

## Department of Agricultural Engineering Nandha Engineering College - Erode – 638 052

### VISION

- To foster academic excellence by imparting knowledge in Agricultural Engineering to meet the ever-growing needs of the society.

### MISSION

- To provide quality education to produce agricultural engineers with social responsibility.
- To excel in the thrust areas of agricultural engineering to identify and solve the real-world problems.
- To create a learner-centric environment by upgrading knowledge and skills to cater the needs and challenges of the society.

### PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

- PEO1: Core Competency: Successful professional with core competency and inter-disciplinary skills to satisfy the Industrial needs.
- PEO2: Research, Innovation and Life-long Learning: Capable of identifying technological requirements for the society and providing innovative solutions to real time problems.
- PEO3: Ethics, Human values, and Entrepreneurship: Able to demonstrate ethical practices and managerial skills through continuous learning



**Dr. N. Rengarajan, Ph.D.,  
Principal**

Greetings to the Department of Agricultural Engineering on the joyous occasion of the publication of the newsletter for the academic year 2022–2023. I applaud the Department of Agricultural Engineering for its efforts in producing the newsletter.



**Dr. J. Senthil, Ph.D.,  
Director, Tech campus**

It is my pleasure to congratulate the Department of Agricultural Engineering on the pleasant occasion of releasing the newsletter for the period 2022-23. It is great to find a considerable number of winners and participants in co-curricular and extra-curricular activities. I hope that this number will continue to grow in the years to come.



**Dr. E. K. Mohanraj, Ph.D.,  
Dean**

Congratulations to the Agriculture Engineering Department's students and teachers on the publication of this newsletter. I believe this project fosters teamwork, motivates young people, and establishes a culture of regular newsletter releases.



**Dr. P. Komalabharathi, Ph.D.,  
HoD**

It gives me a fantastic opportunity to discuss the "Agri clickz 23" issue. This internal newsletter is one of the ways we can tell people about what's going on in the Department. I want to express my gratitude to all of my peers for their unwavering support of the steady improvement.

## DEPARTMENT OF AGRICULTURAL ENGINEERING 2022-23

### ABOUT AGRO CLIKZ'23 NEWS

The AGRO CLIKZ'23 News is the voice of Agricultural Engineering; it is a newsletter from the Department of Agricultural Engineering which mainly focuses on the day-to-day happenings in the department. It speaks and visualizes the events happening in the department and the participation of students in various inter and intra college events. It encourages and brings out the talents of students in various fields.

### ABOUT DEPARTMENT OF AGRICULTURAL ENGINEERING









Agricultural Engineering is started in the year 2017 with an intake of 60 students. Agricultural Engineering is a branch of engineering that deals with the design of farm machinery, location and planning of farm structures, farm drainage, soil management, erosion control, irrigation, rural electrification and processing of farm products. This is to find out the solution of the problems in the field of agriculture for increasing agricultural productivity, increasing the standard of living of the farmers.

Hands on training on crop production using tractor operated farm implements is offered in the farm. Our students are undergoing internships and trainings in farm machinery manufacturing industries, drip irrigation companies, food processing industries, dairy industry, renewable energy industries, etc. The Department has signed MoUs with various allied agriculture industries through which Students get Placements with good packages in Modern Dairy processing Industries, Roots Irrigation Ltd., Shri Pachaiammal Agro Industry, Universal Power Suppliers and many more.

### INFRASTRUCTURE

The following laboratories have been established and students are being given hands-on training.

#### LABORATORY FACILITIES

- |  |  |
|--|--|
|  Soil Science Laboratory                  |  Farm Implements Laboratory         |
|  Crop Production and Husbandry Laboratory |  Unit Operations Laboratory         |
|  Farm Tractors Laboratory                 |  Irrigation and Drainage Laboratory |
|  Maintenance of Farm Machinery Laboratory |  Food and Dairy Laboratory, etc.,   |



## TREE PLANTATION

The Department of Agricultural Engineering, along with the Agro Tech Warriors Association, conducted a "TREE PLANTATION" event on 13.07.2022 at our college premises. The principal of Nandha Engineering College, Dr. N. Rengarajan, felicitated the function by planting trees. This event aims to raise awareness about the importance of trees and shrubs, their benefits in soil and water conservation, carbon storage, moderation of local climate through shade provision, regulation of temperature extremes, creation of wildlife habitat, and enhancement of the land's capacity to adapt to climate change. Additionally, it improves air quality by absorbing toxic chemicals from the atmosphere. Trees' leaves absorb pollutant gases and odors such as ammonia, ozone, nitrogen oxides, and sulfur dioxide. All the association members participated in the plantation with a sense of social responsibility.



Planting samplings by principal NEC

## ASSOCIATION INAUGURATION

Agro Tech Warriors Association inaugural function for the academic year 2022 - 23 was held on 02.08.2022. The chief guest of the function was Dr. M. Muthamil Selvan, Senior Scientist, Central Institute of Agricultural Engineering. The Presidential address was given by Thiru. V. Shanmugan, Chairman, Sri Nandha Educational Trust. Principal Address was given by Dr. N. Rengarajan, Principal, Nandha Engineering College. Felicitation address was given by Dr. S. Arumugam, CEO, Nandha Educational Institutions, Thiru. S. Nandhakumar Pradeep, Secretary, Sri Nandha Educational Trust, Thiru. S. Thirumoorthi, Secretary, Nandha Educational Institutions and Dr. J. Senthil, Director, Tech Campus. Dr. E. K. Mohanraj, Professor and Dean of the Agricultural Engineering department, delivered welcome address. The key point on advancement in agriculture farm mechanization was highlighted by the chief guest.



Group photo of Association Inauguration Ceremony

## ACADEMIC SEMINAR

### COLD CHAIN MANAGEMENT

Many academic degrees include seminars, which provide groups of students with the opportunity to discuss and critique a wide range of fresh information and concepts. Therefore, the Department of Agricultural Engineering organized many academic seminar to enhance students' knowledge. Department of Agricultural Engineering organized various events, orientation programs for the academic year 2022 – 23. One among which is this seminar “**COLD CHAIN MANAGEMENT**” focused on various aspects on set of rules and procedures that ensure the proper storage and distribution of various agricultural commodities, food and dairy related products from the national to the local level. The post-handling procedure is described here to give students a sense of it. Mr. K. Kannan, Agriculture Engineer, Cuddalore, who has been the resource person for the seminar.



*Seminar on Cold Chain Management*

### FOOD PROCESSING TECHNOLOGY

The Agro Tech Warriors Association, along with the Department of Agricultural Engineering, organized an academic seminar entitled “**FOOD PROCESSING TECHNOLOGY**” on 22nd September 2022. The seminar was graced by the presence of guest speaker Dr. N. Karpoorasundrapandiyar, Assistant Professor at IIFPT, Tanjavur. The students gained extensive knowledge about Food Processing Technology, which encompasses a range of physical, chemical, or microbiological methods and techniques employed to convert raw ingredients into food and its subsequent transformation into other food processing forms.



*Seminar on Food Processing Technology*

### ENTREPRENEURSHIP IDEA GENERATION

Department of Agricultural Engineering organized a skill development program on “**FOOD PROCESSING UNIT**”. The program was discussed with food processing concepts and its method used to turn fresh foods into food products. This can involve one or a combination



of the following: washing, chopping, pasteurizing, freezing, fermenting, packaging and many more. Mrs. C. Prema, Founder and CEO of UthraEnterprises, Coimbatore, who has been the resource person for the program through offline mode, held on 19th October 2022.



*Event on Entrepreneurship Idea Generation*

### **SyNECtics,22**

A national level technical symposium conducted every year by the United Student Association (USA) of Nandha Engineering College. SyNECtics,22 which is a great platform to present innovative ideas and develop the technical skills has both technical and fun events. The Presidential address was given by Thiru. V. Shanmugan, Chairman, Sri Nandha Educational Trust. Principal Address was given by Dr. N. Rengarajan, Principal, Nandha Engineering College. Felicitation address was given by Dr. S. Arumugam, CEO, Nandha Educational Institutions, Thiru. S. Nandhakumar Pradeep, Secretary, Sri Nandha Educational Trust, Thiru. S. Thirumoorthi, Secretary, Nandha

Educational Institutions and Dr. J. Senthil, Director, Tech Campus, delivered welcome address.

### **AGRITECH NEXGEN**

The second technical event was a AgritechNexgen, which was held on first day of Synectics 22 at Department on 23<sup>rd</sup> November, 2022. The AGRITECH NEXGEN was the paper and poster presentation event. The theme area was related to Agricultural Engineering Department that is “AGRI TECHNOLOGIES IN NEXT GENERATION”. The presentation is more about advanced robots and automation technologies in 2023 that are created especially for the special requirements of agriculture. For instance, we might witness the creation of robots that can more effectively and precisely harvest crops, plant seeds, and apply pesticides and fertilizers

### **MODERN PRACTICES IN MUSHROOM CULTIVATION WORKSHOP**

Department of Agricultural Engineering organized a workshop on “MODERN PRACTICES IN MUSHROOM CULTIVATION” at Department Field on 23<sup>rd</sup> November, 2022. The main theme of the workshop was providing a better view on the mushroom cultivation, also to empower the entrepreneurial skills of the students. The workshop was discussed with Mushroom cultivation requires little space or land makes it a lucrative option for those who have small landholdings or who want to start cultivation

out of their homes. In a vibrant setting, the programme provided the participants with enhanced knowledge. Mr. K. S. Saravanan, Entrepreneur of S. S. Mushroom Cultivation, Kalaraman, Gobichettipalayam, Erode, who has been the resource person for the program through offline mode.



*Workshop on Mushroom Cultivation*



## HONEY BEE REARING WORKSHOP

Department of Agricultural Engineering organized a workshop on “HONEY BEE REARING” at Department Field on 23<sup>rd</sup> November, 2022. The main theme of the workshop was provide a better view on the honeybee rearing by Mr. R. Annamalai, an Entrepreneur from Edappadi, Salem. The workshop was discussed with the uses of honeybees and honey bee rearing. Bees are the best pollinating agents and they increase the pollination efficiency within the flowers which boosts the yield of crops. It provides the most nutritional food in the form of honey. It also provides beeswax which is used in polishing,

pharmaceutical, and cosmetic industries. The session gave the improved knowledge for the participants in a lively environment.



*Workshop on Honeybee Rearing*

## RANCH PARKING

The third technical event was called RANCH PARKING at Department Field on 24<sup>th</sup> November, 2022. It had two rounds. In first round, one of the participants should drive the tractor to a certain distance and follows the second round with the two members in a team, need to attach the implement in a given time and drive the tractor in a marked place. This event is to make awareness among students about the handling and the use of farm tools and implements in agriculture. Thus, tractors are essential necessity of farming as they provide machine power for performing farm applications. In addition to routine landscape maintenance, lawn care, clearing bushes & spreading fertilizers the tractors are used to pull a variety of farm equipments for ploughing, planting, harvesting and cultivating crops.





*Event on Ranch Parking*



*Event on Agripreneurship*

## AGRI PRENEUR

Department of Agricultural Engineering organized the fourth technical event called "AGRI PRENEUR" at Department on 25<sup>th</sup> November, 2022. It has two rounds, first round was to identify the seed types and the qualified teams were moved to next round. In second round the product were given to the participants and they need to advertise the product in a better way. This event was held on third day of SyNECTics 22 at department. Entrepreneurial skills centre around attitudes (soft skills), such as persistence, networking and self-confidence on the one hand and enabling skills (hard skills) on the other hand, including basic start- up knowledge, business planning, financial literacy and managerial skills. This event helped in spotting the best entrepreneurial abilities of the students.

## BGM CHALLENGE.

This is one of the non-technical events conducted by Department of Agricultural Engineering at Department on 24<sup>th</sup> November, 2022. The event was organized to entertain the students in fun filling environment.

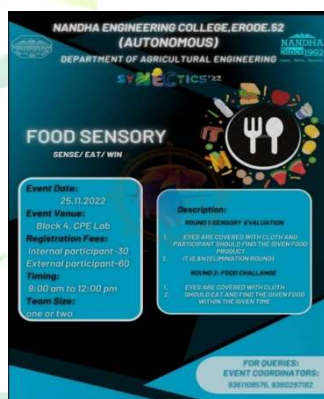


*Event on BGM Challenge*

## FOOD SENSORY

Department of Agricultural Engineering conducted a non-technical TECHFUN event named "FOOD SENSORY" at Department on 25<sup>th</sup> November, 2022. A range of senses are used when eating food. These senses are: • sight; • smell; • hearing; • taste; • touch. A combination of these senses enables you to evaluate a food. The size, shape, color, temperature and surface texture all play an important part in helping to determine your first reaction to a food. This fun

event was arranged to recall the food which values on human health and also to aware about the wastage of food among student community.



*Event on Food Sensory*

## IoT IN AGRICULTURE WORKSHOP

The Department of Agricultural Engineering organized a series of technical events as a part of SyNECTics 22 at Department Field on 24<sup>th</sup> November, 2022. This guest speaker for the technical workshop was Mr. M. Gowthamkumar, Universal Power Suppliers, Bangalore. The workshop was discussed with the recent and advanced title “IOT IN AGRICULTURE”. The topic was clearly discussed about IoT solutions in farming help to mitigate the risks of agriculture. By quickly detecting anomalies and inconsistencies in crop production, farmers can reduce waste and control costs while increasing production. Precision Farming, Agricultural Drones and Hopping systems, Livestock Monitoring, Monitor Climate Conditions, Smart Greenhouses, AI and IoT based Computer imaging etc., with on-farm field demonstration for the broad spectrum knowledge and practical

exposure of the participants.



*Workshop on IoT in Agriculture*

## MOTIVATIONAL SPEECH

Department of Agricultural Engineering and Agri Tech Warriors Association organized an motivation event in connection with SyNECTics'22 held at seminar hall. The speech was about the “YOUTH EMPOWERMENT”. It facilitates young people in constructing meaningful community change, with the goal of enhancing the wellbeing of all individuals. A youth empowerment approach utilizes young people as resources rather than a “collection of problems” in establishing community change. Also, increased self esteem and confidence through helping others and being asked for help. Increased awareness of personal strengths and potential. Work experience and life skills. Mrs. C. Saritha, Erode, who has been the resource person for the program through offline mode, on 24<sup>th</sup> November, 2022.



## GUEST LECTURE

Department of Agricultural Engineering and Indian Society for Technical Education (ISTE) jointly organized a guest lecture on the title of “TECHNOLOGY GENERATION AND DISSEMINATION IN AGRICULTURAL ENGINEERING”. Dr. J. Vasanthakumar, Former Dean, Faculty of Agriculture, Annamalai University, Chidambaram felicitated the function as a guest speaker. The speaker explained about the dissemination, its targeted distribution of information and intervention materials to a specific public or practice audience. Dissemination occurs through a variety of channels, social contexts and settings. The intent is to spread knowledge, technologies and the associated evidence-based interventions. The event held at the college conference hall on 22<sup>nd</sup> March, 2023.



*Guest Lecture on Technology Generation and Dissemination in Agricultural Engineering*



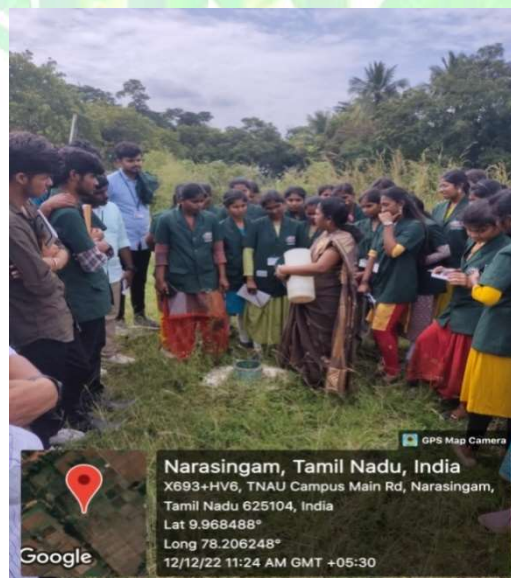
*Guest Lecture on Technology Generation and Dissemination in Agricultural Engineering*

## INDUSTRIAL VISIT

Industrial visit is considered as one of the tactical methods of teaching. The main reason behind this- it lets student to know things practically through interaction, working methods and employment practices. Moreover, it gives exposure from academic point of view. Through industrial visit students get awareness about new technologies. Technology development is a main factor, about which a students should have a good knowledge. Visiting different areas actually help students to build a good relationship with those farmers as well as companies. After visiting an industry students can gain a combined knowledge about both theory and practical. Students will be more concerned about earning a job after having an industrial visit.



The visit was arranged for the exposure of third year students of the Department of Agricultural Engineering to Agricultural College and Research Institute, Madurai. The institute is specially a water technology centre with various allied activities includes crop production, processing, packaging and storage, animal husbandry and also an mechanized farming practicing institute. The students visited on 12<sup>th</sup> December, 2022. There supported with the guest lectures by Dr. Veeraputhiran, Irrigation Specialist on “Importance of Irrigation and Drainage in Agriculture” and Dr. Kalarani, Meteorology Specialist about “The usage of Meteorological Instruments in Agriculture Weather Station”.



*Visit to Madurai Agricultural College and Research Institute, Agricultural Weather Station*

### Visit to Centre of Excellence for Cut Flowers “Thally”

The Centre of Excellence for Cut Flowers functioning here, under Indo-Israel Agriculture Project for demonstration on cut flowers pproduction technology and impart training to farmers and Extension officials of all districts in Tamil Nadu and other states. Department of Agricultural Engineering arranged a visit for second year students to Thally and had training cut flowers production, processing, marketing and export related information.



*Visit to Agricultural College and Research Institute*





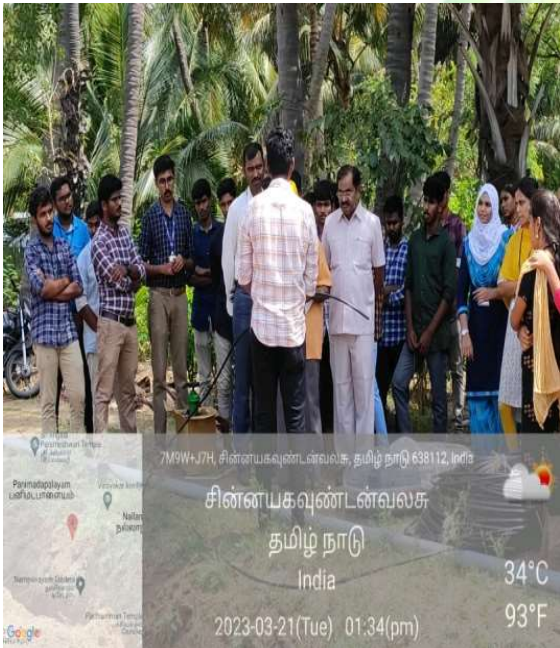


Visit to Centre of Excellence for Cut Flowers “Thally”



On-Farm trail

On-field training were given to the students of third year Agricultural Engineering in Collaboration with Sai Irrigation Micro Irrigation Company for designing and laying out subsurface drip system in the farmer’s sugarcane field at Nallantholuvu Village, Near Vellode. The visit gave a real time practical experience for the course “Design of Micro Irrigation Systems”. Principal, NEC, also visited the field. The students were accompanied with the course teacher, tutor and the senior faculty of the department.



Laying out subsurface drip system to farmers field

*We should look upon agriculture not just as a food-producing machine for the urban population, but as the major source of skilled and remunerative employment and a hub for global outsourcing.*

**M. S. SWAMINATHAN**



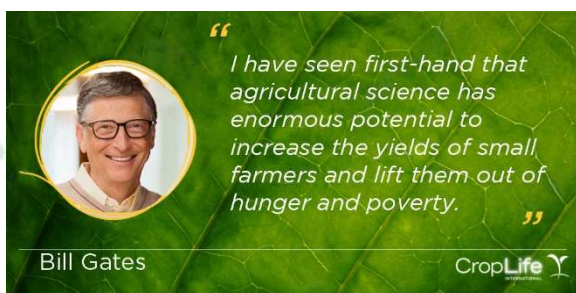
**PAPER PUBLICATION DETAILS**

- Prawin, A., Srikarthi, G., Pradeep Kumar, S., Praveen Kumar, V., and Suvain, K. K. "A Review on Performance and Operation of Grasscutter". International Journal of Research and Analytical Reviews, Vol. 10, No. 2, pg. No: 831-833, April 2023.
- Chandramohan, V., Rakesh, A., Nirmal Raj, M., Kavin Kumar, T. and Ravirajkumar, R. "Development of Turmeric Sower and Harvester : A Review". International Journal of Research and Analytical Reviews, Vol. 10, No. 2, pg. No: 687 – 695, April 2023.
- Karthikeyan, M., Kaviya, N., Pavithra, R., Sathyapriyan, R. and Subramanian, RM. "Design of Solar Dryer for Turmeric". International Journal of Research and Analytical Reviews, Vol. 10, No. 2, pg. No: 331 – 338, April 2022.
- Chandini, R., Sneha, A. and Nandhini, C. "Traditional Rice Variety: Poongar Rice Flat Noodles". International Journal of Research and Analytical Reviews, Vol. 10, No. 2, pg. No: 134 – 140, May 2023.
- Pradeep Kumar, K., Dhevayani, P., Parvathi, R., Aruna R. and Sathya, S. "Incorporation of Waffle by using Mushroom Powder". International Journal of Research and Analytical Reviews, Vol. 10, No. 2, pg. No: 217 – 223, May 2023.
- Kavya, S., Nandhini, C., Poornima, N., Brindha, S. and Naveena, P. "Development Of Ice Cream Using Vegan Milk And Herb". International Journal of Research and Analytical Reviews, Vol. 10, No. 2, pg. No: 271 – 278, May 2023.
- Sindhu, Madhumitha, Sowmitha, Srinithi and Mukilan. "Review On Enhancement Of Pressing The Dough For Chapathi Preparation". International Journal of Research and Analytical Reviews, Vol. 10, No. 2, pg. No: 600 – 608, May 2023.
- Komalabharathi, P., Mathumithran, R., Poonguzhali, T., Ramanarayanan, S. and Shirin Shafnas, K. "An Analysis Of Zero Energy Cool Chambers To Evaluate Life Of Fruits And Vegetables". International Journal of Research and Analytical Reviews, Vol. 10, No. 2, pg. No: 666 – 672, May 2023.
- Pradeep Kumar, K., Harini, R., Mary Sindhiya, V., Sobika, A. and Srithar, S. "Design And Development Of Cow Dung Cleaner". International Journal of



Research and Analytical Reviews,  
Vol. 10, No. 2, pg. No: 795 – 803,  
May 2023.

Suvain, K. K., Selvakumar, P.,  
Thillaiarasan, S., Elankeeran, V.  
and Elango K. "Performance And  
Evaluation Of Power Weeder – A  
Review". Journal of Emerging  
Technologies and Innovative  
Research, Vol. 10, No. 4, pg. No:  
448 – 450, April 2023.



## BOOK CHAPTER PUBLICATION DETAILS

Suvain, K. K. "Methods of Weed  
Control (Chemical and  
Biological)". Compendium of  
Agriculture and Allied Sciences,  
Vol. 1, pg. No: 171– 177,  
December 2022.

Mukilan, N. "Methods of Weed  
Control (Physical and Cultural)".  
Compendium of Agriculture and  
Allied Sciences, Vol. 1, pg. No:  
178– 188, December 2022.

## MEMORANDUM OF UNDERSTANDING

The main goal of the Memorandum of Understanding is to make it easier for industry and academic institutions to connect through visits, student projects, knowledge sharing, and joint research and consulting efforts.



**Universal Power Suppliers Private Limited, Bangalore**

"Investments in agriculture  
are the best weapons against  
hunger and poverty, and they  
have made life better for  
billions of people."



BILL & MELINDA GATES FOUNDATION

**PLACED STUDENTS DETAILS***Supto May 01-03-2023*

**BACHELOR OF ENGINEERING (AGRICULTURAL ENGINEERING)**



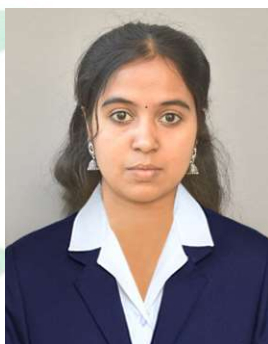
**ARUNA R.**  
(DXC - 4.20 Lpa)



**BHAVAN HARI KARTHI S. S.**  
(DXC - 4.20 Lpa)



**CHANDINI R.**  
(DXC - 4.20 Lpa)



**HARINI R.**  
(DXC - 4.20 Lpa)



**KAVIYA. N**  
(DXC - 4.20 Lpa)



**NIRMAL RAJ M.**  
(DXC - 4.20 Lpa)



**POONGUZHALI T.**  
(DXC - 4.20 Lpa)



**POORNIMA N.**  
(DXC - 4.20 Lpa)



**PRAWIN A.**  
(DXC - 4.20 Lpa)



**RAKESH A.**  
(DXC - 4.20 Lpa)



**SRINITHI G.**  
(DXC - 4.20 Lpa)



**THARSHINY M.R.**  
(DXC - 4.20 Lpa)





**MADHUMITHA R.**  
(CTS - 4.00 Lpa)



**PRAWIN A.**  
(CTS - 4.00 Lpa)



**SINDHU S.**  
(CTS - 4.00 Lpa)



**THARSHINY M.R.**  
(CTS - 4.00 Lpa)



**PRAWIN A.**  
(KGIS - 2.63Lpa)



**RAMANARAYANAN S**  
(KGIS - 2.63Lpa)



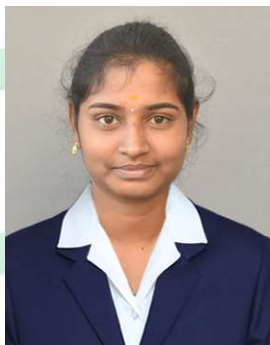
**SATHYAPRIYAN R.**  
(KGIS - 2.63Lpa)



**RAVIRAJKUMAR R.(ILM -**  
2.52Lpa)



**SAMINATHAN S. R.(ILM -**  
2.52Lpa)



**NAVEENA P.**  
(AEE BEE ACADEMY - 1.20Lpa)



**SRIKARTHI G.**  
(AEE BEE ACADEMY - 1.20Lpa)



**SOBIKA A.**  
(FOXCONN - 2.16Lpa)



**KARTHIKEYAN M.**  
(SKYPRO TECHNOLOGIES -  
2.04Lpa)



**THILLAIARASAN S.**  
(AVT MCCORNICK - 2.90Lpa)



**PRADEEP KUMAR S.**  
(MOBITECH - 2.66Lpa)



**ELANGO K..**  
(CRI PUMPS 2.0Lpa)



**DHEVAYANI P**  
(NANDHA POLYTECHNIC COLLEGE -  
1.44Lpa)



**DIVIYA M.**  
(CRI PUMPS 2.0Lpa)

**ACADEMIC TOPPERS**

**BACHELOR OF ENGINEERING (AGRICULTURAL ENGINEERING)  
(2022-2025 Batch)**



**GOWTHAM R.**



**KAVINAYA K.**



**SANJAY R.**



**VIGNESH S.**



**ACADEMIC TOPPERS**  
**BACHELOR OF ENGINEERING (AGRICULTURAL ENGINEERING)**

**(2021-2025 Batch)**



**SANTHIYA I**



**JAMUNADEVI S S**



**ABINAYA G**

**(2020-2024 Batch)**



**MANORANJANI P**



**FIZA TABASSUM A**



**PREETHA A R**

**(2019-2023 Batch)**



**SINDHU S**



**RAKESH A**



**MADHUMITHA R**

## MAGAZINE

### Food Processing-The Growth Engine

*P. Manoranjani, 3<sup>rd</sup> Year, Agri, NEC*

With people becoming health-conscious, the demand for certain variants like high-protein or low-fat food is also there. Traditional methods for processing the food are insufficient to satisfy the demands of the Indian market. The agricultural biodiversity of India can be conducive to the food processing industry. It is necessary to have processes that can add value to the products. Primary processing of food is unlikely to ensure that we have food and nutrition security. There is a need to introduce the latest technology in processing, packaging and distribution to ensure that food products remain fresh for a longer time. Benefits of livestock products like camel milk or goat milk can be realized if we know how to increase their shelf life. The latest technology in storage, packaging and distribution will add value to the food product.

### Food security with millets

*Priyanka, A., Assistant professor, Agri, NEC*

2023 is international year of the millets so the logo and the tagline are everywhere, from advertisements in papers, to food wrappers to railway tickets. There are 'millet meals' and suddenly everything from noodles to biscuits are labelled millets. Millets is a term used for varied crops that are small grained annual cereals, mostly from the 'grass family' Poaceae. They are grown primarily in tropics and semi tropical regions of Africa and Asia, and were the indigenous grains before white rice, maize and wheat became popular across the world. All millets are annual and drought resistant, with nutritive value better or equivalent to the common staples. You can grow millets even over barren land. You can grow them anywhere on the planet. It is ultimately the responsibility of people to recognize the goodness and shift to the production and consumption of millets. It is our responsibility to save our agriculture and save our planet.

### Regenerative Agriculture

*R. Sridharshini, Assistant professor, Agri, NEC*

Regenerative agriculture practices such as natural farming protect against further depletion of water tables, loss of biodiversity, soil degradation, and increase in greenhouse



gas emissions. They can enhance farmers' income while delivering environmental benefits. High-input, resource-intensive conventional agriculture practices cannot deliver sustainable food and agricultural production. We need to adopt holistic and sustainable solutions which are cost-effective, environment friendly and resilient to changing climatic conditions. Such practices need to be incorporated into national policies to ensure their nationwide adoption and effective implementation. Various studies have documented the effectiveness of Natural Farming in enhancing soil health, fertility, microbial biomass and soil respiration. To ensure sustainability of agricultural practices it is critical that in addition to policy support, adequate academic and research support is ensured.

### **Climate-Smart Agriculture**

*S. Haripriya, 4<sup>th</sup> Year, Agri, NEC*

Climate change is one of the most dangerous natural hazards that significantly impair the agricultural production of India. Among the various greenhouse gases, the concentration of carbon dioxide (CO<sub>2</sub>) was increased at the rate of 1.5 to 1.8 ppm per year. India is a largest producer of milk, pulses, spices, and cattle in the world, and it is heavily reliant on the climate change. So there is a great deal of concern about future climate changes and their effects on India's agricultural production. According to the estimations, agricultural production will need to rise by 60% in order to fulfill the estimated demand of food and animal feed in future. Moreover, threats to crops, livestock, and fisheries are anticipated to rise in the next decades as a result of climate change. So transformation and reorientation of agricultural production under the new realities of climate change gave rise to concept of climate smart agriculture.

### **Sustainable food production using hydroponics**

*R. Meharaj, 3<sup>rd</sup> Year, Agri, NEC*

Our current agricultural system is handling the massive task of fulfil the caloric needs of a population of 9.8 billion people by 2050. There are various factors responsible for declining the food production. In order to meet the expanding need for food, we must discover alternatives to the agricultural system. Many of the negative aspects of the world's present agricultural issues can be addressed via hydroponic farming. Farming Plants can be cultivated hydroponically, a farming technique that eliminates the need for soil and allows plants to thrive in nutrient-rich water. Climate change, dangerous infectious diseases, rising urbanization, and the depletion of natural resource deposits are just a few of the pressing

concerns facing humanity today. These issues are dramatically altering our worldwide lifestyles. In regions with severe droughts and poor soil quality, hydroponically farmed crops have the potential to deliver fresh, local food. By maximising the quantity, quality, and timing of the inputs to the plants, farmers are able to guarantee the maximum yield under hydroponics techniques.

### **AUTOMATION IN AGRICULTURE SYSTEM**

*S. Srithar, 3<sup>rd</sup> Year, Agri, NEC*

Automation farming covers all the practices that help with planting and harvesting with the aid of machines and other devices. These devices can be found on the farm itself, such as machinery to perform tasks more quickly and efficiently, or machines that help with precision and accuracy. Drones in agriculture can be used for several purposes, such as measuring soil quality and mapping out the size of the fields. Robots can also be used to help farmers with planting. Analytical farming tools can help determine the conditions of the soil and other materials like fertilizer and seeds. By using a variety of sensing equipment, farmers can get insight into the status of their fields and make decisions accordingly. This can help prevent the growth of the disease and maximize the yield of a harvest.

### **BIOCHAR - A QUALITY ENHANCER FOR CROPS**

*Dr. P. Komalabharathi, Associate professor, Agri, NEC*

Biochar is a carbon-rich solid product produced from the pyrolysis of biomass residues. It can be generated from any ligno-cellulosic biomass, including brushwood, waste from the harvest of timber, crop leftovers like rice and wheat straw, weedy shrubs and grasses, as well as animal manure. Pyrolysis is a thermochemical technique that produces biochar, bio-oil, and syngas derived from biomass. The process involves heating and thermally decomposing biomass under anaerobic conditions or limited oxygen supply with temperatures ranging between 400°C and 1200°C. The absence of oxygen enables biomass heating beyond its thermal stability limit, causing the creation of more robust products, including solid residues. The use of biochar in agricultural practises is a promising new technology with tremendous potential to maintain and enhance soil quality and nutrient cycling.



## **VERMICOMPOSTING: A STEP TOWARDS SUSTAINABILITY**

*Dr. Suvain. K. K, Assistant Professor, Agri, NEC*

Global production of solid wastes as a result of various anthropogenic activities such as urbanization, economic growth, and so on has become a serious ecological concern. In developing nations including India, these massive quantities of waste are not thoroughly disposed of owing to the inadequacy of sophisticated technologies for cost-effective recycling. Vermicomposting is a cutting edge solution for coping with the surge in waste by transforming organic compounds into nutritionally enriched compost for soils instead of dumping it in landfills. It is a nutritive organic fertilizer high in humus, nitrogen, phosphorus, potassium, micronutrients, and advantageous soil microbes such as nitrogen-fixing, phosphate-solubilizing bacteria, actinomycetes, and growth hormones. It is employed to promote soil productivity while also lowering the financial investment and the amount of synthetic fertilizers. Therefore, the adoption of such eco-friendly technologies would contribute to the prevalence of sustainability.

## **Zero Budget - Natural Farming**

*S. Preethi ,3<sup>rd</sup> Year, Agri, NEC*

Zero Budget Natural Farming (ZBNF) is the practice of growing crops without the use of any external inputs, such as pesticides and fertilisers. The phrase “Zero Budget” refers to all crops with zero production costs. The farmers revenue is increased as a result of ZBNF’s guidance towards sustainable farming methods that help to maintain soil fertility, assure chemical-free agriculture, and ensure a cheap cost of production. Natural Farming methods or principles was promoted by Mr. Subhash Palekar, an alternative to the Green Revolution’s methods. Increase organic residues on the soil, mixed cropping, no external inputs, use indigenous seed, moisture conservation, minimal disturbance of soil, and soil to be covered with crops 365 days, pest management through botanical extracts, no pesticides, no synthetic fertilizers, no herbicides and integrating animals and trees into farms.

## **Agricultural mechanization**

*K. Pradeep Kumar, Assistant professor, Agri, NEC*

Mechanization is a multi-dimensional concept and widely used in agriculture. Agricultural mechanization is the use of machinery and equipment, ranging from simple and

basic hand tools to more sophisticated, motorized equipment and machinery, to perform agricultural operations. In modern times, powered machinery has replaced many farm task formerly carried out by manual labour or by working animals such as oxen, horses and mules. It is a key tool to satisfy the need of global food security. Sustainable agricultural mechanization can also contribute significantly to the development of value chains and food systems as it has the potential to render postharvest, processing and marketing activities and functions more efficient, effective and environmentally friendly.

### **Carbon Footprints of Agriculture**

*A. Ratchanya, M. Seetha Lakshmi, 2<sup>nd</sup> Year, Agri, NEC*

Climate change being today's major issue is concerned with the unprecedented increase in natural resource exploitation and uncontrolled population increase, reaching in an irreversible point. Greenhouse gases (GHGs) responsible for such changes are emitted by a variety of natural as well as anthropogenic sources. Agriculture sector shares a major proportion of GHG emission. As the food demand is increasing with the rising population, the proportion of GHG emissions from agricultural sector is also increasing. The total amount of GHGs emitted by the processes in agricultural sector is regarded as carbon footprint of agriculture. Various activities related to agriculture such as plowing, tilling, manuring, irrigation, variety of crops, rearing livestock, and related equipment emit a significant amount of GHGs. Efficient use of fossil fuel and other non-renewable energy sources in the agriculture system, diversified cropping system, enhancing soil carbon sequestration by straw return, plantation, etc., crop rotation system, and limiting deforestation will be discussed as measures which may help to reduce the GHG emissions from agriculture sector.

### **DRONES IN AGRICULTURE**

*S. S.Bhavan Hari Karthi, 4<sup>th</sup> Year, Agri, NEC*

The use of drones in almost every sector of the economy is growing fast, but drone usage in the agricultural industry is booming. In many areas, drone use has become an essential part of large scale precision farming operations already. The data collected from drones recording fields help farmers plan their planting and treatments to achieve the best possible yields. Some reports indicate that using precision farming systems can increase yields by as much as 5%, which is a sizeable increase in an industry with typically slim profit



margins. Drones have already vastly altered the agricultural industry and will continue to grow in the coming years. While drone use is becoming more useful to small farmers, there is still a ways to go before they become part of every farmer's equipment roster, particularly in developing nations.

### **ORGANIC FARMING**

*A. Rakesh, 4<sup>th</sup> Year, Agri, NEC*

Organic farming system in India is not new and is being followed from ancient time. It is a method of farming system which primarily aimed at cultivating the land and raising crops in such a way, as to keep the soil alive and in good health by use of organic wastes (crop, animal and farm wastes, aquatic wastes) and other biological materials along with beneficial microbes (biofertilizers) to release nutrients to crops for increased sustainable production in an eco friendly pollution free environment. Organic production is a holistic system designed to the success stories optimize the productivity and fitness of diverse communities within the agro-ecosystem, including soil organisms, plants, livestock and people. The principal goal of organic production is to develop enterprises that are sustainable and harmonious with the environment.



**IF THE CONSERVATION OF  
NATURAL RESOURCES GOES  
WRONG, NOTHING  
ELSE WILL GO RIGHT.**

**M. S. SWAMINATHAN**

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