



SRI SHANMUGHA  
EDUCATIONAL INSTITUTIONS



SRI SHANMUGHA  
COLLEGE OF ENGINEERING AND TECHNOLOGY



# GROSSMARTZZ GLIMPSE OF 2021-2022

DEPARTMENT OF AGRICULTURE ENGINEERING



## **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 2021 - 2022. 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 2021 - 2022. 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 2021 - 2022. 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. S. Muruganandham**  
**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 Agriculture Engineering throughout the academic year 2021 - 2022. 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. S. Muruganandham,**  
**Principal,**

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



**Dr. L. Ranganathan**  
**HEAD OF THE DEPARTMENT**  
**THE 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 2021 - 2022 , 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,

The Department of Agriculture Engineering,  
Sri Shanmuga College of Engineering and Technology.

# 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



## 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.**

**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..**

# INTERNSHIP TRAINING



# HIGHLIGHTS OF THE DEPARTMENT (2021 - 2022)



# ARTICLES - 1

## AZOLLA CULTIVATION GUIDE (RICH PROTEINS FEED FOR CATTLE, POULTRY, FISH AND PIG)

Mr.,S R Karthick  
4 rd year student / Agri

Azolla, a wonderful plant, is a branched free-floating aquatic fern, and it rapidly grows on the water's surface. Many farmers, due to limited resources, often struggle to produce sufficient feed for those animals. But Azolla is the right option in front of them. Azolla is an ideal sustainable feed for cattle, fish, pigs, and poultry. Apart from this, it's also used as a bio fertilizer on the farm. Hence many farmers attract to the Azolla cultivation. Azolla cultivation is popular in countries like China, Vietnam, the Philippines, etc. Azolla fixes nitrogen; it is an excellent source of nitrogen and has a high nutrient value. For Azolla, cultivation required less investment; hence it is a low-cost alternative for a good feed and good bio fertilizer.

### **Benefits of Azolla Feed for Livestock**

Azolla contains very high proteins, amino acids, vitamins (vitamin A, vitamin B12, Beta Carotene), and minerals, so it is an excellent nutrient feed for livestock. Also, Azolla has low lignin content. So animals easily digest. It is observed that Feeding Azolla to poultry birds improves the weight of broiler chicken and increases the egg production of layers birds. In animals, it showed an overall increase of milk yield by 15–20% when 1.5–2 Kg of Azolla was combined with regular feed. This experiment was conducted in the Natural Resources Development Project at Vivekananda Kendra. You can feed Azolla to sheep, goats, pigs, rabbits, and fish. **Bio fertilizer** Azolla fixes atmospheric nitrogen and stores it in leaves. Therefore, it is used as green manure. It has been observed and appreciated by rice farmers that they cultivate Azolla in paddy farms and increase rice production by 20%. **Weed Control** Azolla plant can form a thick layer on water surfaces, so it uses for weed control in paddy farms. In paddy farms, Azolla forms a thick layer that covers all farm areas and works as organic mulching, which doesn't allow producing weeds. Also, it slows the water evaporation rate and maintains soil moisture for a long time.

**Mosquito Control** Azolla has another ability. Azolla restricts the mosquito breeding process, and thus, Azolla is also called a “mosquito fern.” **Azolla Cultivation Procedure** Create an artificial pond for growing Azolla. For creating the Azolla cultivation pond, select a partially shaded area because Azolla needs 30% sunlight; too much sunlight will destroy the plant. The area under the tree is preferable. If you decide to grow an Azolla on a large scale, you can make small concrete tanks. Otherwise, you can make the pond any size you want. Now Azolla plastic beds are available in the market they are more convenient and easy to use dig out the soil for the pond and level the soil; after that, spread the plastic sheet around the ground to prevent water loss. Make sure the pond is at least 20 CM Deep. Add some soil uniformly to the plastic sheet in the pond. For a 2M X 2M size pond, add 10-15 kg soil. Azolla needs Phosphorus to grow well you can use Super Phosphate along with cow dung slurry. Cow dung increases the available nutrients. Use cow dung 4-5 days old. Next, fill the pond with water to a level of about 10 cm; this will allow the Azolla Plant’s short route to floating freely, then leave the pond for 2 to 3 days so the ingredients can settle. After 2-3 days, add Azolla culture in the pond by gently rubbing Azolla in your hands. It helps break Azolla into smaller pieces for faster multiplication.

### **Important Tips For Growing Azolla**

Azolla rapidly grows, so maintain Azolla biomass 300 gms – 350 gms /sq.meter hence harvest daily to avoid overcrowding. Add once in 5 days mixture of Super Phosphate and cow dung also add mixture containing magnesium, iron, copper, Sulfur etc., at weekly intervals, to enhance the mineral content of Azolla. Replace 25 to 30% old water with fresh water once in 10 days; it helps prevent nitrogen buildup in the pond. Replace complete water and soil at least once in six months, and then add Fresh Azolla seeds. Maintain the water level of at least 10 cm, so Azolla root doesn’t grow in the soil by keeping the roots floating, it becomes easy to harvest. Harvested Azolla wash thoroughly, so it removes dirt and smell of cow dung and then feeds them to animals.

**Conclusion** Azolla is an ideal feed for livestock. If you take good care of your Azolla pond, you can harvest good quality weed every day, and it definitely reduces your cost of feed and fertilizer.



# STUDENT DRAWING



Thesigan  
II Agri

# **ARTICLES - 2**

## **CULTIVATION OF SAFFRON**

**Ms DHANUSHIYA  
4 rd year student / Agri**

**SAFFRON:** Saffron plays an important role in economy of Jammu and Kashmir state. It is grown in an area of about 4000 hectares with an estimated annual production of 60 q. The crop is grown in the temperate regions of the state comprising Kashmir Valley and adjoining mountainous regions of Jammu division. For obtaining optimum production of saffron, the following improved practices are recommended

**SOIL REQUIREMENT:** It requires well drained clay loam soils having a pH range of 7-7.5 free from pebbles **LAND PREPARATION:** The land

should be ploughed upto a depth of 25-30 cm and subsequently, suckers rhizomes, runners etc. of perennial weeds which are uprooted during the ploughing operations, should be collected and removed from the field.

The field should be thoroughly leveled filling in all depressions to avoid stagnation of water. **TIME OF PLANTING:** August to September

**PLANTING STOCK:** Saffron is planted by dormant corms, select disease free and large sized corms, having at least 2.5 cm diameter. The husk dirt etc. adhering to the corms, should be removed, and the corms before

planting **SEED RATE:** About 80 q corms are required to establish a hectare stand under

**METHOD OF PLANTING:** The Berwar method of saffron cultivation comprises essentially of charging the soil with two underground layers of corms, one above the other, in a particular geometric way. The first or the ground layer is planted at a depth of 10-12 cm in straight furrows, opened 15 cm apart. Furrows may be opened, either with a plough or manually with hoe. Corms in the furrows are planted at a distance of 7.5 cm from each other. After planting the first or the ground layer, the second or the upper layer are planted 2.5 cm above and each in between the two rows of the ground layer. The upper layer, thus, rests a depth of 7.5 to 9.5 cm from the surface or the soil. This method of planting is also called the double storey system of saffron cultivation.

**FERTILIZER APPLICATION:** Yield of saffron is increased when chemical fertilizers in a balanced form and in moderate doses are applied. The following doses of different fertilizers are recommended to increase the yield of saffron z 20 Nutrient (kg/ha) P 27.6 K 18 Urea 20 Fertilizer (kg/ha) DAP 60 MOP 33 Urea should be top dressed in the crop during the winter season (December-January). Diammonium Phosphate and Murate of potash should be applied in the month of September with the last intercultural operation. **INTERCULTURE:** Intercultural in saffron is very essential. It is done during the summer season when the corms are resting in the soil in dormant state. During this period, at least three intercultural may be done to remove weeds, mixing of dry leaves in soil and to create soil mulch for conservation of moisture. **PLANT PROTECTION:** Rats are No. 1 enemy of saffron corms. For eradication of rats, their holes should be fumigated with Phosfume tablets. For control of corm rot, treat the corms before planting with 0.1% carbendazim solution. Dip for 30 minutes. **ROTATION:** Saffron under the said intensive programme should be cultivated in a Four year short rotation with some salt resistant crop like wheat, barley, oats mustard etc. **YIELD:** A hectare crop grown under the Berwar way produces during the four years, 6-8 kg saffron or 1.5-2 kg saffron per annum. Yield during the first year of planting is the lowest.

# STUDENT DRAWING



M.V.Aathira  
II-Agri

