the deployment of robots) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers
1100 to 1130 hrs	Poster presentation, Networking and hi-tea
1130 to 1300 hrs	Technical Session-IV (Robotics applications for farming operations (harvesting and post harvesting)) Theme Presentations (by invited experts) Presentations of accepted research and practioners papers
1300 to 1400 hrs	Lunch
1400 to 1530 hrs	Key Note Session-II (Digital Technologies for Agriculture)
1530 to 1600 hrs	Hi-tea, Networking
1600 to 1730 hrs	Concluding Session

Call for Papers

Category of papers

The papers are invited on one or more themes of the Symposium in following categories from:

- **Academician, Scientists and Researchers:** The research papers based on the development of process and technologies of AI and ML and Robotics.
- **Entrepreneurs, Start-ups, Practioners and Industries:** The practioners/ description papers based on the developed and under-development products and processes.
- **Students:** The papers on the development of the concepts, framework.
- **Others:** The papers on challenges, issues, regulatory framework and policies.

Acceptance of the Papers and Form of the Presentations

The papers submitted for the Symposium will be entered through the peered review process and depending on the comments from the reviewers, the accepted papers will be considered for the "Oral" or "Poster" presentations.

The Submission of the Papers

- **The format:** The formats of the papers to be submitted in various categories are available at <https://mpkv-cff2023.in/Home/israg/6>
- The papers in the prescribed format need to be uploaded at <https://mpkv-cff2023.in/Home/israg/6> and/or emailed to info@mpkv-cff2023.in



Key Dates, Registration, Publication and Awards

Publication of the Papers

All the papers accepted in various categories and presentation forms will be published in the Conference/ Symposia Proceedings after due modifications by the authors/presenters as per the comments received during the presentations. The selected papers from all the categories accepted for oral presentations will also be published in the “**Journal of Agricultural Research and Technology**” jointly published by all the four agricultural universities in the State of Maharashtra after processing thorough the review process of the journal.

Awards

The poster presentations of the scientists/faculties and practitioners; and the oral and poster presentations of the students will be evaluated by the International and National Experts and the selected oral and poster papers will be awarded in various categories.

Key Dates

- **Registration**
With normal registration fees: **8 December, 2023**
With late registration fees: **15 December, 2023**
- **No on-spot registration**
The registration will be closed once the prescribed numbers of delegates have registered.
- **Paper submissions**
Last date of submission of papers: **1 December, 2023**
Communication regarding the final acceptance: **8 December, 2023**
- **The dates of the Symposium**
20-21 December, 2023

Registration Fees

For participation only

- **Registration fee for the participants other than students: Rs. 10000/-** and late registration fee (i.e. registration after 15 December, 2023): **Rs. 15000/-**
- **Registration fee for the students: Rs. 4000/-** and late registration fee (i.e. registration after 15 December, 2023): **Rs. 6000/-**

For participation with paper presentation

- Registration fee for the presenting author of the paper accepted for the **oral presentation** (however registration is mandatory): **Rs. 3000/-**
- Registration fee for the presenting author of the paper accepted for the **poster presentation** (however registration is mandatory): **Rs. 5000/-**
- Registration fee for presenting author (**if student**) of the paper accepted for the **oral and/or poster presentation** (however registration is mandatory): **Rs. 500/-**
- Registration fee for the authors whose submitted **papers have not been accepted for oral or poster presentation and desire to participate: Rs. 10000/-** and **if student: Rs. 4000/-**

Mode of Payment

Online and links will be available during the Registration Process.

[Click here to](#)

Register

Registration includes

- Access to the Inaugural and Closing Programs, Key Note Sessions and Technical Sessions
- Access to other parallel Symposia (depending on availability of seats)
- Opportunity for networking with National and International Experts, Industries, Start-ups, Entrepreneurs, Students and Farmers
- Registration kit with the specified literature
- Snacks/Lunch during the Symposium

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Accommodation and About CAAST-CSAWM

Accommodation

Limited accommodations are available in the guest houses of NCL (CSIR), IITM, IMD, IE(I), NIV, ICAR-NRCs, University of Pune and Govt. guest houses on first-come first-serve and payment basis. The participants can contact them directly or indicate the requirement during the registration process (while submitting the application form). Accommodation will not be available at MPKV Guest houses in Pune. There are plenty of hotels in Pune and especially near the venue of the Symposium. The participants are advised to book these hotels, if required, in advance. The list of the hotels along-with the contacts and the tariffs is available the Symposium Website.

About CAAST-CSAWM

The project entitled "**Center for Advanced Agricultural Science and Technology (CAAST) on Climate Smart Agriculture and Water Management (CSAWM)**" is being implemented in Mahatma Phule Krishi Vidyapeeth (An Agricultural University), Rahuri, Maharashtra under World Bank Sponsored National Agricultural Higher Education Project (NAHEP) of Indian Council of Agricultural Research (ICAR), New Delhi, Government of India, Since 2018. The major objectives of CAAST-CSAWM project are;

- To develop the capacity amongst the faculties and scientists for the development and adoption of Precision Farming, Climate Smart Agriculture and Water Management Technologies
- To start a one-year Post-Graduate Diploma in "Climate Smart Agriculture and Water Management" for developing human resources to create entrepreneurship and enhance employability in the public sectors and private industries, strengthen the current M.Sc., M. Tech. and Ph.D. programme (for their research projects, and make provision for the prospective beginner/middle-level faculties/researchers for Post Doctorate studies in precision water management, precision climate-smart agriculture and Geoinformatic
- To develop an integrated system including RS/GIS and GPS tools, modelling and SDSS tools using unmanned aerial system (UAS aka. drone) and sensor-based technologies, mobile applications and their applications climate-smart and precision agriculture and water management
- To conduct end-to-end capacity building through on-the-job training and case study-based learning; enhance the employment and placement rate; and business and entrepreneurship opportunities
- To develop the capacity amongst the faculties and students of MPKV Rahuri and other Agricultural Universities and related organizations for the development and adoption of the precise Climate Smart Agriculture and Water Management technologies as well as to conduct on-the-job training and case study based learning to enhance the employment and placement rate; and business and entrepreneurship opportunities.

With this background, CAAST-CSAWM, MPKV, Rahuri is organising International Conclave "**Futuristic Farming**" during **20-21 December, 2023 at Pune.**

[Click here to know more about CAAST-CSAWM](#)

For updates, visit: <http://mpkv-cff2023.in/>

World Bank Aided
ICAR- National Agricultural Higher Education Project (NAHEP)
Centre for Advanced Agricultural Science and Technology
for Climate Smart Agriculture and Water Management
(CAAST-CSAWM)

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