

# SDG-1 Annual Report 2019-20





End hunger, achieve food security and improved nutrition and promote sustainable agriculture

## VIT Organic Sustainable Farms

## **Vellore Institute of Technology**

Vellore – 632014 Tamil Nadu, India <u>www.vit.ac.in</u>







### **Report of VIT-Vellore Campus**

VIT School of Agricultural Innovations and Advanced learning (VAIAL), was established in the year 2018 to promote sustainable smart agriculture to combat the global challenges of next-generation and promote integrated and self-sustainable organic farming. VAIAL aims to offer world class learning and training experience to the students in science, technology and business aspects of agriculture, to serve the farming community with custom-designed technologies for improved agricultural production and enhanced productivity and to innovate eco-friendly technology for uplifting the agro-industry. Core activities of the school revolves around teaching in Agriculture, training of students, organizing farmers training programmes, outreach and field programmes for the farmers as well as research in agricultural and allied sectors on a techno-commercial scale.

#### **Student Activities**



Plate 1. Nursery field preparation - Puddling



Plate 2. Nursery field preparation - Levelling



Plate 3. Nursery field preparation - Digging



Plate 4. Nursery field preparation - Plastering





## Practicing Agronomy







## Livestock and poultry to complement farm activities



**Gir Cows:** Semi-intensive system of rearing where animals are kept in concrete sheds during night and extreme climate with provision for feeding, watering and cooling mechanisms (fans).



**Rabbits:** Intensive system of rearing where animals are kept in concrete sheds with modified roofing and separate cages for kindling, kits and bunnies. The shelter is provided with provision for feeding, fodder and watering for the whole duration of day and night.





## 2 ZERO HUNGER

## Access to food security knowledge

#### Events Organised during 2019-20 at VAIAL

Programme Type	Title	From Date	To Date	No of Participants
Workshop	Drones in Agriculture	25-02-2020	25-02-2020	120
Workshop	Water resource management	22-02-2020	22-02-2020	60
FDP	2D Resistivity Imaging A Plausible solution for Engineering and geological problems	20-02-2020	20-02-2020	30
FDP	Significance of Hydrological intervention in Groundwater Studies	19-02-2020	19-02-2020	30
Training	aining Coconut based integrated farming system		19-02-2020	60
FDP	Patenting your inventions	24-01-2020	24-01-2020	40
Training	Agripreneurship	17-12-2019	17-12-2019	238
Workshop	Lab Biosafety	07-12-2019	07-12-2019	30
Workshop	Soil Health Water Quality & Remediation	05-12-19	05-12-19	50
Training	AgriExpo	01-11-19	02-11-19	3500
Workshop	Serological and PCR based detection of Plant viruses	03-10-2019	04-10-2019	20
FDP	Precision Agriculture Technologies and Challenges	08-08-2019	08-08-2019	25
Workshop	Quality assurance and testing of tissue culture plants	17-07-2019	17-07-2019	17

**News Article Links – AgriExpo :** (<u>https://www.thehindu.com/news/national/tamil-nadu/agri-expo-and-workshop-gets-underway-at-vit/article29858604.ece</u>)





#### Few ongoing funded projects related to food and agriculture

PI	Project Title	Funding Agency	Sanctioned Date	Sanctioned Amount (Rs)
Prof. Sowbiya Muneer	Mulching sheet application for crop improvement and water conservation in arecanut	Balaji Poly Packs	01-01-20	2600000
Dr A Sathiavelu & Dr. P. Anbarasan	Agri-Clinics and Agri-Business Centres (AC&ABC) Scheme	MANAGE	15-04-19	1225000
Dr. S. Babu & Dr. S. Vino	Development and validation of signature peptide-proteome biomarkers for improved and precise detection of root wilt infection in coconut.	DST	10-05-18	4174000
Dr. S. Babu	Quality Assurance and Testing of Tissue Culture Plant Materials	DST	24-05-18	12779000

#### **Ongoing Industry Consultation Project**

Dr. Sowbiya Muneer Mulching sheet application for crop improvement and water conservation in arecanut	Balaji Poly Packs	14-12-19	26,92,000
---	----------------------	----------	-----------

#### **Farmers Attachment Programme**

Objective of the programme is to inculcate the real life experience of farming from the farmers among the students and to provide a platform for farmers to share their field problems with the experts in VAIAL to avail timely solutions. Third year students of B.Sc.(Hons.) Agriculture program are attached to a specific farmer. The student interacts with the farmer and learns farming related issues and identifies the farmer's problems and reports to the experts in VAIAL. Solutions are provided to the student, who in turn delivers the same to the farmer within 72 hrs. Students act as links between farmers and subject matter experts.



## Germplasm Conservation and maintenance of genetic diversity

Black gram Accessions	Source
NO-5131, NO-236818, PLU-1050, PLU-710, PLU-461, NO-40, KU- 96-3, PU-30, NUL-7. Jalpaiguri Local, IPU-94-1, PKGU-03, Mash- 114, Pant Urd-19, ADT-6, KPU-405, VBN-8, COBG-653, ADT-5, PDU-6, IPU-2-43, NO-981120, KUG-479, IPU-99-18, PLU-294, Pant Urd-35, IPU-2K-22, PDU-3, CO6, ADT-3, Pant Urd-31, KUG- 391, TU-942, PLU-144, PDU-2E	IIPR, Kanpur
Urad kaala, Urad kharif, Urad Hara, Urad Badwaala	Maharashtra farmer
VBN 6, VBN 5, VBN 8, VBN 7, VBN 2, VBN 1, VBN 3, VBN 4, MDU 1, CO5	Vamban, Tamil Nadu
Arcot LOCAL, Chidambaram LOCAL	None

Traditional Rice Variety	Duration (Days)	Special Characters	
Basumathi	140	Long grain aromatic rice.	
Mappillai samba	160	Gives strength and stamina.	
Swarna masoori	135	Aromatic medium grain rice	
Paal kudai vazhai	129	Red in colour. Very high in fat content.	
Garudan Samba	150	Rich in nutrients and fibre.	
Kaalan Namakku	120	Suitable for saline soil condition.	
Navara	140	Grains red in colour, ideal weaning food for children	
Thooya malli	140	Rice is fine and white. At flowering earheads look like flowers	
Athur kichili samba	140	Suitable for dry sowing. High in protein and very high in iron.	
Illupai poo samba	104	Fragrance like Madhuca flower. Useful for diabetes & knee pain	
Kaatu yanam	180	Grain is Red in colour, bold rice. Resistant to pest and diseases.	
Neelan samba	180	Rice is red and resistant to brown plant hopper and earhead bug	
Rani kandha	120	Used as flattened rice	
Poongar	105	Popularly known as women's rice and cures hormonal issues.	
Karupu kavuni	140	Grain is long and bold in shape. It possess medicinal properties	
Kullankar	120	Rice is red in colour. Highly drought resistant.	
Karudan Samba	150	Nutty flavoured and it is rich in nutrients and fibre	





Сгор	Name of the Germplasm/Variety	Salient characters	
	Rasthali	Choice table variety	
	Monthan	Culinary variety, resistant to drought	
	Moris Green	Long distance transportation	
	Red banana	Good keeping quality, red pseudostem, midrib and fruit	
	Yelakki	Long distance transport	
	Grand Naine/G-9	Good keeping quality, international variety	
	Karpooravalli	Tolerant to corm weevil, suitable for leaf production	
Banana	Semmatti/Red Matti	Low in sugar and high in ascorbic acid	
	Malaimatti/Hill Matti	Suitable for hilly regions	
	Singan	Indigenous variety of Kanyakumari	
	Thenmatti/Honey Matti	Sweet taste	
	Aathu Kathali	-	
	Karumthuzhuvan/Black Rasthali	Erect flower	
	Palaymkondan	Natural cooling effect	
	Poongathali/Royal Banana	Meant for the Travancore kings	
	Rasa Kadali	Sweet taste	
Tomato	PKM 1	Typical green shoulder, long distance transport	
Radish	China King	White colour roots	
Grain Amaranth	RMA 4	Creamy white seeds	
Cluster Beans	Local Type	High yielder	
Lab Lab	Local Type	High yielder	
Brinjal	Elavampadi Local	Spiny, glossy pink colour	
Turmeric	Local Type	Small sized fingers	
Colocasia	Local Type	Robust growth, small sized tubers	
Coconut	Tall Type	High yield, copra production	
Marigold	African Type	Xanthophyll pigments	
Leafy amaranthus	Local Type	High yielder with consumer preference	

**Endangered Species in VIT-** *Calophyllum inophyllum, Guaiacum officinale, Pterocarpus marsupium, Pterocarpus santalinus (Near Threatened) and Santalum album* 

#### *List of Drought tolerant species planted in the VIT Vellore campus*

Phoenix dactylifera	Cocus nuifera
Acacia	Dalbergia sissoo
Cassia fistula	Mangifera indica
Ficus	Phyllanthus emblica
Terminalia	Pisidium guajava
Azardirachta indica	Thespesia populnea
Albizia lebbeck	Eugenia jambolana
Artocarpus heterophyllum	Artocarpus heterophyllus
Annona reticulata	Wodyetia plam
Artocarpus	





## List of tree species planted in VIT Vellore campus

1) Alstonia scholaris	54) Murraya koenigii (curry leaf)
2) Adeanthera paronina	55) Mimusops elengi
3) Azardirachta indica	56) Moringa olerifera
4) Albizia lebbeck	57) Nyctanthes
5) Artocarpus heterophyllum (jack)	58) Ochna kirkii (mickey mouse)
6) Acacia auriculiformis	59) Peltophorum ferrugineum
7) Annona reticulata	60) Pterocarpus marsupium (vengai)
8) Artocarpus (altilis)	61) Phyllanthus emblica (Indian goose berry)
9) Aegle marmelos (vilvam)	62) Putranjiva roxbughii
10) Anacardium accidentale (cashew nut)	63) Pisonia alba
11) Bauhinia	64) Podocarpus
12) Bignonia magapotomica	65) Polyalthia longifolia pendula
13) Brachychiton acerifolius	66) Pongamia pinnata
14) Brownea	67) Pisidium guajava
15) Butea	68) Samanea saman
16) Cassia fistula	69) Saraca asoca
17) Casarina equisatifolia	70) Schotia latifolia
18) Cassia javanica	71) Sesbania grandiflora (agathi)
19) Carica papaya	72) Swietenia mahogany
20) Calophyllum inophyllum	73) Sapthodea companulata
21) Cordia sebestena	74) Sterculia foetida
22) Cocus nuifera	75) Sterculia alata
23) Conocapus erectus	76) Simarouba glauca
24) Callistiemon lanceolatus	77) Syzygium aquem (water rose apple)
25) Ceiba speciosa	78) Tamarindus indica
26) Citrus (lemon)	79) Tabebuia rosia
27) Clusia rosia	80) Tabebuia argentea
28) Couroupita guianensis	81) Tabebuia avellanedae
29) Dalbergia sissoo	82) Terminalia catappa
30) Delonix elata	83) Terminalia arjuna
31) Delonix regia	84) Terminalia mentally
32) Eugenia uniflora (Surinam cherry)	85) Terminalia belliria (thandri)
33) Ficus benjamina	86) Tectona grandis
34) Ficus religiosa	87) Thespesia populnea
35) Ficus racemosa	88) Gmelina arborea (kumil teak)
36) Ficus bengalensis	89) Carambola (star fruit)
37) Ficus lyrate	90) Eugenia jambolana
38) Filicium decipiens	91) Pterocarpus santalinus (red sandal)
39) Guaiacum officinale	92) Santalum album (sandal)
40) Holoptelea integerifolia (aya)	93) Barringtonia
41) Hibiscus tiliaceus	94) Neolamarckia cadamba
42) Jacaranda	95) Melia dubia (malai vembu)
43) Kigelia pinnata	96) Ficus racemose (athi)
44) Lannea coromandelica (othiyan tree)	97) Artocarpus heterophyllus (jack fruit)
	98) Agathis robusta
45) Lagerstroemia speciosa 46) Lawsonia inermis	
40) Lawsonia inermis 47) Leucaena leucocephala (subabul)	99) Caryota urens palm
	100) Muntingia calabura
48) Madhuca longifolia (illupai)	101) Roystonea regia plam
49) Mangifera indica	102) Wodyetia plam
50) Manilkara zapota	103) Borassus (panai maram)
51) Michelia champaca	104) Date palm
52) Millettia ovalifolia	105) Plumeria rubra
53) Milligtonia hortensis	





Vermicomposting Unit





Vermicomposting is a well-known waste recycling technology to produce vermicompost, a nutrient rich organic manure using earthworms. There exists a huge demand for vermicompost in agricultural farms, gardens and landscaping sectors. VIT vermicomposting unit is established with an objective of recycling leaf litter (dry leaves) waste collected in the Vellore

campus on daily basis and producing vermicompost for usage in agricultural fields as manure, and also as manure for the trees, plants, bushes and lawns in the campus premises. The dry leaves are processed with farmyard manure (FYM) and earthworms. On an average, the capacity of this unit is 120 tons of vermicompost per year. The whole unit is constructed with eco-friendly materials with natural insulation.

#### Utility of this unit:

i) **Teaching**: Students of agriculture and biotechnology degree programmes in VIT have biocomposting and waste recycling topics in syllabi and this unit will be used for teaching practical classes which would provide experiential learning experience.

ii) **Students projects**: Students of agriculture and all other branches of science and engineering in VIT will be exploring the processes, products, value addition, new technology development etc., by taking up UG and PG projects.

iii) **Research:** Faculty members and research scholars will be doing intensive research with the support of government funded projects and improving the nutrient concentration, supplementation for developing new products, field level testing etc.,





iv) **Entrepreneurship**: Students of agriculture, biotechnology and other branches will have the opportunity of getting trained in the technology to take up entrepreneurship start-ups in vermicomposting.

v) **Technology transfer to farmers**: Through the farmers training programmes and field level demonstrations, the technology will be transferred to the farmers. Scientific and technical support will be provided to the farmers for setting up their own vermicomposting units.

vi) **Training students of other institutes**: Training programmes will be organized to the students of Schools and Colleges to create awareness on waste to wealth concept.

vii) **Product development, patenting and commercialization**: The vermicompost products and processes that are being developed in this unit will be patented and commercialized.

**Uniqueness:** To our knowledge, this is the first established and functional vermicompost unit in the country that recycles leaf litter waste as exclusive source material, along with farm yard manure, to produce vermicompost manure.

**Expansion:** Similar vermicomposting unit will be established in other campuses of VIT. Vermicomposting using food waste is also proposed.

## FEW VIT VAIAL FARM PRODUCES





### Healthy and affordable food choices

Healthy, wholesome food and a variety of dining options are available to the hostel students and all VIT employees and students inside the campus through messes, food courts and various eateries. Given the great diversity of tastes and cultures, students have access to multi-cuisine catering services that serves vegetarian, non-vegetarian, Indian and International food. Students can also choose and order from a limited list of special dishes available on prior registration at the Restaurant-style Mess. Dining areas are open as early as 7:00 AM with night canteens available from 10:30 PM to 12:30 AM. The kitchens are hygienically operated and adhere to the prescribed food standards. A balanced menu is prepared every month by the Student Mess and Menu Committee in consultation with the hostel administrators. A sample mess menu is given below.

DAYS	BREAK FAST	OF TECHNOLOGY: LADIES HOSTEL SPECIAL MESS	NACKS	DINNER
Monday 09.12.19 23.12.19	Idly, Vada, Sambar, Peanut/tomaloChutney Pineapple Juice Veg: Multi Grain Sundal Non Veg: Boiled Egg	Phulka, Mutter masala, Tamarind Rice White Rice, Sambar, Rasam, Cup Curd, Bitter guard fry, Dahi Vada, Fryums Sweet : Friut Kesari	Burger	Chole Bhatura, White Rice, Sambar, Rasam, Loose Curd Nool Khol Sabj Palak Soup, Banana Seasonal Fruit
Tuesday 10.12.19 24.12.19	Masala Dosai, Sambar, Chutney Mosambi Juice Veg : Saute Black Chenna Sundal Non Veg : Scrambled Egg	Chapathi, Dhal Thadka, Jeera Rice, White Rice, Sambar, Rasam, Cup Curd, Sepan Kizhangu Fry, Papad Veg : Soya Chunks Gravy, Sweet:Kulfhi Non Veg: *Fish Curry/Fish Fry	Cutlet 2 Nos Ginger Tea	Roti, Dingiri Mutter, Veg / Egg Noodles White Rice, Sambar, Rasam, Loose Curd Botte Guard Sabji Tomato Soup Papaya
Wednesday 11.12.19 25.12.19	Mooli Paratha, Curd, Pickle, Upma Chutney, Mango Milkshake Veg : Sprouted Moong Dhal Non Veg : Masala Omlette	Stuffed Kulcha, Rajma dhal, Ghee Rice White Rice, Vatha Kulambu, Rasam, Cup Curd, Keerai Kootu, Appalam Sweet: Badhusha /Laddu	Raw banana/onion Bhajji	Chapati, Dhal Rajasthani, Kal Dosai, Veg Stew, White Rice, Sambar, Chutney, Rasam, Loose Curd Veg Noodle Soup Veg : Checese Balls (4 Pieces) Non Veg : Chicken 65 (4 Pieces)
Thursday 12.12.19 26.12.19	Masala Uthappam, Pav Bhaji Masala, Sambar, Chutney Pomegranate Juice Veg : Moochai Payaru Sundal Non Veg : Boiled Egg Masala	Phulka, Lauki Dhal,Veg Hydrabadi, Mint Rice White Rice, Sambar, Rasam, Cup Curd Beet Root Sabji, Fryums Sweet : Rasmalai/ Rasgula	Egg Puff/Veg Puff Hot Badam Milk	Tandoori roti, White Rice Sambar Rasam, Loose Curd, Cluster Beans Poriyal Chow Mein Soup, Seasonal Fruit Veg : Paneer Chat pot/ Paneer Do Piazha Non Veg : Ginger Chicken / Pepper Chicken
Friday 13.12.19 27.12.19	Poori, Potato Masala, Brown Bread, Apple Juice Veg : Green Gram Sprouts Non Veg : Omlette	Phulka, Malai Kofla gravy, Coconut Rice White Rice, Sambar, Rasam, Cup Curd Green Gram Pumpkin Sabij, Papad Sweet: Carrot Halwa / Bread Halwa	Mysore Bonda', Chutney	Chapathi, Yellow Dhal, Veg Dopiyaza gravy White Rice, Sambar, Rasam, Loose Curd Peerkankai Poriyal, Hot and Sour Soup, Fruit salad with Lee cream
Saturday 14.12.19 28.12.19	Dosai, Sambar Chutney, Papaya Juice Veg : Bengal Gram Sprouts Non Veg : Scrambled Egg	Butter Naan, Butter pancer masala, Lemon Rice White Rice, Pappu Koora,Rasam, Cup Curd Potato Fry, Fryums Sweet : Coconut Barfi	Pani Poori (5 nos)	Phulka, Dhal, Kadai Veg, Lachha Paratha White Rice, Sambar,Rasam, Loose Curd Sweet Corn Soup Banana

Note: 1. Bread, Butter and Jam will be provided during Breakfast

2. Tea, Coffee and Milk (150 ml) will be provided along with breakfast and snacks; Milk and Coffee will be provided during dinner

- 3. Dhal powder, Ghee and Lemon Wedges will be provided during lunch and Vegetable salad will be provided during lunch
- 4. Curd 2 Cups and Banana 2 no's only will be provided; Seasonal Fruits (apart from Banana) will be served during dinner 5. Fish curry/Jish Fry /Mutton Briyani to be provided atleast once in a month

TUTCA lenu Co LADIES HOSTEL

Associate of the transformer of VIT University, Vello: 632 914

Chief Warden Ladies Hostel Vellore Institute of Technology (VIT) (Deemad to be Criterialy under color: 3 of the UGC (2005) Vellore - 532 014, TH, India

adies Hostel

Vellore - 632 014, TN, India

llore Institute of Tachnology (VIT) and table University under sedan 3 of the USC Ad. 1955



## 2 ZERO HUNGER

## **Report of VIT-Chennai Campus**

### PREAMBLE

Urbanization and population exploitation have an impact on food utilization. In developing countries, the capacity to produce food for the entire population is limited. Zero waste management of VIT promotes and develops sustainable and professional waste management system in campus through the mission by promoting resource efficiency over sustainable production and consumption. In addition, all kinds of research and projects have been accomplished for the dissemination of information.

### POLICIES: FOOD AND NUTRITION SECURITY

Researchers are working on developing more sustainable food production methods and achieve its mission through promoting resource efficiency through sustainable production and consumption. Some clubs like health club provides awareness among all about physical and mental health, awareness about various health issues, its possible treatment and prevention, rendering social service in the form of visits to needy, trying to meet their needs, wastage of food etc., observing various health related days and to highlight its importance, conducting fun events which involve either mental or physical wellbeing, thus stating the importance of health. For eliminating hunger, VIT provided donations to government funds during various natural calamities and pandemic for meeting the essential purpose for the affected people.

### SUSTAINABLE FOOD PRODUCTION

Sarva Shiksha Abhiyan (SSA), Scheme for Prevention of Alcoholism and Substance (Drugs) Abuse conducted various awareness programs, visited orphanage and old age home. Based on the Curriculum Ethics and Values , the students creates consciousness through NSS programs on leading a healthy life, malnutrition, use of available land for producing our own food, risk factors of using tobacco and liquors. The Youth Red Cross club of VIT Chennai inspires, encourages and initiates the student members in all forms of humanitarian activities in order to minimize the human sufferings, alleviation and even prevention, thus contributing to create a more congenial climate for peace. VITeach is a student run social club at VIT Chennai. Students from different branches and batches come together to teach the children of a government school in nearby villages, Chennai. The Vellore Institute of Technology (VIT) contributed ₹1.25 crore to the Tamil Nadu Chief Minister's Public Relief Fund for COVID-19 relief work.





S. No.	Date	Quantity	Amount (Rs.)	Handed over to
1	7.4.2020	Rice -250 kg, Wheat flour- 100 kg	15,500	Commissioner Office, Chennai Corporation
2	18.4.2020	100 bags of groceries	70,800	Rajiv Gandhi Nagar, Melakottaiyur
3	18.4.2020	200 bags groceries	100,000	Vandalur Taluk Office
4	21.4.2020	Rice -625 kg	22, 500	Tiruporur MLA Thiru Idhayavarman
5	9.5.2020	100 bags of groceries	38,000	Dr.Parasuraman, MS Swaminathan Foundation
6	28.03.2020	-	1.25 Crore	Chief Minister's Public Relief Fund (CMPRF)



Provisions being handed over to Corporation Chennai (Rice -250 kg, Wheat flour-100 kg)







NSS VIT distributed provisions to Rajiv Gandhi Nagar, Melakottaiyur, Kanchipuram



NSS VIT distributed provisions to Rajiv Gan Nagar, Melakottaiyur, Kanchipuram









Provisions being handed over to Thiruporur MLA

Provisions being handed over to MS Swaminathan Foundation

## VIT donates ₹1.25 crore to CMPRF

The Vellore Institute of Technology (VIT) on Saturday contributed ₹1.25 crore to the Tamil Nadu Chief Minister's Public Relief Fund. The demand draft for ₹1.25 crore was handed over to the Vellore District Collector A. Shanmuga Sundram on Saturday.

VIT founder and chancellor G. Viswanathan said the amount was one day salary donated by faculty and staff of Vellore Institute of Technology (Vellore and Chennai campuses) and the contribution made by the management of VIT. Mr. Viswanathan said that VIT would extend all necessary help to the government in its fight against COVID-19.

## **Vellore Institute of Technology**

Vellore – 632014 Tamil Nadu, India www.vit.ac.in

