

INSIDE TREC



Winter 2024

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From the Desk of the Director

Recently, it was announced that in 2023, Florida welcomed 135 million visitors. In the fourth quarter of 2023 alone, the number of overseas visitations was estimated at 2.3 million, up by almost 16% when compared to Q4 2022. These metrics support the view that Florida continues to be a preferred destination for international travelers. This is excellent news for Floridians and the Florida economy, and we welcome such great news with open arms. But as every economist will tell you, there are always tradeoffs in life. In this case, with such an increase in travel comes the chance/possibility of introducing some new plant pests and/or diseases. And where else is there a better place for such unwanted "hitchhikers" to set up house for the family than in South Florida, with its mild climate conditions that allow for year-round production and beautiful landscapes. It has been reported that of all the new pests entering Florida, 70% of them enter by way of South Florida. This places UF/IFAS TREC in the epicenter of defense in terms of meaningful scientific research for the essential answers to these problems.

Our [Plant Diagnostic Clinic](#), established in 1990, is at the forefront of combating such nuisances. The specific purpose of the Clinic is to assist growers of vegetable, ornamental, and fruit crops, as well as homeowners, by identifying the various invasive pests and diseases and recommending remedial actions. Plant maladies may be caused by

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

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From the Desk of the Director (continued)



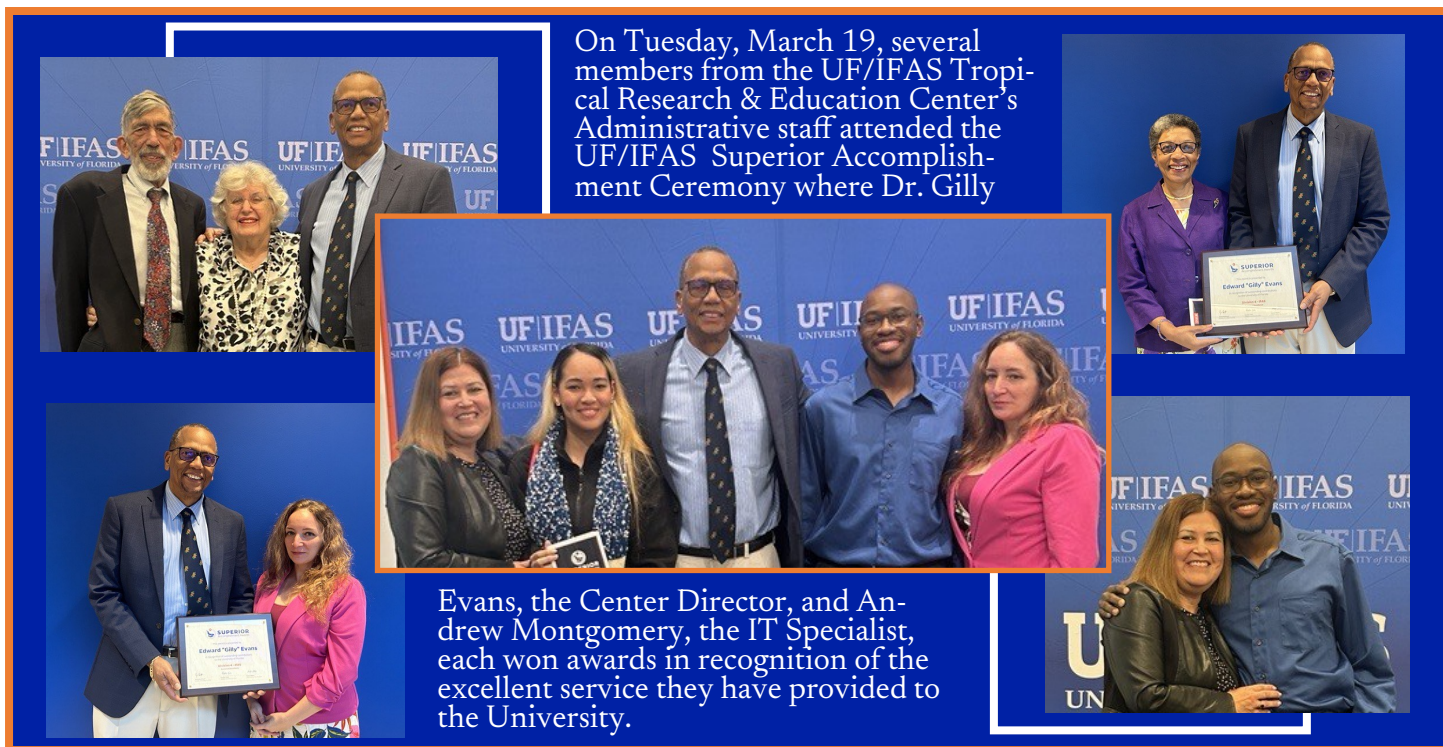
insects, bacteria, fungi, viruses, viroids, nematodes, snails, weeds, improper nutrition, extremes of temperature and moisture, etc. All of which destroys commercial crops and residential landscaping and poses major threat to agriculture and natural resources and tourism industries. Accurate and timely diagnosis enables targeted management strategies, preventing the spread of diseases and minimizing crop losses.

The Director of the Clinic is Dr. Romina Gazis (Plant Pathologist) who was recently tenured and promoted to Associate Professor (congrats!).

She and members of her team, which includes faculty members with various expertise (Drs. Alexandra Revynthi, Daniel Carrillo, Dak Seal, Shouan Zhang), support scientists, and students work tirelessly to combat such invasions that would otherwise adversely affect livelihoods and regional economies. On any given day during the week, people come to the Center with plants in their hands or in their vehicles. Currently, the Clinic handles about 1,300 samples per year. Some of the largest and most valuable agricultural enterprises in both South and Mid-Florida utilize the Clinic on a daily basis, receiving recommendations for appropriate courses of action for correcting various problems. The Clinic also serves as an educational resource, training students, extension agents, and professionals in plant health practices.

However, the Clinic, which is housed in a 1940s building, is now bursting at its seams, coping with increased pressures. Undoubtedly, the services provided by the Clinic are invaluable – healthy plants contribute to robust agricultural production, food security, and economic stability—but an unhealthy infrastructure will eventually adversely impact the quality-of-service stakeholders have grown so accustomed to.

Edward 'Gilly' A. Evans



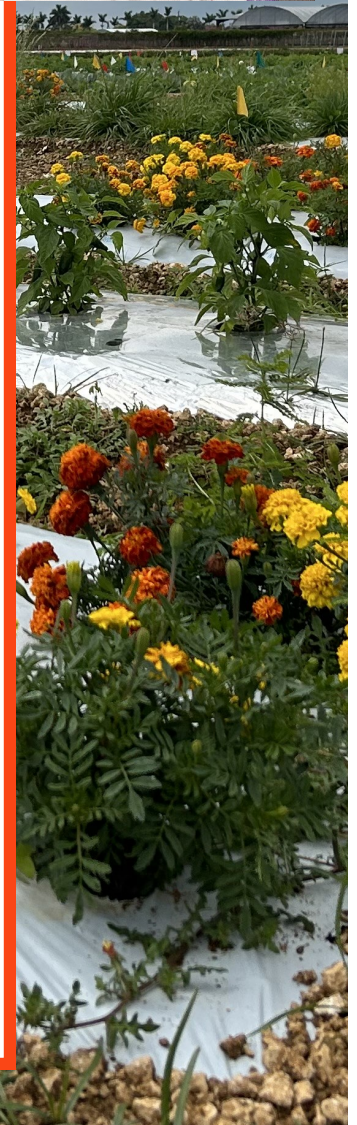
Research Report

In this installment of TREC's Research Report, you'll learn about Dr. Dakshina Seal and the research his lab is conducting to develop Integrated Pest Management (IPM) programs to control pests of vegetable crops.

Like all crops in south Florida, vegetable crops are susceptible to pests and harmful insects. As the vegetable capital of the southeast, farmers in south Florida are especially concerned when a new pest arrives on the scene. Sometimes, Dr. Seal travels the tropics to protect crops on US soil from a new pest. Sometimes, the insects come to him in Homestead, Florida. Around 1990, the melon thrip appeared in south Florida. Anywhere the melon thrip went, up to 90% of all vegetable crops were defoliated. By studying the biology and behavior of this insect, Dr. Seal and his team developed management practices for a chemical insecticide to manage the growing number of insects. The management programs developed at that time, have enabled growers to learn to live with the melon thrip.

Other pests that Dr. Seal has worked to develop IPM programs for include the Chili Thrips and Asian Bean Thrips. The newest pest on the Dr. Seal's resume? *Thrips parvispinus*. Last year Dr. Seal collaborated with other IFAS researchers to publish [an article identifying the characteristics and management of *T. parvispinus*](#). In addition to some ornamental crops, *T. Parvispinus* has been ravaging pepper crops, beans, squash, and eggplants. Dr. Seal's lab is working on developing management programs using both chemical and molecular tools.

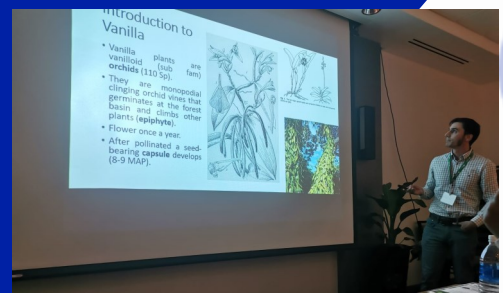
Ongoing research being conducted in Dr. Seal's lab now involves the pepper weevil. The Pepper weevil is originally from Mexico and was spotted locally in about 1988. Dr. Seal has spent more than a decade working to manage the pest, but so far, there is no means to effectively manage it. Dr. Sumit Jangra, a Post-doctoral researcher, is developing a molecular tool to control the insect's reproduction. Victoria Adeleye, a PhD candidate, is researching the population dynamics and management of pepper weevil on jalapeno pepper. You can learn more about Victoria's research [on page 6 of this newsletter](#). Finally, Nagamani Kanchupati is working to find barrier resistance to pepper weevil. To learn more about Dr. Seal's programs, review his [faculty page](#).



Congratulations

Student Awards

Ph.D. students, Sisi Chen and Manuel Gastelbondo, both in Dr. Xingbo Wu's Ornamental Breeding, Genetics, Genomics, and Bioinformatics lab were each awarded Travel Awards to the 2024 National Floriculture Forum meeting in Biloxi, Mississippi. Both Sisi and Manuel gave oral presentations at the meeting.




Ketsira Pierre, a PhD student in Dr. Shouan Zhang's Vegetable Pathology Lab, was awarded the 2024 John Deere graduate student award. This award is given to students in recognition of their academic excellence, extracurricular activities, MANRRS, and community involvement. The award carries a stipend of \$2,500. The funds will enable Ketsira to travel to Chicago in March for the MANNRS national conference, among other things. MANNRS stands for Minorities in Agriculture, Natural Resources, and Related Sciences. You can learn more about the [John Deere Scholarship here](#).



At the 59th Annual Ag Tour and Luncheon in Miami -Dade County, several TREC students were recognized for the research they're conducting in Agriculture in Miami-Dade County. **Victoria Adeleye**, a PhD student in Dr. Dak Seal's Vegetable Entomology Lab, received the Dennis Carpenter Memorial Fellowship. **Marcello De Giosa**, a PhD student in the Dr. Alexandra Revynthi's Ornamental Entomology Lab, received the Seymour Goldweber Scholarship. **Max Gosselin**, a Master's student in Dr. Daniel Carrillo's Tropical Fruit Entomology Lab, received the L. Russell Norton Memorial Fellowship. The Warren Wood Memorial Fellowship was awarded to **Prerna Sabharwal**, a PhD student in Dr. Geoffrey Meru's Vegetable Breeding, Genetics, and Genomics Lab. Finally, **Nicolas Portugues**, a student intern in Dr. Xingbo Wu's Ornamental Breeding, Genetics, and Genomics Lab, was awarded the Sheeran Scholarship. Nicolas is presently a high school senior at Coral Reef Senior High in their Agriscience program.



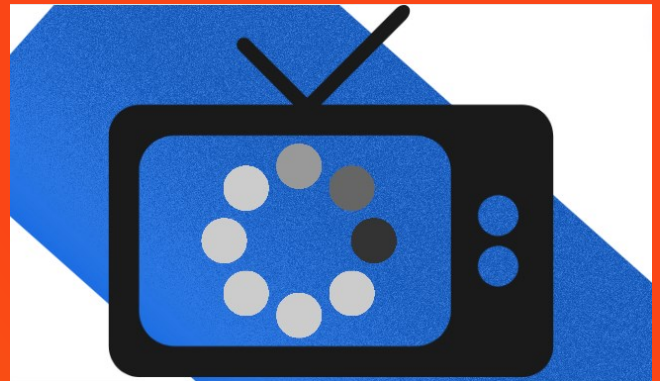

Student Awards (cont.)



John Connor, a PhD student in Dr. Ashley Smyth's Biogeochemistry lab, **Marielle Berto**, a PhD student in Dr. Daniel Carrillo's Tropical Fruit Entomology Lab, **Jesse Potts**, a PhD student in Dr. Xingo Wu's Ornamental Breeding, Genetics, Genomics, and Bioinformatics lab, and **Fitsum Teshome**, a PhD student in Dr. Haimanote Bayabil's Water Resources lab, were awarded travel grants to present at the Graduate Student Research Day (GRSD) on April 2 in Gainesville. The GRSD is cohosted by the Organization for Graduate Student Advancement and Professional Development and the UF Black Graduate Student Organization.



Follow us on your favorite social media platform to see images from either of these forthcoming events!



Faculty & Staff Awards

Dr. Edward "Gilly" Evans, was 1 of 4 recipients of IFAS' Superior Accomplishment Award in the category of **Sustained Excellence**. This was the first year that the Sustained Excellence award was available. Winners of this award are recognized for their exceptional performance, contributions, and successes which must have taken place over a longer span of time (minimum of three years).

Andrew Montgomery, the IT Specialist here at TREC, was also the winner of an inaugural award in IFAS' Superior Accomplishment Awards. Andrew was recognized as IFAS' Rookie of the Year. In winning this category, Andrew successfully passed their probationary period, excelled and had a positive impact through their work early on in their role at UF. Andrew has been who has been at UF for less than two years.

Jorge Vergel, Jr., the Senior Maintenance Supervisor in the Shop, was recognized for achieving a milestone of 25 years of service in 2023. We want to thank Jorge for his commitment to Center!

TREC IN FOCUS

Graduate Student

Victoria Adeleye is a PhD candidate in Dr. Dakshina Seal's Vegetable Entomology lab. Dr. Seal's lab focuses on developing Integrated Pest Management (IPM) programs to control pests or harmful insects of vegetable crops. Specifically, Victoria's research focuses on population dynamics and management of pepper weevil on jalapeno pepper.

Some of the methods implemented by Victoria include testing the effects of different reflective plastic mulch and testing the effects of non-host plants near the jalapeno crops. To learn more about the Victoria's research, [watch this video](#).



You can find this and other videos on our YouTube channel: UFTropical!



PostDoc Exposé(d)

In this edition of TREC's PostDoc Exposé(d), we feature Dr. Michael Vincent, a post doctoral researcher in Dr. Xingbo Wu's Ornamental breeding, genetics, genomics, and bioinformatics lab.

Q: Where did you complete your Bachelor's, Master's, PhD? How did you arrive at TREC?

A: I did my BSc in Biotechnology at Kenyatta University. At University of South Africa, I received my MSc in Agriculture focusing on characterizing genetic diversity of pigeon pea germplasm using molecular markers. During my PhD at UF, I identified genes conferring resistance to *Phytophthora capsici* in squash and developed molecular tools to accelerate integration of these genes in popular susceptible squash varieties. I came to TREC to follow my passion in plant breeding and crop improvement.

Q: What is something unique to your role or your teaching/research/extension project here that you have not encountered before?

A: TREC maintains very robust Extension connections that allow immediate adoption of technologies developed by scientists at the Center. Just check out the EDIS publications

TREC EXTENDED

Advisory Board

Lydia Borgatta serves as the Managing Director of Investments at Wells Fargo Advisors. She specializes in providing financial, investment and funding advice and tending to the specific needs of business owners including managers of operating accounts, retirement and pension plans, and credit arrangements. Her introduction to TREC came through use of the master gardener program; a resource



instrumental in helping Ms. Borgatta obtain EEL (Environmentally Endangered Land) certification for her North Miami home

Ms. Borgatta is a member of the U.S. delegation to the O.E.C.D Insurance and Pension Committees and serves as a technical advisor on cross-border issues relating to corporate securities and insurance investment assets.

that originate from research conducted by TREC scientists every year.

Q: How do you spend your free time?

A: You'll find me reading, playing football or walking in a nature trail.

Q: If you could meet one celebrity, who would it be? Why?

A: Pope Francis (if he counts as a celebrity). I like him.



You can find EDIS publications written by TREC faculty and staff on the [TREC in the News](#) page or by [clicking here!](#)

Upcoming (Extension) Events

April

- 11 UF/IFAS Extension - SE District quarterly meeting — Tour of TREC
- 25 Climate Workshop

May

- 6-10 Agricultural Acarology Workshop
- 17-19 Redland Orchid Festival

Plant Diversity Tour at TREC

The video for Stop 3 of the Plant Diversity Tour at TREC is now available. Check out the video highlighting some of the rare Haitian palms featured in the courtyard.



EDIS Publications

Bayabil, H. K., Migliaccio, K. W., Dukes, M., Vasquez, L., & Balerdi, C. (2024). [Consejos basicos para diseñar sistemas eficientes de riego: AE549/AE549](#). EDIS 2024.

Crane, J. H., Li, Y., Evans, E., Ballen, F., & Wasielewski, J. (2024). [Planning for a successful commercial subtropical/tropical fruit grove](#): HS1387/HS1387. EDIS 2024.

Crane, J. H., Wasielewski, J., Balerdi, C. F., & Maquire, I. (2024). [Mango Growing in the Florida Home Landscape: MG216/HS2](#). EDIS 2024.

● Moon, P., Li, Y., Meru, G., Vendrame, W., Molnar, T., Wu, X. (2024). Indigo from *Indigofera* spp.: Historical and cultural overview: ENH1378/EP642, 3/2024. DOI: <https://doi.org/10.32473/edis-EP642-2024>

● Sanchez, F. W., Crane, J. H., Bayabil, H., Sarkhosh, A., Shahid, M. A., Schaffer, B. (2024). Achachairú (*Garcinia humilis*) fruit trees: Botany and commercial cultivation in south Florida: HS1480. EDIS, 2024. DOI: <https://doi.org/10.32473/edis-HS1480-2024>

● Wu, X., Moon, P., Chambers, A., & Crane, J. (2024). Vanilla growing in south Florida: HS1348, rev. 2/2024. EDIS 2024. DOI: <https://doi.org/10.32473/edis-hs1348-2024>

Research Publications

- Acharya, S. R., Shrestha, S., **Michael, V. N., Fu, Y., Sabharwal, P., Thakur, S., & Meru, G.** (2023). Transcriptional changes during *Phytophthora capsici* infection reveal potential defense mechanisms in squash. *Stresses*, 3(4), 827-841. DOI: <https://doi.org/10.3390/stresses3040056>
- Ataide, L., Della Vechia, J. F., Ochoa, R., Carrillo, D., & Revynthi, A.** (2023). Influence of temperature on the population size of *Aceria litchii* (Acari: Eriophyidae) and the development of its galls. *Experimental and Applied Acarology*, 92(1): 1-13. DOI: <http://dx.doi.org/10.1007/s10493-023-00872-6>
- Belizaire, C. M., Gañan-Betancur, L., **Gazis, R.** (2024). Avocado scab cause by *Elsinoe perseae*: A diagnostic guide. *Plant Health Progress*, 0, DOI: <https://doi.org/10.1094/PHP-10-23-0084-DG>
- Brym, M., Brewer, S., **Wu, X.,** Chambers. A. (2023). CRISPR/Cas9-mediated editing of the *phytoene desaturase* gene in *Vanilla planifolia* enabling targeted domestication. *The Journal of Horticultural Science and Biotechnology*. DOI: <https://doi.org/10.1080/14620316.2023.2297233>
- de Souza, E. R., **Schaffer, B., Vargas, A. I.,** de Camargo Santos, A., **Gutierrez Rodriguez, E. A.** (2024). Contrasting salinity effects of artificial seawater and sodium chloride of *Carica papaya* L. cultivar Red Lady on physiology and growth. *CABI Agriculture and Bioscience*, 5(15). DOI: <https://doi.org/10.1186/s43170-024-00216-3>
- Fischman, H. S., **Smyth, A. R., & Angelini, C.** (2024). Invasive consumers provoke ecosystem-wide disruption of salt marsh functions by dismantling a keystone mutualism. *Biological Invasions*, 26(1): 169-185. DOI: <https://doi.org/10.1080/26395940.2023.2269314>
- Hailegnaw, N. S., Bayabil, H. K., Berihun, M., Teshome, F., Shelia, V., & Welidehanna, F. G.** (2023). Integrating machine learning and empirical evapotranspiration modeling with DSSAT: Implications for agricultural water management. *The Science of the Total Environment*, 912(2) 169403. DOI: <http://dx.doi.org/10.1016/j.scitotenv.2023.169403>
- Posadas, B. C., Stafne, E. T., Blare, T., Downey, L., Anderson, J., **Crane, J., Gazis, R.,** Faber, B., Stockton, D. G. **Carrillo, D.,** Morales-Payan, J. P. Dutt, M., Chambers, A., & Chavez, D. (2023). Grower and operational characteristic of US passion fruit farmers. *Technology in Horticulture*, 3: 25. DOI: <https://www.maxapress.com/article/doi/10.48130/TIH-2023-0025>
- Potts, J., Michael, V. N., Meru, G., Wu, X.,** Blair, M. W. (2024). Dissecting the genetic diversity of USDA cowpea germplasm collection using Kompetitive allele specific PCR-single nucleotide polymorphism markers. *Genes*, 15(3), 362. DOI: <https://doi.org/10.3390/genes15030362>
- Seal, D.** (2024). Chemical insecticides for controlling sweet potato whitefly in squash, Spring 2022. *Arthropod Management Tests*, 49(1), 2024: tsad128. DOI: <https://doi.org/10.1093/amt/tsad128>
- Seal, D., Jangra, S., Kanchupati, N., Adeleye, V., & Sabines, C.** (2023). Section E: Vegetable crops efficacy of various insecticides for controlling Thrips parvispinus, spring 2023. *Arthropod Management Tests*, 48(1): 1-2. DOI: <https://doi.org/10.1093/amt/tsad131>
- Teshome, F., Bayabil, H. K., Schaffer, B.,** Ampatzidis, Y., Hoogenboom, G., & Singh, A. (2024). Crop growth model and machine learning approaches for simulating soil hydrology dynamics. *Social Science Research Network*. DOI: <https://ssrn.com/abstract=4725156>
- Urbina, H., Jones, C., Moore, M. R., & **Gazis, R.** (2024). Susceptibility of centipede tongavine, *Epipremnum pinnatum*, commercially grown in nurseries in Florida to aroid leaf rust, *Pseudocercospora paullula*. *Plant Disease*, 108(1): 217. DOI: <https://doi.org/10.1094/PDIS-07-23-1360-PDN>
- Vargas, G., Velazquez-Hernandez, Y.,** Greene, A. D., Yang, X., **Revynthi, A. R.** (2024). Entomopathogenic nematodes to control the hibiscus bud weevil *Anthonomus testaceosquamosus* (Coleoptera: Curculionidae), above ground and on soil surface. *BioControl*. DOI: <https://doi.org/10.1007/s10526-024-10242-9>

LET'S GET TROPICAL!

ICYMI — These are just some of the highlights from the beginning of the Spring semester at UF/IFAS TREC. To stay up to date on all of TREC's news and events, follow us on all platforms at [UFTropical](#) or bookmark the *TREC in the News* page on our [website](#).

