

INSIDE TREC



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Director's Message

In this edition, I am giving a shout out to one of the initiatives emanating from upper IFAS leadership that, in my humble opinion, ranks with others at the top of the list: the Support for Emerging Enterprise Development Integration Team, more commonly referred to as SEEDIT. Why do I consider this to be such an important initiative? Well, there are several reasons, most importantly is that it addresses a major problem confronting our researchers to conduct the necessary investigations geared towards establishing a new ag industry: the problem of, “which comes first -- the chicken or the egg”. Specifically, a situation whereby there is no fledgling industry to justify funding through granting agencies, and no granting agency willing to fund the research because there is no industry.

Briefly, the SEEDIT program provides seed funding to facilitate the development and success of research and Extension programs related to emerging agricultural enterprises. Specifically, funds are geared toward alleviating “choke points” in the development of emerging enterprises in Florida, by enabling the development and advancement of projects, the collection of new data, or the analysis of existing data to assist in the creation and transfer of tools and technologies with commercialization and business enterprise potential to create new viable alternative enterprises for our stakeholders. The fact is that establishing new agricultural industries is far from easy and can lead to great frustration for both researchers and stakeholders. I have seen it firsthand with respect to the effort by one of our faculty members, Dr. Alan Chambers, to establish a vanilla industry in South Florida. Convinced that such an industry is possible in South Florida, he tried several times to obtain sponsor support, but the proposals got turned down as the sponsors wanted data showing that the industry was interested in such an enterprise, and the growers, quite rightly, wanted science-based information to show that that this was a worthwhile venture—the typical “chicken or egg” situation.

Funds provided by the SEEDIT program and the resolve of our faculty went a long way in bridging this gap to put the wheels into motion. To date, sufficient information has been generated to pique the interest of our growers and sponsors. Housed at UF/IFAS TREC is now one of the best collections of vanilla germplasm in the world, with almost 300 accessions representing 30 species. Last year, one Florida company produced chocolates flavored by vanilla grown in south Florida, and another company is supplying suitable planting materials to increase our domestic production acreage. It should be noted that Dr. Chambers and his colleagues have been awarded a NIFA grant of close to \$300,000 to assist with the effort of domesticating vanilla. The international community has taken notice and, last year, held the first ever hybrid global Vanilla conference on our campus with participants from over 40 countries.

Other projects supported by the SEEDIT program, which will be highlighted in future editions, include Specialty Pumpkin (PI, Dr. Meru); Industrial Hemp (PI, Dr Brym); and Finger Limes (Dr. Dutt), giving our growers more choices. While we may never be able to fully solve “the chicken or egg paradox”, programs such as SEEDIT definitely help toward removing some of the frustration faced by our researchers and assisting in laying the groundwork for the takeoff of emerging agricultural industries. BTW, I believe the chicken came first.

Edward 'Gilly' A. Evans

UF Core Value Connection on page 6...



Research Publications

- Chang, Y., Harmon, P. F., Treadwell, D., **Carrillo, D.**, Sarkhosh, A., Brecht, J. K. (2022). Bio-control potential of essential oils in organic horticulture systems: From farm to farm. *Frontiers in Nutrition*, 8:805138. DOI: [10.3389/fnut.2021.805138](https://doi.org/10.3389/fnut.2021.805138)
- Devkota, S. and **Seal, D.** (2022). Seasonal abundance and spatial pattern of distribution of *Liriomyza trifolii* (Diptera: Agromyzidae) and its parasitoid on bean and squash in south Florida. *Turkish Journal of Food and Agriculture-Food Science & Technology*, 9:12. DOI: <https://doi.org/10.24925/turjaf.v9i12.2094-2105.4247>
- Gazis, R.**, DeWitt, K. M., Johnson, L. K., Chamberlin, L. A., Kennedy, A. H., Hansen, M. A., Bush, E.A. (2022). First report of Laurel Wilt disease caused by *Raffaelea lauricola* on saffras in Virginia. *Plant Disease*, DOI: <http://dx.doi.org/10.1094/PDIS-11-21-2616-PDN>
- Jibrin, M. O., **Liu, Q.**, Guingab-Cagmat, J., Jones, J.B., Garrett, T. J., **Zhang, S.** (2021). Metabolomics insights into chemical convergence in *Xanthomonas perforans* and metabolic changes following treatments with the small molecule carvacrol. *Metabolites* 11(12), 879. DOI: [10.3390/metabo11120879](https://doi.org/10.3390/metabo11120879)
- Kendra, P. E., Tabanca, N., **Cruz, L. F., Menocal, O.**, Schnell, E. Q., **Carrillo, D.** (2021). Volatile emissions and relative attraction of the fungal symbionts of tea shot hole borer (Coleoptera: Curculionidae). *Biomolecules*, 12, 97. DOI: <https://doi.org/10.3390/biom12010097>
- Liu, H., Wang, Y., Zhang, W., Sun, W., Ji, X., **Zhang, S.**, Qiao, K. (2022). Lentinan extends lifespan and increases oxidative stress resistance through DAF-16 and SKN-1 pathways in *Caenorhabditis elegans*. *International Journal of Biological Macromolecules*, 202:202201071, 286-295. DOI: <https://doi.org/10.1016/j.ijbiomac.2022.01.071>
- Luckew, A., **Meru, G.**, Wang, Y., Mwatuwa, R., Paret, M., Carvalho, R., Kalischuk, M., Ribeiro da Silva, A. L. B., Candian, J., Dutta, B., Srinivasan, R., Kavalappara, S. R., Konakalla RRD, N. C., Bag, S., & McGregor, C. (2022). Field evaluation of Cucurbita germplasm for resistance to whiteflies and whitefly-transmitted viruses, *HortScience*, 57(2), 337-344. DOI: <https://doi.org/10.21273/HORTSCI16197-21>
- Menocal, O.**, Kendra, P. E., **Padilla, A.**, Chagas, P. C., Chagas, E., A, **Crane, J. H.**, & **Carrillo, D.** (2022). Influence of canopy cover and meteorological factors on the abundance of bark and ambrosia beetles (Coleoptera: Curculionidae) in avocado orchards affected by laurel wilt. *Agronomy* 2022, 12, 547. DOI: <https://doi.org/10.3390/agronomy12030547>
- Ribeiro, P. G., Araújo, O. B., Martins, G. C., Rodrigues, M., Souza, J. M. P., Moreira, F. M., **Li, Y. C.**, Guilherme, L. R. G. (2022). Hydrothermally-altered feldspar reduces metal toxicity and promotes plant growth in highly metal-contaminated soils. *Chemosphere*, 286, 131768. DOI: <https://doi.org/10.1016/j.chemosphere.2021.131768>
- Revynti, A. M.**, **Velazquez Hernandez, Y.**, **Canon, M. A.**, **Greene, A. D.**, **Vargas, G.**, Kendra, P. E., Mannion, C. M. (2021). Biology of *Anthonomus testaceosquamosus* Linell, 1897 (Coleoptera: Curculionidae): A new pest of tropical hibiscus. *Insects*. 2022; 13(1):13. DOI: <https://doi.org/10.3390/insects13010013>

EDIS Publications

- Bayabil, H. K., Tilahun, F. T., Li, Y., & Campoverde, E. V. (2021). Moisture retention and chemical properties of nursery potting substrates. *EDIS*, 2021 (5). <https://doi.org/10.32473/edis-AE562-2021>
- *Evans, E., Ballen, F. H., Crane, J. H., Blare, T., Contreras, V., & Singh, A. (2022). Estimación de costos para la producción de guayaba rosada (*Psidium guajava* L.) en el sur de Florida: FE1113, 2/2022. *EDIS*, 2022 (1). <https://doi.org/10.32473/edis-fe1113-2022>
- Martin, C. G. and Brym, Z. T. (2022) Common weedy plants on open, tilled, and rocky soil in the Redland Agricultural Area, Miami-Dade County, Florida. SS-AGR-459/AG460, 01/2022. *EDIS*, 2022 (1). <https://doi.org/10.32473/edis-ag460-2022>
- Revynti, A. M., Crane, J. H., Wasielewski, J., Kendra, P. E., & Carrillo, D. (2022). The Lychee Erinose Mite *Aceria litchii* (Keifer) (Acari: Eriophyidae): ENY2077/IN1347, 11/2021. *EDIS*, 2021 (6). <http://dx.doi.org/10.32473/edis-in1347-2021>
- Reyes, G., Smyth, A. R., & Reynolds, L. (2021). What are urban mangroves? SL493/SS706, 1/22. *EDIS*, 2022 (1). <https://edis.ifas.ufl.edu/publication/SS706>
- Smyth, A. R., Laughinghouse IV, H. D., Havens, K. E., & Frazer, T. K. (2022). Rethinking the role of nitrogen and phosphorous in the eutropication of aquatic ecosystems. *EDIS*, 2022 (1). <https://edis.ifas.ufl.edu/publication/SG118>
- Zhang, S., Meru, G., Pernezny, K., & Lamberts, M. (2022). Tropical Vegetable Diseases: I: PP-40/VH053, rev. 1/2022. *EDIS*, 2022 (1). <https://doi.org/10.32473/edis-vh053-2022>
- Zhang, S., Meru, G., Pernezny, K., & Palmateer, A. (2022). Florida Plant Disease Management Guide: Eggplant. *EDIS*, 2022 (1). <https://doi.org/10.32473/edis-ae562-2021>

* Article is in Spanish.



*Have you
registered?*

Dr. Trent Blare
will speak on the
“Market Potential
for Floridian finger
limes.”

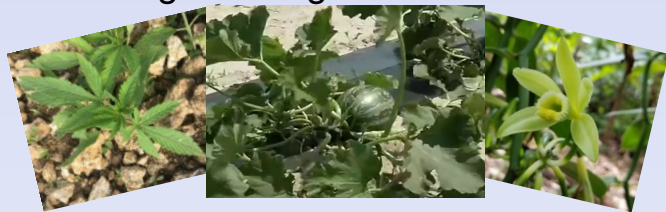
SEEDIT Meeting

The UF/IFAS Dean for Research Office and Dean for Extension Office partnered with the Senior Vice President for IFAS to promote and grow integrated research and Extension team efforts toward emerging agricultural enterprises in a project known as Support for Emerging Enterprise Development Integration Team (SEEDIT). As Phase I



of the SEEDIT program begins to wrap up, a team from the UF/IFAS Dean for Research Office met with each of the programs to evaluate the status of each.

The hybrid meeting took place on February 23 and with faculty presenting research at their respective Centers. At TREC, the SEEDIT programs include Dr. Brym's [industrial hemp research](#), Dr. Chambers' [vanilla research](#), and Dr. Meru's calabaza research. The UF/IFAS Office of the Dean for Research also viewed Dr. Dutt's finger lime grove at TREC.



To learn more about UF/IFAS faculty projects within the SEEDIT program, click [here](#).

Research Update

Dr. Yuncong Li is the Professor of Soil and Water Quality at UF/IFAS Tropical Research & Education Center and a recently elected Fellow in the American Association for the Advancement of Science (AAAS). His research at the University of Florida spans almost three decades and includes collaborations with over 200 international scholars from 27 countries. He has published over 300 research papers and over 100 extension articles and filed three patents.

Dr. Li's newest pending patent is for a biodegradable controlled-release fertilizer. The polymers used for coating controlled-release fertilizers currently on the market are petroleum-based. Petroleum, like plastics, has the potential to stay in the ground for many years and contaminate both soil and water. The polymer of this new controlled-release fertilizer, however, is made from biomaterials generated from lignin, a type of agricultural waste. Thus, the lignin-based polymer produces controlled-release fertilizers with renewable, biodegradable, inexpensive, and nontoxic materials, and is highly efficient. This controlled-release fertilizer will be much safer for the environment, and both cheaper and efficient for crops and growers' wallets.

What's next? Dr. Li hopes to improve coating materials further by testing additional agricultural wastes that can be utilized for the polymer. The release of the nutrient from coated fertilizer could be further improved to more precisely match specific crops. For more information on this research, visit <https://pubs.acs.org/doi/pdf/10.1021/acssuschemeng.0c06472>.

Faculty & Staff Awards

Dr. Alan Chambers received a \$300k grant from NIFA to identify superior vanilla accessions for domestic commercialization and to develop breeding tools for vanilla. Ultimately, the hopes for this research is that a self-sustaining domestic vanilla industry will be established in Florida where field-based plant breeders can be trained.

Dr. Ashley Smyth received a \$100,000 grant from The Nature Conservancy to quantify the site-specific nitrogen removal potential for shellfish in selected Florida waters where shellfish aquaculture is already occurring. This data will help to inform the Project's economic analysis of the value of the ecosystem service provided by shellfish and a policy analysis designed to identify appropriate ecosystem service payments, including nutrient credit trading, that can be employed to create a market for bivalve based restoration aquaculture.

Student Awards

Fikadu Getachew, a PhD student in **Dr. Bayabil's** lab was awarded the prestigious Intergovernmental Panel on Climate Change (IPCC) scholarship in the amount of \$29,500 over a two-year period. The IPCC is the United Nations body for assessing the science related to climate change. The Scholarship Program provides scholarships for PhD students from developing countries for research that advances the understanding of the scientific basis of risks of climate change, its potential impacts, and options for adaptation and mitigation.

UF's Core Value Connection

Dr. Evans' message in this issue exemplifies UF's Core Value of **Excellence**. The integrity evidenced by each level of UF/IFAS leadership cultivates excellence throughout the organization.



May 20-22, 2022

135th Annual Meeting of the

**FLORIDA STATE
HORTICULTURAL SOCIETY**



June 5 - 7, 2022

**Hyatt Regency
Sarasota, Florida**



Save the Date

**WHEN: August 11-12, 2022
WHERE: Gulf Coast REC
(14625 County Road 672, Wimauma, FL 33598)**

Emerging Agricultural Enterprises Summit:
Crops, Livestock and Aquaculture

Developing emerging agricultural enterprises, entrepreneurship, and public-private partnerships to help Florida agriculture thrive in a global marketplace.

Featuring



Dr. Zachary Brym

&



Dr. Geoffrey Meru
"Specialty Pumpkins:
Needs Assessment,
Production Systems, and
Processing for Emerging
Products and Markets"

Salvatore “Sal” Finocchiaro is a co-owner of S&L Bean Farms, established in 1989. Sal currently grows 100 acres of field-grown palm trees, 15 acres container nursery, and has 100 acres set aside for CBD hemp. For the past 12 years,



Salvatore ‘Sal’ Finocchiaro

Sal has supported UF/IFAS TREC’s pest management research studies in his fields which have provided valuable information for developing Integrated Pest Management (IPM) programs against both vegetable and hemp insect pests.

Sal is a former President of the Dade County Farm Bureau.

Watch Federico Sanchez, a PhD student in **Dr. Bruce Schaffer’s** lab, discuss his master’s thesis research project: Physiological, biochemical and growth effects of colored shaded nets on *Vanilla planifolia*. As Federico explains, growing vanilla plants under different colored shade netting would affect growth.

For this project, the four colors of shade netting that were used were black, red, green, and blue. Physiologically, the plants under the red netting experienced the highest levels of carbon assimilation (photosynthetic activity) and exhibited the largest biomass. Meanwhile, the plants under the blue netting had the highest levels of chlorophyll and chlorophyll fluorescence.

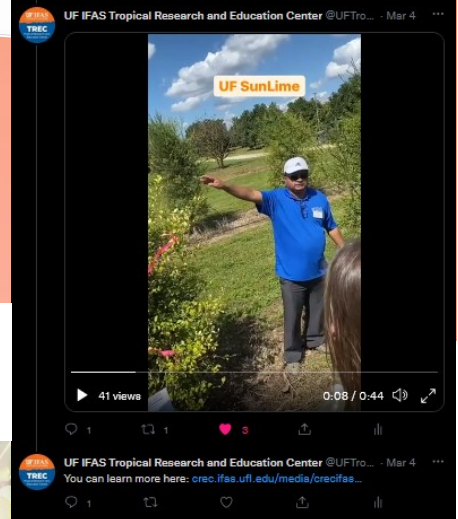
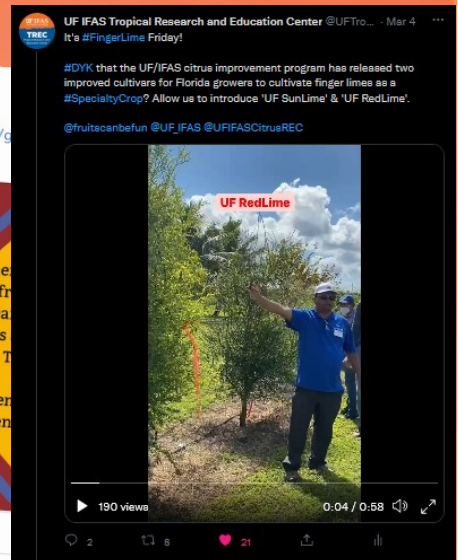
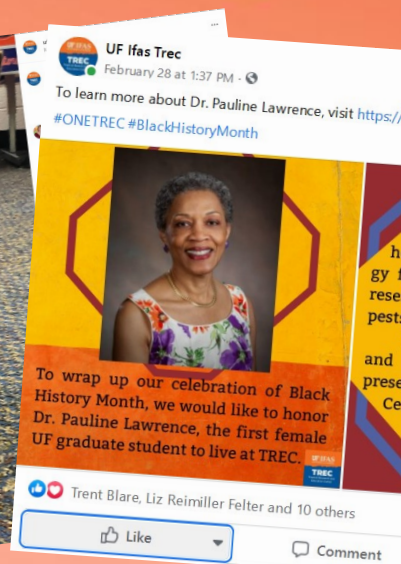
Regarding the biochemistry results of this project, it is worth noting that the plants under the red netting had the highest levels of antioxidant activity and protective compatible osmolites.

To learn more about Federico’s project, watch [this video](#):



You can find this and other graduate student videos on our YouTube channel.

Join the conversation on social



Our most popular posts this quarter, from left to right: Welcome of Dr. Xingbo Wu ([Twitter](#)), Juniper at TREC's Gator Nation Giving Day ([Instagram](#)), recognition of Dr. Pauline Lawrence ([Facebook](#)), Dr. Manjul Dutt and finger limes ([Twitter](#)).

Follow us at [UF_Tropical](#) to see what's next!



October 30–November 2
Naples, Florida USA

conference.ifas.ufl.edu/cucurbits



Geoffrey Meru
Conference Co-Chair
UF/IFAS, Homestead, FL, USA
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If you have any suggestions or would like to submit your own recognition or short article of interest, please send them to Monique Scoggin, mis6664@ufl.edu.

You may forward any questions or comments about this periodical to Monique Scoggin, mis6664@ufl.edu.