



Centurion
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*Shaping Lives...
Empowering Communities...*

Research Centre for Smart Agriculture (2020-2023)



RC BOOKLET

**SMART SOLUTION IN
AGRICULTURE FOR
OPTIMIZATION OF INPUTS
AND CROP PRODUCTIVITY**

Version 1/2023



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*Shaping Lives...
Empowering Communities...*

Research Centre for Smart Agriculture (2020-2023)

CEO: Y. Veera Pratap

RC Coordinators: Dr. Sagar Maitra

Dr. Dinkar Gaikwad

Mentor: Mr. Venkat Shivananda, MD, GTIDS

Message from CEO, RC Smart Agriculture



Our mission is to revolutionize farming practices and empower farmers with cutting-edge technologies and innovative solutions. At our research center, we are dedicated to explore the potential of smart agriculture, which integrates advanced technologies like the Internet of Things (IoT), artificial intelligence (AI), and data analytics into agricultural operations. Through our research, we aim to enhance productivity, sustainability, and profitability in the agricultural sector.

Our state-of-the-art facility is equipped with the latest equipment and resources to conduct experiments, develop new methodologies, and validate smart farming techniques. We focus on several key areas of smart agriculture, including precision farming, protected cultivation, resource management, and crop optimization. Through precision farming, we aim to optimize the use of resources such as water, fertilizers, and pesticides, while minimizing environmental impact. Our research focuses on data-driven decision-making, remote sensing technologies, and real-time monitoring systems to enable farmers to make informed choices for crop management.

Protected cultivation is another key area of our research. We explore the potential of automated greenhouses, IoT-based climate control, and sensor-driven systems to create ideal growing conditions for high-value crops such as flowers and vegetables. By integrating automation and smart technologies, we aim to maximize yield, quality, and year-round production. Resource management, including efficient water usage and soil health maintenance, is crucial for sustainable agriculture. We investigate the implementation of micro-irrigation, mulching techniques, and soilless culture systems to optimize resource utilization and minimize waste.


Y. Veera Pratap

Team members

Veera Pratap, CEO

Sagar Maitra

Dinkar J Gaikwad

Tanmoy Shankar

Sivala Kumar

Santosh D.T

Upasana Sahoo

L. Sagar

M. Sairam M

Rajesh S. Kalasare

Abha Manohar K

Nihal. R

Rahul Adhikary

Arunabha Pal

Ashirbachan Mahapatra

Subhankar Debnath

Jnana Bharati Palai

G. Sekhar

Bishnu Prasad Dash

Mehazabeen A

Manisha

Goutam B Hosamani



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Aims

- ☀ To promote IoT-based automation in greenhouse.
- ☀ To familiarize individuals with the principles and practices of soilless culture
- ☀ To enhance productivity, sustainability, and profitability in the agricultural sector through the integration of cutting-edge technologies such as smart tools, decision support systems, AI, and data analytics.

OBJECTIVES



01

To demonstrate the successful cultivation of gerbera and Dutch rose in a protected environment using an IoT-based automated greenhouse.

02

To demonstrate the viability of soilless culture techniques such as hydroponics and aeroponics for the cultivation of exotic crops.

03

To train farmers on the effective utilization of the Paddy Predict and Kalgudi apps for improved decision-making in low GI rice cultivation.

04

To empower farmers with knowledge and skills to implement water-saving practices and maximizes irrigation efficiency through micro-irrigation and mulching strategies.

Field activities

**Polyhouse design and construction
at Vizianagaram and Ranadevi**



Hydroponics unit setup and cultivation

Field activities



Gerbera and Dutch rose cultivation



Poly-mulching



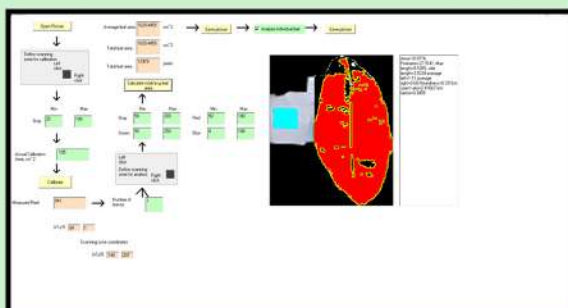
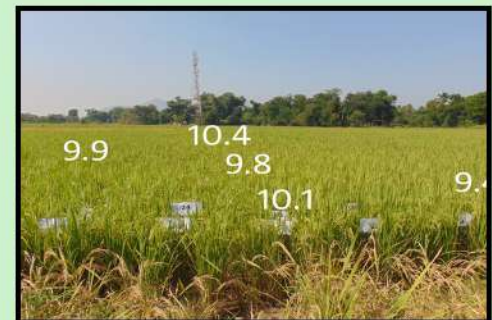
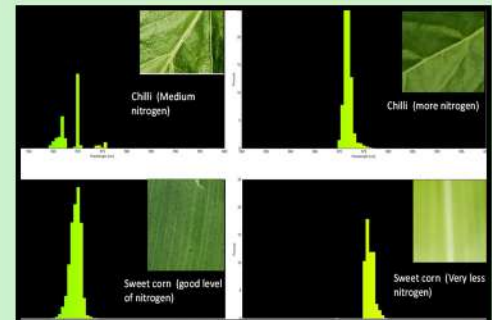
Field activities



**Coloured capsicum and
parthenocarpic cucumber
under protected cultivation**

Research activities

- Response of novel nanomaterials on sweet corn
- Mulching in rice and maize
- Soil moisture sensor
- Chlorophyll estimation using image analysis
- Prototype of automated chlorine estimation from drinking water
- Leaf arch
- Oxygen concentrator
- Room temperature seed dryer



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Publications/Patents

(August, 2020 to May, 2023)

Journal articles: 312

SCI/Scopus: 66

NAAS: 120

UGC Care/WoS: 149

Book Chapters: 77

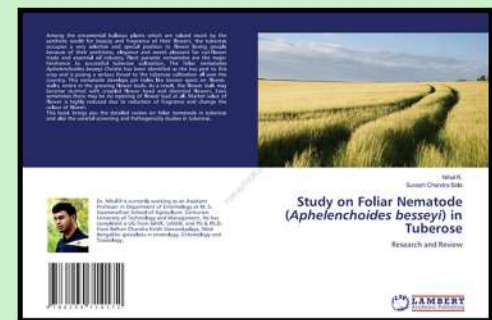
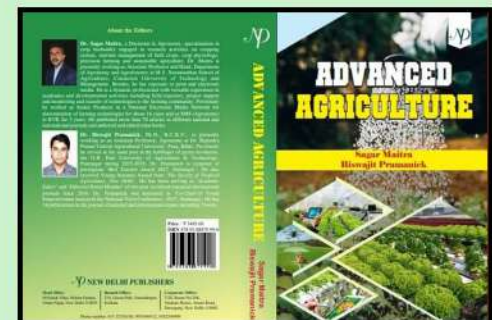
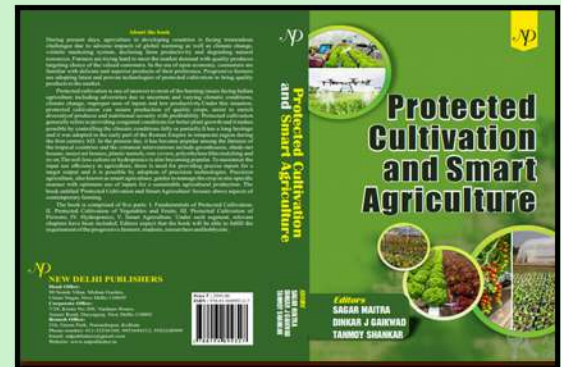
International: 53

National: 49

Conference proceeding: 26

Books: 5

Patents: 1



Courses Developed

Certificate courses: 03

- Organic Farming
- Hydroponics Technology
- Floriculturist

Diploma courses: 02

- Organic Farming
- Smart Agriculture

Organic farming

Teacher: Subhojit Prasad | Category: Certificate Courses

Description Teachers Attendees Reviews


Course Name : Organic farming

Code(Credit) : (2-2-0)

Course Description
Type of course:
Certificate Course: (Theory + Practice)
Eligibility: 10th/12th/ ITI pass
Prerequisite: Participants should have some idea about raising crops/ herbs in pots/backyard

Hydroponics Technology

Teacher: Dr. Omita J. Ghoshal | Category: Certificate Course



Description Teachers Attendees Reviews

Course Name : Floriculturist

Code(Credit) : ABC01(0-2-2)

Course Description
Type of course:
Certificate Course: (Theory + Practice)
Eligibility: 10th/12th/ ITI pass

Description Teachers Attendees Reviews

Course Name : Floriculturist

Code(Credit) : ABC01(0-2-2)

Course Description
Type of course:
Certificate Course: (Theory + Practice)
Eligibility: 10th/12th/ ITI pass

Diploma- Smart Agriculture

Teacher: Sagar Maltra | Category: Diploma Courses

Description Teachers Attendees Reviews

Diploma Track Title : Smart Agriculture

Track Total Credits (T-P-P): 3-15-0

Course Description
Type of course: Diploma Course: (Theory + Practice)
Eligibility: 10th/12th/ ITI pass
Prerequisite: Participants should have some interest in polyhouse cultivation.

Description Teachers Attendees Reviews

Diploma Track Title :Organic Farming

Track Total Credits (T-P-P): 3-15-0

Course description:
Type of course: Diploma Course: (Theory + Practice)
Eligibility: 10th/12th/ ITI pass
Prerequisite: Participants should have some interest in Organic Farming
Duration of the course: 6 months
Key highlights:
Faculty name: Ms. Riga Mandapati
Participants will get certificate from university after successful completion.
Participants can learn raising of different crops using organic sources and methods of composting.
Imparts skills to develop as an organic entrepreneur.

Course Objectives:

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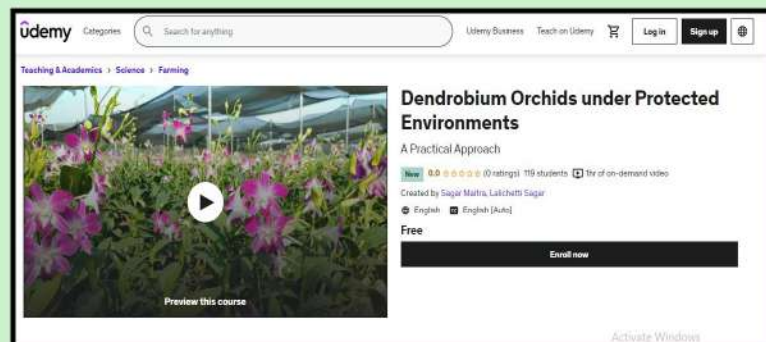
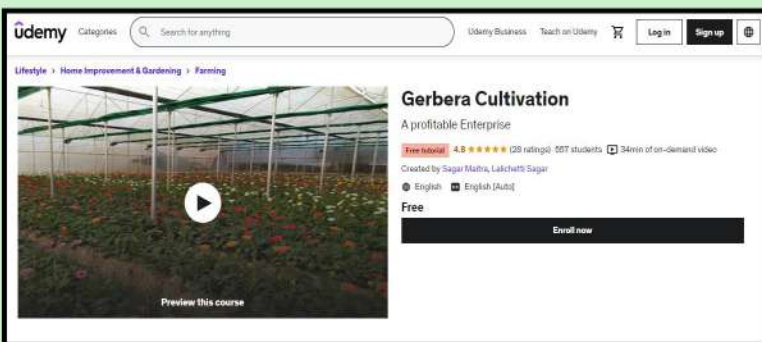
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Courses Developed

Udemy courses: 02

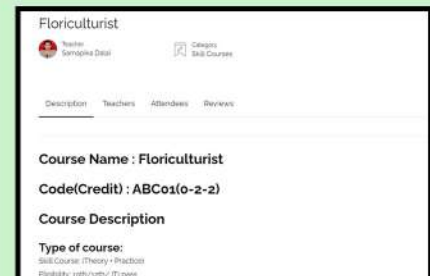
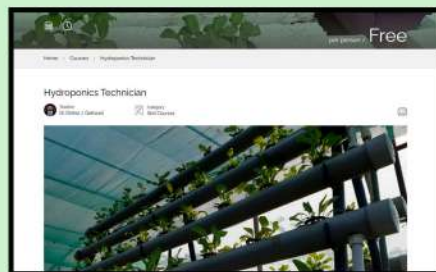
(Instructors: Sagar Maitra and L. Sagar)

- Gerbera Cultivation-A Profitable Enterprise
- Dendrobium Orchids under Protected Environments



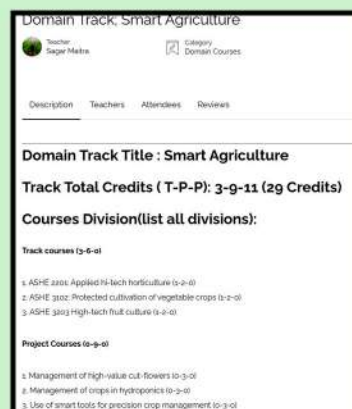
Skill courses: 02

- Hydroponics Technician
- Floriculturist



Domain courses: 01

- Smart Agriculture



NSDC QP and QB

- QB developed: 32 job roles
- Prepared/modified QP: 36 job roles



Awards

- Received 1st prize for the best stall in CUTM Kisan Mela, 2022



Webinars

- Webinars organized : 04
- Delivered lecture as guest speaker : 04



Workshop/FDP

- Workshop on drone piloting



- Total talks: 23 delivered by faculty of the RC (From 25/05/21 to 30/06/2021).

Industry Partners

- IFFCO Kisan
- ITC Ltd.
- SunMoksha Power Pvt. Ltd.



Visits

- Roadshow at Forest College and Research Institute (FCRI), Hyderabad



Summer Internship

- **Development of NFT Hydroponics structure using square pipes** (Vadaga Dhanasri)
- **Growing of water spinach in Hydroponics** (U.P.Teja Ravi Kumar and Smrutisikha Patnaik)
- **Development of NFT hydroponics structure using PVC pipes** (Subash Chandra Munda)
- **Biodiversity Estimation and Enumeration (Flora and fauna)** (Ankita Panda and Smrutisudha Pradhan)
- **Application of crop wat models for determining Irrigation requirement in tomato** (Anitha Madapakula)
- **Growing of microgreens in protected structures** (Jyoshna Sahu)
- **Micro irrigation** (Kirti Priyadarshini, Y. Bhanu chandra, K. Sagar Kumar, K. Natraj, K.Prabhu Kumar, Chakradhar Gudla, Ashutosh Panda, P. L Sai Sree)
- **Blending of false fruit for enrichment of nutrients** (Jallu Neelima)
- **Generation of soil health card through soil testing** (Ch. Sai Durga and A.Sowjanya)
- **Study of effect of pre-emergent herbicides action on spinach in summer season** (Kaushik Panda and Pradosh Pradhan)
- **Oil extraction from different oilseed crop** (Pandranki Charisma)



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Training Program

AGRO INDUSTRIAL ATTACHMENT

Center for Smart Agriculture, CUTM in Collaboration with Gram Tarang and Inclusive Development Services Private Limited (GTIDS)

| | |
|---|---|
| Registration Details | 8 Weeks Program |
| Registration Fee : Nil (Free) Training Fee : 3000/- | *As Per 5 th Deans Committee the Syllabus of ICAR Online & Offline Mode |
| Important Dates | Training Components |
| Commencement of Registration - 17th January 2023 Last Date of Registration - 25th January 2023 | * Agri Technology Management * Agri Drone * Hydroponics * Micro Irrigation * Protected Cultivation |
| Resource Persons | For Registration Click on the Link |
| Dr. Sagar Maltra Dr. Dinkar J. Gaikwad Dr. Mehabeen.A | https://docs.google.com/forms/d/1jzabw6w6fCKw85q2Pm5e0m0w45C03s3m4w0Z22e4w8 <small>*After Successful Completion Certificate will be Provided</small> |

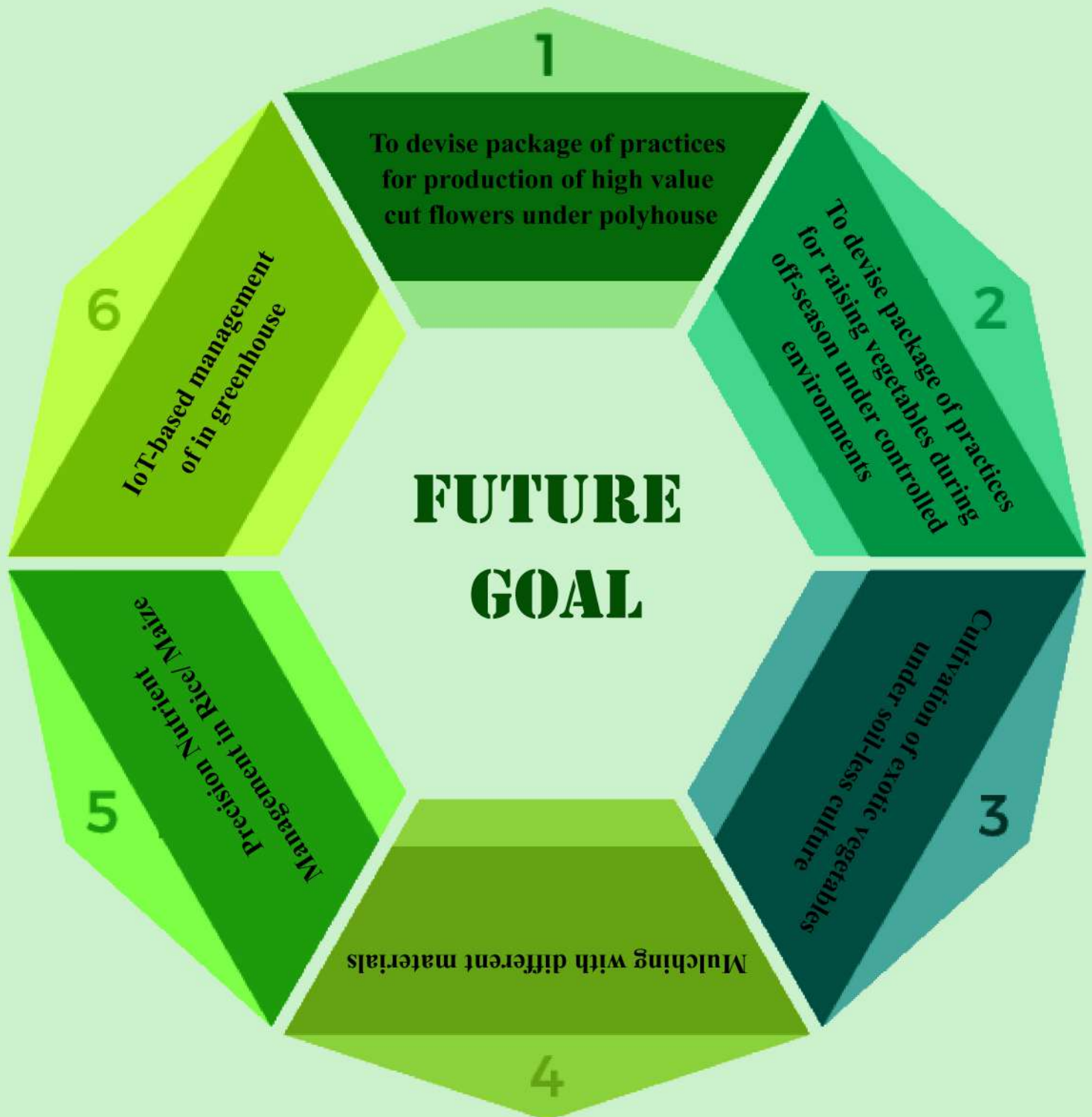
research.cutm.ac.in/courses/Center-for-Smart-Agriculture
mehabeen.a@cutm.ac.in | Contact Us : +91 7539901488
Venue : Paralakhemundi

Revenue
Generated form
Jan, 2023 to till
date:
Rs: 1,29,000/-

Knowledge Partner

- Supporting Gabon project on Smart Agriculture as a knowledge partner







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