



International Symposium

# Indoor Farming

December 20-21, 2023



Grand Maratha, Four Points By Sheraton Hotel and Serviced Apartments, Viman Nagar, Pune, Maharashtra 411014, India.



<http://mpkv-cff2023.in/>  
<https://www.mpkv-caast.ac.in/>





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

Date: 21 December, 2023

0930 to 1100 h	<b>Technical Session-III</b> (Vertical Farming) <b>Theme Presentations</b> (by invited experts) <b>Presentations of accepted research and practioners papers</b>
1100 to 1130 h	Poster presentation, Networking and hi-tea
1130 to 1300 h	<b>Technical Session-IV</b> (Other soilless cultivation technologies) <b>Theme Presentations</b> (by invited experts) <b>Presentations of accepted research and practioners papers</b>
1300 to 1400 h	Lunch
1400 to 1530 h	<b>Key Note Session-II</b> (Digital Technologies for Agriculture)
1530 to 1600 h	Hi-tea, Networking
1600 to 1730 h	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, Practitioners and Industries:** The practitioners/ 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 peer 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](mailto:info@mpkv-cff2023.in)



### Publication of the Papers

All the papers accepted in various categories and presentation forms will be published in the Symposium 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: **8 December, 2023**
  - Communication regarding the final acceptance: **12 December, 2023**
- **The dates of the Symposium**
  - 20-21 December, 2023**





## Registration

### 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.

### 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

Click here to

**Register**

[Click here for Registration](#)

### 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 at the Symposium Website.



## Organizers

### 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 Symposium on "**Indoor Farming**" during 20-21 December, 2023 at Pune.

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

### Organizing Committee

- **Patrons**  
Dr. Prashantkumar Patil, Hon'ble Vice Chancellor, Mahatma Phule Krishi Vidyapeeth, Rahuri  
Dr. R.C. Agrawal, Deputy Director General (Edu.) and National Director, ICAR-NAHEP, New Delhi
- **Convenors**  
Dr. Sunil Gorantiwar, Director of Research; Head (Ag. Engg.) & Principal Investigator (CAAST-CSAWM), MPKV Rahuri  
Dr. Anuradha Agrawal, National Coordinator (CAAST), ICAR-NAHEP, New Delhi
- **Co-Convenor**  
Dr. Mukund Shinde, Professor (SWCE) and Co-Principal Investigator (CAAST-CSAWM), MPKV Rahuri
- **Organizing Secretary**  
Dr. Atul Atre, Professor and Procurement Officer (CAAST-CSAWM), MPKV Rahuri (+91-9860593836)
- **Joint Organizing Secretaries**  
Dr. Pramod Popale, Assistant Professor (IDE), MPKV Rahuri (+91-9767772152)  
Dr. Dagadu Pardhe, Sr. Research Assistant, CAAST-CSAWM, MPKV Rahuri (+91-9850144809)
- **Co-Ordinators**  
Er. Abhishek Datir, Sr. Research Fellow (ICAR-IWMI) (+91-7387946828) and Er. Janhvi Joshi, Sr. Research Fellow (PoCRA), MPKV Rahuri

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

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