

THE LEAF

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Newsletter of VIT School of Agricultural Innovations and Advanced Learning (VAIAL)

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Dear Readers,

It is indeed a great pride to launch this first issue of our e-newsletter 'The Leaf'. VAIAL is working and progressively for improving its accomplishments. In this issue we will recount the status and landmarks of the school, faculty and students that has transpired until now. This issue highlights the active participation and contribution in various activities by faculty members and achievement of students. I hope you will continue to join us in this journey which we are embarking in this newsletter



VIT SCHOOL OF AGRICULTURAL INNOVATIONS AND ADVANCED LEARNING (VAIAL)



ABOUT VIT

VIT is emerging as a benchmark for the continuous journey towards excellence among the institutions of higher education in the field of technology in the country. Its values of equality, transparency and healthy collaboration have been ably guided by its founder Dr G. Viswanathan, renowned for his principled life devoted to public service.

The ubiquitous sense of joy and enthusiasm observed in the campus bears testimony to the positive learning and living experiences enjoyed by every student at VIT. Ours is a place where opportunities for holistic education as well as recreation are maximized, and distractions are minimized.

VIT Students get to feel the taste of a borderless world through a heterogeneous group of students from across the globe who have made VIT their institution of choice.

ABOUT SCHOOL

VIT School of Agricultural Innovations and Advanced Learning (VAIAL) is engaged in education. Agricultural research and extension. Core activities of the school revolve around teaching in Agriculture, training of organizing farmers students, training programmes, outreach and field programmes for the farmers, as well as research in agricultural and allied sectors. Integrated and self-sustainable organic farming is the main focus of the school. The school facilities teaching, research, and extension activities in agriculture. The school imparts agricultural education through modern technology in and off the field.





The School offers B. Sc. Agriculture (Hons.) which is a four year degree program

VAIAL

Vision:

To be a forerunner in developing and demonstrating sustainable smart agriculture to combat the global challenges of nextgeneration farming.

Mission:

 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.
To innovate eco-friendly technology for uplifting the agroindustry.

Awards and Recognitions

'Nodal Institute to offer Diploma in Agricultural Extension Services to Fertilizer and Agricultural Input Shop Owners' Department of Agriculture, Govt of Tamil Nadu.

Nodal Institute to offer Skill Development Programme in Agricultural Biotechnology' Department of Biotechnology, Ministry of Science and Technology, Govt of India.

"Nodal Training Institute to offer Agri Entrepreneurship Training' Ministry of Agriculture and Farmers Welfare, Govt of India.

'Nodal Centre to Implement AKRUTI (Advance Knowledge and Rural Technology Implementation) Programme' Department of Atomic Energy, Govt of India.

FACULTY DIVERSITY

VAIAL faculties are remarkable in all aspects and are the product of premier national and international institutions.

The faculty are trained in reputed institutions of countries like the USA, UK, Korea, France, Canada, Switzerland, Australia, South Africa, Israel, Germany, Ethiopia.



UNIQUENESS

The academic program in VAIAL ensures activity-based learning through challenging experiments and field visits. The students get international exposure through Adjunct professors. They also receive industry exposure by sessions on contemporary topics, industrial visits and agro-industry tieups. Apart from this, the school conducts sensitization and training sessions related to placement and entrepreneurship. VAIAL students are encouraged and involved in research and even have publications. Students are encouraged through Funding for the idea-to-prototype projects from VIT Technology Business Incubator. The students get a rare opportunity to connect with the farmers directly through farmer's attachment and Kisanmitr Program



Focus Areas of Research

The problem of decreased production of areca nut due to moisture loss in the soil is being tackled by VAIAL faculty using mulching sheet application. Application of silver and bioluminescent mulching sheet with a micron size range of 20-150 microns on the preservation of soil moisture, enhancing biological activities, and improving soil chemical compounds are being studied.



The use of LED's as assimilation lights for better energy efficiency and enhanced crop productivity, particularly horticultural products such as leafy vegetables and ornamental plants, is being studied. This can lead to low use of pesticides, biofiltration of indoor air.

Target-based chloroplast proteomic discovery, cross-talk, signalling, and tolerance mechanism under drought stress in okra genotypes (Abelmoschus esculentus L.). Encapsulate the drought stress-induced molecular/physiological mechanisms in response to severe and prolonged water deficiency and focus on the molecular response of chloroplasts in okra genotypes.

Analysis of soil nutrient status of the soil. VAIAL faculty are also working on molecular cross-talk mechanism and microbiome engineering

Biopesticides are generally considered to be a categorically lower risk option and can be a highly effective alternative to FAW management. Identification of the best microbial agent to control and the development of same into the commercial formulation.









Publications impact factor 3 and above

- Guerrero-Ferreira Ricardo C., Mario Hupfeld, Sergey Nazarov, Nicholas MI Taylor, Mikhail M. Shneider, Jagan M. Obbineni, Martin J. Loessner, Takashi Ishikawa, Jochen Klumpp, and Petr G. Leiman. "Structure and transformation of bacteriophage A511 baseplate and tail upon infection of Listeria cells." The EMBO Journal 38, no. 3 (2019): e99455.
- Mazumdar Purabi, Pooja Singh, Subramanian Babu, Ramamoorthy Siva, and Jennifer Ann Harikrishna. "An update on biological advancement of *Jatropha curcas* L.: new insight and challenges." Renewable and Sustainable Energy Reviews 91 (2018): 903-917.
- Jha Madan Kumar, Ankit Shekhar, and **M. Annie Jenifer**. "Assessing groundwater quality for drinking water supply using hybrid fuzzy-GIS-based water quality index." Water Research 179 (2020): 115867.
- Natarajan Lokeshwari, Sonal Omer, Nishta Jetly, M. Annie Jenifer, N. Chandrasekaran, G. K. Suraishkumar, and Amitava Mukherjee. "Ecocorona formation lessens the toxic effects of polystyrene nanoplastics towards marine microalgae *Chlorella* sp." Environmental Research 188 (2020): 109842.
- Annamalai Mohan, and Kalaichelvan Gurumurthy. "Enhanced bioleaching of copper from circuit boards of computer waste by *Acidithiobacillus ferrooxidans*." Environmental Chemistry Letters 17, no. 4 (2019): 1873-1879.
- Sahithi Bhuma Mani, Kaukab Razi, Musa Al Murad, Avanthika Vinothkumar, Lincy **Kirubhadharsini** Saravanan Jagadeesan, Ryong Sowbiya Benjamin, Byoung Jeong, and Muneer. "Comparative physiological and proteomic analysis deciphering tolerance and homeostatic signaling pathways in chrysanthemum under drought stress." Physiologia Plantarum 172, no. 2 (2021): 289-303.
- Al Murad Musa, Kaukab Razi, Lincy Kirubhadharsini Benjamin, Jeong Hyun Lee, Tae Hwan Kim, and Sowbiya Muneer. "Ethylene regulates sulfur acquisition by regulating the expression of sulfate transporter genes in oilseed rape." Physiologia Plantarum 171, no. 4 (2021): 533-545.

Cumulative Impact Factor of Publications by the School: 221.29



Cumulative NAAS Rating of Publications by the School: 395.57





- Khan Adil, Abdul Latif Khan, **Sowbiya Muneer**, Yoon-Ha Kim, Ahmed Al-Rawahi, and Ahmed Al-Harrasi. "Silicon and salinity: crosstalk in crop-mediated stress tolerance mechanisms." Frontiers in Plant Science 10 (2019): 1429.
- **Muneer Sowbiya**, and Jeong Hyun Lee. "Hazardous gases (CO, NO x, CH 4 and C 3 H 8) released from CO 2 fertilizer unit lead to oxidative damage and degrades photosynthesis in strawberry plants." Scientific Reports 8, no. 1 (2018): 1-9.
- Lilly Jimmy John, and **Babu Subramanian**. "Gene network mediated by WRKY13 to regulate resistance against sheath infecting fungi in rice (*Oryza sativa* L.)." Plant Science 280 (2019): 269-282.
- Subramaniyan Vishnupriya, and **Kalaichelvan Gurumurthy**. "Diversity of probiotic adhesion genes in the gastrointestinal tract of goats." Journal of Cellular Biochemistry 120, no. 8 (2019): 12422-12428.
- Sankari Mohan, Priya Rajendra Rao, Hridya Hemachandran, Phani Kumar Pullela, Iftikhar Aslam Tayubi, **Babu Subramanian**, K. M. Gothandam, Pooja Singh, and Siva Ramamoorthy. "Prospects and progress in the production of valuable carotenoids: Insights from metabolic engineering, synthetic biology, and computational approaches." Journal of Biotechnology 266 (2018): 89-101.
- **Muneer Sowbiya**, Hai Kyoung Jeong, Yoo Gyeong Park, and Byoung Ryong Jeong. "Proteomic analysis of aphid-resistant and-sensitive rose (*Rosa hybrida*) cultivars at two developmental stages." Proteomes 6, no. 2 (2018): 25.
- Singh Pooja, Purabi Mazumdar, Jennifer Ann Harikrishna, and **Subramanian Babu**. "Sheath blight of rice: a review and identification of priorities for future research." Planta 250, no. 5 (2019): 1387-1407.
- Kumar Ashwani, Kumari Pooja, Gupta Kritika, Singh Manjot, **Tomer Vidisha**. "Recent advances in extraction, techno-functional properties, food and therapeutic applications as well as safety aspects of natural and modified stabilizers." Food Reviews International.(2021): 1-44.
- Harishkumar R, Christopher J G, Ravindran R, **Selvaraj C. Immanuel.** "Nuciferine attenuates doxorubicin induced cardiotoxicity: An in vitro and in vivo study ". Cardiovascular toxicology 21, no. 11 (2021): 947-963.
- Choudhary SK, Kumar V, Singhal RK, Bose B, Chauhan J, Alamri S, Siddiqui MH, Javed T, Shabbir R, **Rajendran Karthika** and Iqbal MA. Seed Priming with Mg (NO3) 2 and ZnSO4 Salts Triggers the Germination and Growth Attributes Synergistically in Wheat Varieties. Agronomy 11, no.11(2021): 2110.
- Kaukab Razi, **Sowbiya Muneer**. Drought stress-induced physiological mechanisms, signaling pathways and molecular response of chloroplasts in common vegetable crops. Critical Reviews in Biotechnology. 41 no.5(2021): 669-691
- Kaukab Razi, Dong Won Bae, **Sowbiya Muneer**. Target Based Physiological Modulations and Chloroplast Proteome Reveals a Drought Resilient Rootstock in Okra (Abelmoschus esculentus) Genotypes. International Journal of Molecular Sciences 22, no.23 (2021):12996.
- Durgesh Kumar Tripathi, Kanchan Vishwakarma, Vijay Pratap Singh, Ved Prakash, Shivesh Sharma, **Sowbiya Muneer**, Miroslav Nikolic, Rupesh Deshmukh, Marek Vaculík, Francisco J Corpas . Silicon crosstalk with reactive oxygen species, phytohormones and other signaling molecules. Journal of Hazardous Materials 408(2021): 124820.



Funded Projects

Department of Science and Technology, GOI Rs. 41,74,000

Development and Validation of Signature Peptide-Proteome Biomarkers for Improved and Precise Decision of Root Wilt - Dr. S. Babu, Dr. S. Vino

Certificate course on Agricultural Biotechnology, Quality Assurance and Testing of Tissue culture plant materials - Dr. S. Babu, Dr. R. Siva, Dr. M. Anbalagan, Dr. C. Immanuel Selvaraj, Dr. R. Vidya Department of Biotechnology, GOI Rs. 1,27,79,000

MANAGE Rs. 12,25,000 per programme

Agri-Clinics and Agri-Business Centres (AC&ABC) Scheme. - Dr. A. Sathiavelu, Dr. A. Anbarasan

Diploma in Agriculture Extension Services for Input Dealers - Dr. A. Sathiavelu, Dr. A. Anbarasan MANAGE Rs. 8,00,000 per programme

Balaji Poly Packs Rs. 2,60,000



Characterization of Drought Stressed Okra Cultivars to Reveal the Critical Signalling Pathways and Homeostatic Maintenance Employing Grafting Techniques and Proteomic Approach. -Dr. Sowbiya Muneer Department of Science and Technology, GOI Rs. 24,44,000

Department of Science and Technology, GOI Rs. 12,00,000

Towards understanding the mechanism of infection of plant badna viruses - Structure of Banana streak virus using cryo-electron tomography and subtomogram averaging. - Dr. Jagan Mohan Obbineni

Evaluating the effect of CleanRise on mitigating greenhouse gas emission and yield improvement in paddy. -Dr. T. Parthasarathi, Dr. Saiyyeda Firdous Industry Project Rs. 5,59,353



Industrial Collaborations



Institute Collaborations

GALILEE INTERNATIONAL MANAGEMENT INSTITUTE, ISRAEL

TEL AVIV UNIVERSITY, ISRAEL

AL NEELAIN UNIVERSITY, SUDAN LOUISIANA STATE UNIVERSITY, USA

SHAHID BHANOR UNIVERSITY OF KERMAN, IRAN

UNIVERSITY OF ESSEX, UK

CHUNGNAM NATIONAL UNIVERSITY, SOUTH KOREA THE UNVERSITY OF WESTERN AUSTRALIA, AUSTRALIA

TAMIL NADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY (TANUVAS), CHENNAI, TAMIL NADU

> TAMIL NADU AGRICULTURAL UNIVERSITY, TAMIL NADU, INDIA

INDIAN INSTITUTE OF HORTICULTURAL RESEARCH, BENGALURU, INDIA

BOLOGNA UNIVERSITY, USA

ETH ZURICH, SWITZERLAND NORTH DAKOTA STATE UNIVERSITY, USA

INDIAN INSTITUTE OF AGRICULTUAL RESEARCH, INDIA

UNIVERSITY OF NOVI SAD, SERBIA

GYEONGSANG NATIONAL UNIVERSITY, SOUTH KOREA BULE HORA UNIVERSITY, ETHIOPIA

UNIVERSITY OF MALAYA, MALAYSIA TOKYO UNIVERSITY, JAPAN INSTITUTE POLITECNICO DE CASTELO BRANCO, PORTUGAL

UNIVERSITY OF HUSTON, USA

NATIONAL RESEARCH CENTER FOR BANANA, TRICHY, INDIA

UNIVERSITY OF AGRICULTURAL SCIENCE, BANGALORE, INDIA

NATIONAL ISTITUTE OF AGRICULTURAL EXTENSION MANAGEMENT, HYDERABAD, INDIA

UNIVERSITY OF LISBON, PORTUGAL



Farmers Attachment Programme

Farmers Attachment Program is regarded as one of the highly successful programs kickstarted by VAIAL. This exemplary program was inaugurated during the VAIAl Agri-Expo in November 2019. Students are enrolled in this program and are actively reaching the farmers to solve their issues concerning their crops and yield. The school has successfully extended helping hands to several farmers in the region and continues to do the same.



Farmer's Training Programme

VAIAL firmly believes in gathering and sharing knowledge from every horizon of the world possible. The Farmer's Training Programme is a knowledge and technology disseminating programme, where the farmers are trained & educated by highly qualified speakers of Agriculture and other related interdisciplinary. The programme's primary aim & vision is to motivate & inculcate the latest technology & sustainable agricultural practices among the farmer community, with their experience for giving birth to innovation. This initiative is successfully conducting various training sessions addressing the pressing problems in farming in the current scenario. The online conference series was held in collaboration with industries like Srinivasan Services Trust-TVS, ICICI Foundation, and Arivuthottam, Vellore. Potential Entrepreneurs emerged through training programs on mushroom & moringa.



Agri Expo



Annual Agricultural Exposition (Agri Expo) is a two-day Agri Mela. The event is organized every year in which 4500 farmers participate. The event has exhibition stalls by state departments of agriculture, horticulture, animal husbandry, agricultural engineering, forestry, research institutes of Tamil Nadu, Agricultural Universities and other ICAR institutes, agro-industries, farmer producer organizations, banking sector, other agricultural organizations, and students. The event includes conferences with expert talks for the farmers. Workshops on agrotechnology, experience sharing by farmers, an exhibition of research findings, and student's projects are also a part of it.

The farmers are provided consultancy and agro advisory services; Awareness camps on Agri loans are also conducted.





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HIGHLIGHTS-Agrifarm

VIT Agri farm is an exemplary example of a union of contemporary and modern agriculture. Production in Agrifarm focuses on organic farming. Farm produce like rice, millets, coconut, pulses, bananas and vegetables are sold directly to the faculty and VIT staff.

To facilitate the teaching, learning process & research activities, agrifarm includes a student crop production area, wetland and dryland crop area, fruit orchard, medicinal plant garden, botanical field, livestock and poultry farm, forestry area and farm machinery



Agrometeorological Observatory

The observatory is located in the Northeastern zone of Tamil Nadu at 12°57'N latitude and 79°11'E longitude with an altitude of 194 m above MSL. Institute has both manual (Principal Observatory) as well as an automatic weather station, where physical elements (daily temperature, rainfall, sunshine, humidity, wind velocity, soil temperature, evaporation, etc.) and agricultural elements, generally of phenological nature or both related to agriculture are observed to explore crop environment relationship.





Vermicompost Unit

Leaf litter waste of the entire campus is recycled in the vermicompost unit of 120 tons capacity. The whole vermicompost unit generates a revenue of Rs. 15 Lakh per year.



Crop production in VAIAL includes the collection and conservation of traditional varieties of banana, rice and vegetables. The school also has a mushroom production unit. The produce is sold to staff and faculty at reasonable price.





Recent Events

RAWE Programme by the Final Year Students

Several Farmer awareness programmes were conducted by the students under Rural Agriculture Work Experience (RAWE) in nearby villages. Student activities were supported by the Dean and faculty by ensuring participation and facilitated by the State department of agriculture, Government of Tamil Nadu







First Prize in Poster Presentation

Final year students of B.Sc. (Hons.) Agriculture, Ms Arshiya Fathima Q, Ms Chithra B, Ms Roshini E, Ms Chitrika D and Ms Nivedhitha B under the guidance of Dr Thirumalai Kumar R; Assistant Professor (Agronomy) won the first prize for poster presentation in a National Seminar on "Barnyard Millet: A Promising Crop for Future Needs" held at Tamil Nadu Agricultural University. The title of the presentation is 'Barnyard Millet: Wonder millet for healthy meal Upma'.



Paddy Harvest





The first season paddy was harvested by the students for the crop production course on 20th October 2021. The occasion was honoured by the respected Vice President, VIT. In this course, students raise crops during Kharif and Rabi season in the individual cropping area allotted to them. All the cultural and other agronomic management practices, including harvest and post-harvest practices, has to be undertaken by students and the income earned will be paid to students as their remuneration.

Recent Events

Inaugration on Unmanned Aerial Vehicle



The unmanned aerial vehicle is another addition to the VAIAL infrastructure. Drone usage in agrifarm was inaugurated, and the occasion was addressed by the respected Vice President, VIT, Dean, VAIAL faculty, staff and students. The drone will be used for spraying biopesticides and aerial imaging in the VIT Agri farm.

World Food Day Celebrations



World food day was virtually celebrated on 16th October 2021 based on the theme 'Our actions are our future-better production, better nutrition, better environment and a better life. Students ensured their participation through different events in a creative manner. Dr Mudasir Yaqoob, Technical Officer, Export Inspection Agency, Ministry of Commerce and Industry, Govt. of India, delivered an expert talk on food phytochemicals and health. Five competitions, namely Use Me, Try Me, Culinary Arts, Foodathon and Farming Systems for Zero Hunger, were conducted. The top three participants were announced as winners.

Commencement of Community Radio Program



VAIAL, jointly with the Office of the Joint Director of Agriculture, Department of Agriculture & Farmers Welfare, Government of Tamil Nadu, broadcasts agricultural messages daily for the benefit of the farmers of Vellore district through VIT Community Radio (90.8 MHz). VAIAL subject experts and students will record the sessions and will be streamed daily. The broadcasted messages include topics on different crop management practices, value addition in different crops & animal husbandry products, horticulture, agricultural engineering, sericulture, apiculture, various schemes, financial assistance etc.

Recent Events

International conference



A two-day virtual international conference on "Transforming Agricultural Advisory Services to Mitigate the Effects of the Pandemic for Farmers Welfare (ICTAAS – 2021)" was organized jointly by Vellore Institute of Technology, Vellore; TANUVAS, Chennai; Bule Hora University, Ethiopia; and Al Neelain University, Sudan. The presidential address was given by the Honourable Chancellor, Dr G. Viswanathan and the inaugural address were delivered by Shri. A. K. Singh, Deputy Director General (Agricultural Extension), Indian Council of Agricultural Research, Ministry of Agriculture and Farmers Welfare, Government of India. Participants from 20 states across India & 6 countries got registered. Several paper abstracts and oral presentations were done and judged by able field expertise during the conference.

National Conference on World Soil Day

A Virtual National Conference on Halt Soil Salinization, Boost Soil Productivity was organized on 5-6th December 2021. The keynote speakers were Dr Raj Mukhopadhyay, Scientist, Irrigation and Drainage and BioEngineering, ICAR Soil Salinity Research Institute, Karnal – Haryana; Dr Ashim Dutta, Scientist, Division of Soil & Crop Management, ICAR Central Soil Salinity Research Institute, Karnal; Dr Koushik Chakraborty, Scientist, Plant Physiology Crop Physiology and Biochemistry Division ICAR-National Rice Research Institute, Cuttack and Dr V Umamahesh Professor, Department of Crop Physiology ANGRAUS V Agricultural College, Tirupati.

Webinar on Biochar: Regenerative Agriculture

The webinar was conducted on 13th November 2021. The keynote speakers were Dr Sushmita Munda, Scientist, Crop Prod. Division, ICAR- National Rice Research Institute Cuttack and Dr Jayanta Layek, Scientist, ICAR Research Complex for NEH Region, Umiam

Best Poster Award

On the 9th Indian Horticulture Congress 2021 at Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, Uttar Pradesh, Dr Utpal Das & Pramila Choudhury were awarded the Best Poster Paper Award for the research paper "Processing and value addition of ber (Ziziphus mauritiana L.) in Post-Harvest Management and Value Addition."











My name is Venkatesh. I am living in Erikuppam village in Vadugasathu panchayath. I joined the online class conducted by TVS-SST through VIT university, which was based on the cultivation of mushrooms. After which, I planned to start mushroom cultivation. Now I am harvesting 2-3 kilos. I want to thank VIT University, the Department of Agriculture and Srinivasan Services Foundation. the The challenges for us are purchasing seeds and marketing. It would be very helpful if TVS arranged to market our seed procurement through VIT University. I am currently involved in mushroom cultivation with my two friends, Rajesh and Parthiban. Thank you.



Studying Agriculture in VAIAL VIT is a blessing. I'm highly motivated to work towards my career and learn about environmental issues and come up with a solution for the same. It feels like a family here, who wants to see me succeed in life as the faculty and seniors guide me to be the best version of myself. The quality of education in VAIAL VIT is highly informative and helps me to discover my hidden talents and interests. Our Dean says to come with a no box concept (i.e. more than out of the box thinking) pushes us to come up with innovative ideas. Lab facilities, field facilities, mushroom unit, vermicompost unit and other extra experimental facilities are always a key to explore more. - Haseen Taj. A



Chief Editor

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