



SRI SHANMUGHA  
COLLEGE OF ENGINEERING AND TECHNOLOGY



# GROSSMARTZZ GLIMPSE OF 2022-2023

DEPARTMENT OF AGRICULTURE  
ENGINEERING



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**Thiru. K. Shanmugham**  
**CHAIRMAN**  
**SRI SHANMUGHA EDUCATIONAL INSTITUTIONS**

Dear Members of the Sri Shanmugha Educational Institutions,

I am delighted to announce the release of the inaugural edition of GROSSMARTZZ, a magazine brought to you by the Department of Agriculture Engineering. This publication encapsulates the essence of our institution's commitment to academic excellence and innovation in the field of biomedical engineering. Within its pages, you will find insightful articles, highlights of student achievements, and a retrospective on the myriad events that shaped our academic journey throughout the year 2023. As Chairman, I extend my heartfelt congratulations to the editorial team and contributors for their dedication in bringing this vision to fruition. May Inventus serve as a beacon of inspiration and knowledge for years to come.

Warm regards,

**THIRU.SHANMUGHAM K, Chairman,  
Sri Shanmugha Educational Institutions**



## **Thiru. A.Thirumoorthy**

**EXECUTIVE DIRECTOR  
SRI SHANMUGHA EDUCATIONAL INSTITUTIONS**

Dear GROSSMARTZZ Readers, As Executive Director,

I am thrilled to announce the launch of the first edition of GROSSMARTZZ from the the Department of Agriculture Engineering at Sri Shanmugha Educational Institutions. This publication encapsulates the pinnacle of academic prowess and innovation within our institution, offering a glimpse into the ground breaking research, student achievements, and enriching events that defined the year 2023. My sincere gratitude goes to the editorial team and contributors for their dedication in crafting this informative and inspiring magazine.

Warm regards,

**Mr. THIRUMOORTHY ARUMUGAM, Executive Director,  
Sri Shanmugha Educational Institutions.**



**Mrs. GOKILA THIRUMOORTHY ARUMUGAM**  
**JOINT SECRETARY SRI SHANMUGHA**  
**EDUCATIONAL INSTITUTIONS**

Dear GROSSMARTZZ Readers,

As Joint Secretary of Sri Shanmuga Educational Institutions,

I am pleased to announce the launch of the inaugural edition of GROSSMARTZZ, prestigious publication curated by the the Department of Agriculture Engineering. Within its pages lie stories of academic prowess, student achievements, and noteworthy events that shaped the fabric of our institution in the vibrant year of 2023. This magazine stands as a testament to our unwavering commitment to fostering intellectual growth and scholarly exploration. Let us embrace this momentous occasion and look forward to the continued success of this esteemed publication.

Warm regards,

**Ms. GOKILA THIRUMOORTHY ARUMUGAM, Joint Secretary,**  
**Sri Shanmuga Educational Institutions.**



**Dr. N. R. SRINIVASAN  
ADVISOR  
SRI SHANMUGHA EDUCATIONAL INSTITUTIONS**

Dear Members of the SSEI,

In my role as Advisor to Sri Shanmugha Educational Institution, I am honored to introduce the inaugural edition of GROSSMARTZZ a testament to the excellence and ingenuity that defines our institution's commitment to the Department of Agriculture Engineering. This magazine serves as a testament to the remarkable accomplishments of our students and the transformative impact of the events held throughout the academic year 2023. My heartfelt congratulations go to the the Department of Agriculture Engineering for their dedication and hard work in bringing this publication to fruition.

Warm regards,  
**Dr. N. R. SRINIVASAN,**  
Advisor,  
Sri Shanmugha Educational Institutions.



**Dr. G. M. TAMILSELVAN**

**PRINCIPAL**

**SRI SHANMUGHA COLLEGE OF ENGINEERING AND TECHNOLOGY**

Greetings,

I am pleased to introduce the inaugural edition of GROSSMARTZZ, a magazine crafted by the the Department of Agriculture Engineering. This publication encapsulates the remarkable achievements and milestones reached in the realm of Agricultural Engineering throughout the academic year 2023. Within its pages, you will find insightful articles, student accomplishments, and a retrospective on the events that have shaped our academic journey. My sincere appreciation goes to the editorial team and contributors for their dedication and hard work in bringing this vision to life. GROSSMARTZZ serves as a testament to our institution's commitment to excellence and innovation in the field of the Department of Agriculture Engineering.

Warm regards,

**Dr . G. M. TAMILSELVAN,**

**Principal,**

**Sri Shanmuga College of Engineering and Technology.**



**Dr. L. Ranganathan**  
**HEAD OF THE DEPARTMENT**  
**DEPARTMENT OF AGRICULTURE ENGINEERING**

Dear colleagues and students,

It is with great pleasure that I announce the release of the inaugural edition of GROSSMARTZZ, brought to you by the the Department of Agriculture Engineering. This magazine encapsulates the remarkable journey of our department throughout the academic year 2023 , showcasing the outstanding achievements, ground breaking research, and enriching events that have defined our academic landscape. I extend my heartfelt thanks to the dedicated editorial team for their tireless efforts and unwavering commitment in curating this publication. Your hard work and dedication have truly brought GROSSMARTZZ to life, serving as a testament to our department's excellence and innovation in the field of the Department of Agriculture Engineering.

Warm regards,  
Dr . L. Ranganathan,  
Head of Department,  
Department of Agriculture Engineering,  
Sri Shanmuga College of Engineering and Technology.



## ABOUT US

Considering the importance of conserving natural resources, proper land management and to provide quality education on agriculture to the rural masses, the department of Agriculture Engineering was established in the year 2016 with an intake of 60. Sri Shanmuga vows to promote agriculture by bridging the gap between agriculture and latest technology. Our primary motive for offering this course is to serve the farming community by inculcating the effective utilization of available resources with the motto: “Resources are limited but creativity is unlimited’. Sri Shanmuga provides state-of-the-art agricultural practices to the farmers and the society at large, ‘for a better and a greener tomorrow’.

The Department has been maintaining high standards in informing superiority education in the challenging field of Agriculture. Highly experienced and dedicated faculty members with\ minimum M.E / M.Tech / M.Sc qualification impart quality training to students, with solid emphasis on understanding the fundamentals and intricacies of the subjects concerned and subsequently apply them to solve problems. The Department has successfully conducted Technical Symposiums and has arranged a number of seminars and several invited lectures by eminent persons both from academia and industry. The Department has well established lab facilities with well- equipped farm land suited to the syllabus prescribed by the University.

# **VISION AND MISSION OF THE DEPARTMENT**

## **VISION**

To produce Agricultural Engineers with enriched knowledge and moral values to achieve excellence in academic, industry and research-centric environments.

## **MISSION**

- To provide a conducive learning atmosphere to improve the analytical, design and investigation knowledge through effective teaching-learning Processes.
- To create an amicable environment to solve societal problems through continuing education programmes and research.
- To develop students ethically responsible for the benefit of society through cultural, social and economic awareness.

# **PEOs AND PSOs OF THE DEPARTMENT**

**PEO1** – Practice Agricultural Engineering and Technology concepts across diverse Industrial, societal, and real-world contexts.

**PEO2** – Pursue higher education for professional development.

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**PEO3**–Become Agripreneur with leadership qualities and continuously contributes to societal needs ethically.

**PSO1** – Develop the student's expertise in the field of agricultural engineering by using diverse resources, farm mechanization, and processing.

**PSO2** – Acquire knowledge on IoT, Drone Technology applications in Agriculture and Automation in Agriculture sectors..

# STUDENT OFFICIALS



**Mr S R Karthick**  
PRESIDENT



**Ms DHANUSHIYA**  
VICE PRESIDENT



**Mr AKILAN KUMAR**  
SECRETARY



**MR B GUNAL**  
TREASURER



**Mr MASAN**  
OFFICE BEARER

# EDITORIAL TEAM



**Dr. L. Ranganathan**  
CHIEF EDITOR



**Mr K MOHAN**  
EDITOR



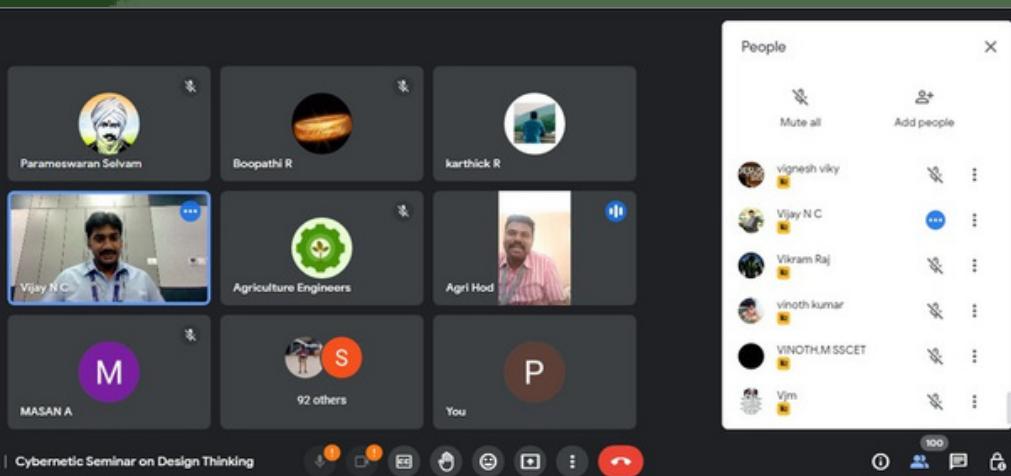
**MRs K LAVANYA**  
EDITOR

# HIGHLIGHTS OF THE DEPARTMENT (2022-23)



Industrial seminar on  
Entrepreneurship  
skills in agriculture  
technology

## Cybernetic Seminar on “Design Thinking”



Cybernetic  
Seminar on  
Design  
Thinking

# HIGHLIGHTS OF THE DEPARTMENT (2022-23)

## National Level Workshop on Drone Technology in Agriculture



## How to Apply and Write Patent

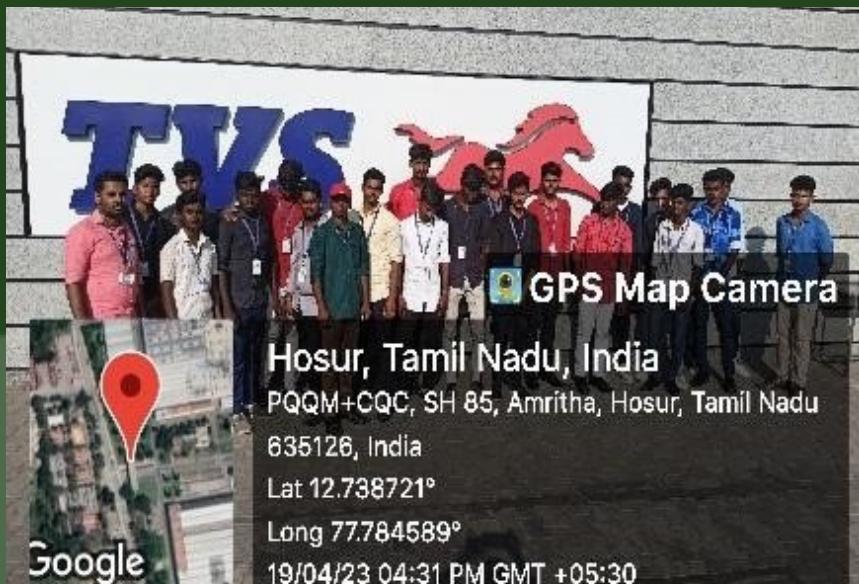




# FIELD/ INDUSTRIAL VISIT (2022-23)



## OOTY- ICAR INSTITUTE-SOIL AND WATER CONSERVATION



## TVS MOTOR COMPANY- HOSUR



# FIELD/ INDUSTRIAL VISIT (2022-23)



**AO HONEYBEE FIELD VISIT- EDAPPADI**





## STUDENT ACHIEVEMENTS

1. National Level Technical Symposium  
J. Saranya IV/ Agri - Gnana Mani College of Engineering -I PRIZE.
2. First National Conference on Innovative Smart Technologies in Engineering & Management Sciences- L Sowmiya -IV /AGRI- Excel Engineering College, Komarapalayam -Best paper Award.
3. First National Conference on Innovative Smart Technologies in Engineering & Management Sciences- S Umapriya -IV /AGRI- Excel Engineering College, Komarapalayam -Best paper Award.
4. SHUNRAAK'23-Level Techfest MEERA NAIR & MEGHA NAIR- III/ AGRI - Excel Engineering College, Komarapalayam - I PRIZE
5. UDHAYAM'23- An Intercollegiate Technical & Cultural Fest - Manoranjith A- III/ AGRI Kalaignarkarunanidhi Institute of Technology, Coimbatore- III PRIZE.
6. One day National Level Technical Symposium - TECHUTSAV'23- Yuvarishi A R - III/ AGRI Vivekananda College of Technology for Women, Tiruchengode- I Prize.



# STUDENT ACHIEVEMENTS in NPTEL

STUDENT NAME	COURSE NAME
J.KARUNYA	FARM MACHINERY
S.HEMGOWTHAM	POST-HARVEST OPERATIONS AND PROCESSING OF FRUITS, VEGETABLES, SPICES AND PLANTATION CROP PRODUCTS
K.ARUNAVARSHINI	POST-HARVEST OPERATIONS AND PROCESSING OF FRUITS, VEGETABLES, SPICES AND PLANTATION CROP PRODUCTS
G.SUTHARSHAN	NATURAL RESOURCES MANAGEMENT
B.SENTHAMILARASI	POST-HARVEST OPERATIONS AND PROCESSING OF FRUITS, VEGETABLES, SPICES AND PLANTATION CROP PRODUCTS
MEGHA NAIR	POST-HARVEST OPERATIONS AND PROCESSING OF FRUITS, VEGETABLES, SPICES AND PLANTATION CROP PRODUCTS
G.VEERAPATHIRAN	DAIRY AND FOOD PROCESS AND PRODUCTS TECHNOLOGY



# STAFF ACHIEVEMENTS in NPTEL

STAFF NAME	COURSE NAME
MR.K.MOHAN	DESIGN OF STEEL STRUCTURES
MS.K.LAVANYA	POST-HARVEST OPERATIONS AND PROCESSING OF FRUITS, VEGETABLES, SPICES AND PLANTATION CROP PRODUCTS



# STUDENT ACHIEVEMENTS



# ARTICLES - 1

## PROTECTED CULTIVATION STRUCTURES FOR YIELD MAXIMIZATION UNDER CHANGING CLIMATIC CONDITIONS

MR. S. PRAMOTH KUMAR, AP/ AGRI

### **GREENHOUSE**

Greenhouse is framed structures covered with UV stabilized plastic films in which crops are grown under partially or controlled environment conditions.

### **POLYHOUSE**

A polyhouse is a specially made building-like structure used for growing plants in controlled environments. Since it is covered with translucent material, natural light may enter. A polyhouse or greenhouse is actually the same thing. The greenhouses were traditionally built on wooden frames with glass utilized as the covering material. With the development of plastic technology, glass could be swapped out for plastic. In more recent times, greenhouses have acquired the name & poly houses due to the popularity of the polythene material. In polyhouses, drip irrigation is utilized to conserve water and increase productivity.

### **NET HOUSE**

A Net house is a structure enclosed by agro nets or any other woven material to allow required sunlight moisture and appropriate micro climate conducive to the plant growth. It is also referred as shade net house or shade house.

and air to pass through the gaps. It creates

# POLY TUNNEL

Polytunnel (also known as a polyhouse, hoop greenhouse or hoophouse, grow tunnel or high tunnel) is a tunnel typically made from steel and covered in polythene, usually semi-circular, square or elongated in shape. The interior heats up because incoming solar radiation from the sun warms plants, soil, and other things inside the building faster than heat can escape the structure. Air warmed by the heat from hot interior surfaces is retained in the building by the roof and wall. Temperature, humidity and ventilation can be controlled by equipment fixed in the poly tunnel or by manual opening and closing of vents. Poly tunnels are mainly used in temperate regions in similar ways to glass greenhouses and row covers. Every type of auxiliary heating, from hothouse heating to minimal heating to unheated dwellings, is represented in current practise in addition to the passive solar warmth that each polytunnel offers. Row coverings and low tunnels frequently nest inside high tunnels.

## CONCLUSION

Protected cultivation structures are indispensable tools for modern agriculture in the face of changing climatic conditions. They offer a range of benefits, including climate resilience, increased yields, improved crop quality, and more sustainable farming practices. To maximize their potential, farmers should consider factors such as energy efficiency, water management, and crop selection to align with market demands. As we continue to confront the challenges of a changing climate, these structures will play a crucial role in ensuring food security and agricultural sustainability.



# STUDENT DRAWING



# **ARTICLES - 2**

## **ORGANIC FARMING: FOR SUSTAINABLE PRODUCTION**

**Dr. S. SapthagiriASP/ Agri**

**INTRODUCTION** The practice of organic farming has been in India for a very long time. It is a farming system that focuses on cultivating the land and growing crops in a way that preserves the soil's life and health by using organic wastes (crop, animal, and farm wastes, aquatic wastes), other biological materials, and advantageous microbes (bio fertilisers) to sustainable production in an environment free of pollution.

According to the definition of organic farming provided by the United States Department of Agriculture (USDA) study team, organic farming is a system which avoids or largely excludes the use of synthetic inputs (such as fertilisers, pesticides, hormones, feed additives, etc.) and to the maximum extent practicable relies upon crop rotations, crop residues, animal manures, off-farm organic waste, mineral grade rock additives, and biological system of nutrient mobilisation and plant protection.

### **Need of organic farming**

With the increase in population our compulsion would be not only to stabilize agricultural production but to increase it further in sustainable manner. Scientists have observed that the Green Revolution with its high input use has plateaued and is currently sustained with diminishing benefits. To ensure the survival of life and property, a natural balance mORusGtA tNhleCre

**FARMING: FOR**  
The obvious answer would be more pertinent now, since these agrochemicals are made from fossil fuels, are not renewable, and are becoming less and less available. Additionally, future foreign exchange losses could be significant.

## THE KEY CHARACTERISTICS OF ORGANIC FARMING INCLUDE

- Protecting the long term fertility of soils by maintaining organic matter levels,
- encouraging soil biological activity, and careful mechanical intervention.
- Providing crop nutrients indirectly using relatively insoluble nutrient sources which are made available to the plant by the action of soil micro- organisms. Nitrogen self-sufficiency through the use of legumes and biological nitrogen fixation, as well as effective recycling of organic materials including crop residues and livestock manures. The extensive management of livestock, paying full regard to their evolutionary adaptations, behavioural needs and animal welfare issues with respect to nutrition, housing, health, breeding and rearing. Careful attention to the impact of the farming system on the wider environment and the conservation of wildlife and natural habitats.

## BENEFITS OF ORGANIC FARMING

- Environment-friendly.
- Promotes sustainable development.
- It uses organic inputs.
- Generates income.
- Generates income through exports.
- Source of employment.
- Organic farming is more labour intensive. Hence, it generates more employment.



## CONCLUSION

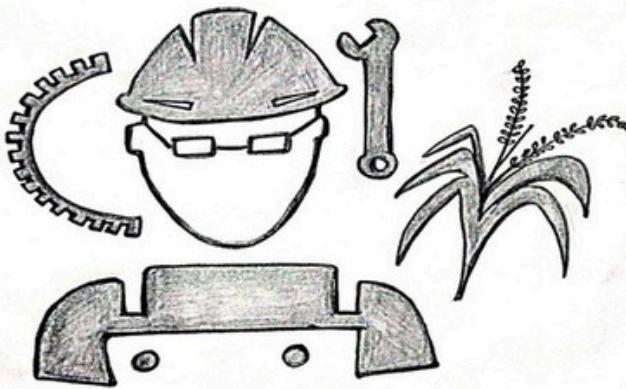
It helps in keeping agricultural production at sustainable level. It reduces the cost of agricultural production and also improves the soil health. Organic farming as a system of crop production is to feed the soil rather than feed the plant. Organic farming is the most sustainable method of farming which can fetter the use of chemically infused fertilizers and pesticides and foster the usage of naturally grown food products. In simple terms, it can replace synthetic fertilizers.





# STUDENT DRAWING

I AM AN  
AGRICULTURAL ENGINEER  
MY LEVEL OF  
SARCASM  
DEPENDS ON YOUR  
LEVEL OF STUPIDITY



Technology Leads Agriculture...

RINA.C

YOUR FARM TELLS A STORY....

RINA.C  
III<sup>rd</sup> year AGRI

## HYDROPONICS FARMING

Mrs. K. Lavanya, AP/ Agri

### HYDROPONICS

Hydroponics is a method of growing plants without using soil as a growing medium. Instead, it relies on a nutrient-rich water solution to deliver essential minerals and nutrients directly to the plants roots. This technique allows for controlled and efficient cultivation of various crops in a several agriculture, including faster growth rates, higher yields, and the ability to grow plants in areas with poor soil quality or limited space.

### METHODS OF HYDROPONICS

Hydroponics employs several methods or systems for growing plants without soil. Each method has its own approach to delivering nutrients, water, and oxygen to the plants roots. Here are some common methods of hydroponics.

#### NUTRIENT FILM TECHNIQUE (NFT):

shallow, continuous flow of nutrient solution that circulates over the roots of the plants. The roots are exposed to a thin film of nutrient solution, allowing them to absorb essential and recirculated, minimizing wastage. NFT systems require precise nutrient control and proper slope to ensure uniform nutrient distribution. This method is favored for its water efficiency and suitability for crops with shallow root systems, such as lettuce and herbs.

**AEROPONICS** Aeroponics is an advanced hydroponic method where plants are grown in an air or mist environment. The roots are suspended in the air, and a fine mist of nutrient solution is periodically sprayed onto the roots. This mist provides oxygen, nutrients, and moisture directly to the root zone. The high oxygen availability in aeroponics accelerates plant growth and can lead to impressive yields. However, the complexity of aeroponic systems, including misting schedules and maintaining sterile conditions, requires advanced technical expertise.

**VERTICAL HYDROPOONICS** Vertical hydroponics involves growing plants in stacked layers or vertical structures. This method maximizes space utilization and is particularly suitable for urban environments or areas with limited space. Plants are typically grown in trays or pockets affixed to vertical structures, with nutrient solution supplied through drip or NFT systems. Vertical hydroponics optimizes light exposure and airflow, promoting efficient growth and space-saving cultivation.

**FOGPONICS** Fogponics is an advanced form of aeroponics where nutrient-rich fog or mist is delivered to the plant root zone. The fine mist provides exceptional oxygenation to the roots and precise nutrient delivery. This method offers optimal conditions for nutrient absorption and root health. However, due to its complexity and potential for technical challenges, it's often used in research settings and experienced hydroponic enthusiasts.



**CONCLUSION** Hydroponics farming offers a promising path toward more sustainable and efficient agriculture. Its ability to conserve resources, reduce environmental impacts, and provide high-quality, year-round produce makes it a valuable addition to the agricultural landscape. As technology continues to advance and the world faces growing challenges related to food security and climate change, hydroponics is likely to play an increasingly important role in ensuring a resilient and productive food supply. However, successful implementation requires careful planning, investment, and ongoing management to realize its full potential.





# STUDENT ACHIEVEMENTS

# G. Thesigan III- Agri



Society

of Agriculture Innovators in Shannnugha