

INSIDE TREC



In this issue:

Director's Message	1
UF Core Value Connection	2
Research Publications	3
Research Report:	
Dr. Young Gu Her	4
EDIS Publications	5
Faculty & Staff Awards	5
Student Awards	6
TREC In Focus	
Advisory Board:	
Mike Merida	7
Graduate Student:	
Fitsum Teshome	7
Making History	8
One Night in the Tropics	
Sponsors	9
Tropi-Collaborations	9
Find us on Social!	10

From the Desk of the Director

Season's greetings! As I have said in past years, this is my favorite time of the year, beginning from Thanksgiving right through New Year's Day. Apart from the obvious reasons is the chance to spend quality time with friends and family. This year will be slightly different for me, and I ask for your indulgence as I get a bit personal. The reason it will be a bit different is that for the first in a long time my mother-in-law, who was looking forward to celebrating her 90th birthday on Christmas day with us, will not be at the dinner table, as sadly she passed away earlier this year. It was hard on the family, especially my wife, who was extremely close to her mother. My wife has found some solace knowing that as her mother aged, she was able to take great care of her out of an abundance of love and the recognition of the sacrifices which her mother made to guarantee her success. This led me to the thought that, likewise, US agriculture has been extremely productive and successful over the years. Less than two percent of the US population now feeds the entire nation and beyond. That success would not have been possible without the reliance on and abundance of our natural resources. And now that our natural resources are declining (becoming aged so to speak), it is heartening

continued on page 2

Inside TREC is a seasonal newsletter distributed by the Marketing & Communications Department of UF/IFAS TREC via e-mail and on the UF/IFAS TREC [website](#).

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

From the Desk of the Director (continued)

to see the scientific advances that are being made in agriculture geared toward protecting and conserving our natural resources for now and the future.

We are experiencing some of those advances in the research being conducted at TREC. World renowned scientist Dr. Yuncong Li and his team are formulating new fertilizers (nano-coated controlled-release, polymer-coated controlled release, and amino acid chelated) that have the potential to greatly improve fertilizer use efficiency and reduce nutrient loadings in water, thus contributing to the long-term profitability of growers while protecting and enhancing our natural resources. (See a detailed article [here](#).) Likewise, the simulation models and tools being developed by Dr. Young Gu Her, Assistant Professor of Hydrology, will enable informed decision-making for information-driven, science-based agricultural and natural resources management that will contribute to the sustainability of Florida's crop production, ecosystem, and water resources. Through his research we will get an idea of how climate change and sea-level rise could affect the quality of the water in our aquifers that we so depend on for agricultural and non-agricultural consumption and what actions can be taken to lessen the adverse impacts. (You can learn more about Dr. Her's projects on page 4 of this issue.)

Growing up, we take so many things for granted, but there comes a time when we have to take on our share of the responsibilities. Now has come the time to shoulder the responsibility for what is happening to our planet. And indeed it is gratifying to know that agricultural science and emanating technologies are ensuring that agriculture does its part to take care of our 'aging' natural resources.

Edward 'Gilly' A. Evans



UF's Core Value Connection



Discovery & Innovation

In this issue, Dr. Evans' reviews how some of the research conducted at the TREC benefits the agricultural and natural resources sectors of our state. As important, though, is how the results of that research can transform change throughout all sectors of the great state of Florida and beyond. We think this is an example of **Discovery and Innovation** at its finest!

To learn more about the UF Core Values, click [here](#).

Research Publications

- Anderson, J. D., Gastelbondo, M., Chambers, A. H.** (2022). Diagnostic KASP markers differentiate *Vanilla planifolia*, *V. ordata*, *V. pompona*, and their hybrids using leaf or cured pod tissues. *Molecular Biology Reports*, 2022 . DOI: <https://doi.org/10.1007/s11033-022-08085-7>
- Bayabil, H. K., Teshome, F. T., Hailegnaw, N. S., Zhang, J., Li, Y. C.** (2022). Changes in soil hydraulic properties due to organic amendment. *Experimental Results*, 1-12. DOI: <https://doi.org/10.1017/exp.2022.25>
- Cloonan, K. R., Montgomery, W. S., Narvaez, T. I., Carrillo, D., Kendra, P. E.** (2022) Community of Bark and Ambrosia Beetles (Coleoptera: Curculionidae: Scolytinae and Platypodinae) in agricultural and forest ecosystems with Laurel Wilt. *Insects* **2022**, *13*, 971. DOI: <https://doi.org/10.3390/insects13110971>
- Faal, H., Cooperband, M. F., Canlas, I., Carrillo, D.** (2022). Evidence of pheromone use in a Fulgorid, spotted lanternfly. *Forests*, 2022, *13*: 1639. DOI: <https://doi.org/10.3390/f13101639>
- Fu, Y., Shrestha, S., Moon, P., and Meru, G.** (2022). Embryo rescue protocol for interspecific hybridization in squash. *Journal of Visualized Experiments: Jove*, 2022 (187). DOI: <https://doi.org/10.3791/64071>
- Jamshidi Goharrizi, K., Karami, S., Basaki, T., Mostafaei Dehnavi, M., Nejat, M. A., Momeni, M. M., Meru, G.** (2022). Transcriptomic and proteomic mechanisms underlying cold tolerance in plants. *Biologia Plantarum*, 2022, *66*:240-254. DOI: [10.32615/bp.2022.030](https://doi.org/10.32615/bp.2022.030)
- Jibrin, M. O., Liu, Q., Garrett, T., Jones, J., Zhang, S.** (2022). Potential and metabolic pathways of eugenol in the management of *Xanthomonas perforans*, a pathogen of bacterial spot of tomato. *International Journal of Molecular Sciences* *23*(23): 14648. DOI: [http://dx.doi.org/10.3390/ijms232314648](https://doi.org/10.3390/ijms232314648)
- Karlsen-Ayala, E., Smith, M. E., Askey, B. C., Gazis, R.** (2022). Native ectomycorrhizal fungi from the endangered pine rocklands are superior symbionts to commercial inoculum for slash pine seedlings. *Mycorrhiza* (2022). DOI: <https://doi.org/10.1007/s00572-022-01092-3>
- Michael, V. N., Crane, J. H., Freeman, B., Kuhn, D., Chambers, A. C.** (2023). Mango seedling genotyping reveals potential self-incompatibility and pollinator behavior. *Scientia Horticulturae*, 2023, *308*: 111599. DOI: <https://doi.org/10.1016/j.scienta.2022.111599>
- Tefera, B. B., Bayabil, H. K., Tong, Z., Teshome, F. T., Wenbo, P., Li, Y. C., Solomon Hailegnaw, N., Gao, B.** (2022). Using liquefied biomass hydrogel to mitigate salinity in salt-affected soils. *Chemosphere*, 2022, 136480. DOI: <https://doi.org/10.1016/j.chemosphere.2022.136480>
- Wang, Y., Liu, H., Gu, G., Li, Y., Ji, X., Zhang, S., Qiao, K.** (2022). *Paecilomyces variotii* extract increases lifespan and protects against oxidative stress in *Caenorhabditis elegans* through SKN-1, but not DAF-16. *Arabian Journal of Chemistry* *15*(9): 104073. DOI: [http://dx.doi.org/10.1016/j.arabjch.2022.104073](https://doi.org/10.1016/j.arabjch.2022.104073)

Research Report

Groundwater Elevation, feet above NAVD 88

Groundwater Level, feet above or below NAVD 88

Dr. Young Gu Her is a hydrologist and agricultural engineer working as an assistant professor at UF/IFAS TREC. His current research focuses on developing a simulation tool capable of providing a holistic view of climate change and sea level rise impacts on south Florida's agriculture and water resources. His long-term research interests lie in enhancing our ability to manage agricultural crop production and natural resources in sustainable ways. In this Research Report, Dr. Young Gu Her provides us with an update on some of the projects he and his team are working on.

First, Dr. Her is one of several UF/IFAS faculty who are participating in a study to assess the economic trends related to agriculture in Miami-Dade County. This study will serve as a follow-up to a similar study completed two decades ago titled "Urban and Agricultural Land Use Trends and Projections". As a hydrologist, Dr. Her is projecting future climate and sea-level changes and their impacts on the groundwater system in south Florida. These projections are being completed in 10-, 20-, and 30-year increments up to the year 2100. The results of these projections will be considered with data generated by other co-PIs in the areas of Food and Resource Economics and Agricultural and Biological Engineering.

Another one of Dr. Her's projects focuses on quantifying the contributions of in-lake hydrodynamic processes and external water and nutrient loading to the water quality of Lake Okeechobee using watershed simulation models. It also evaluates the impact of climate change on the algal bloom using lake and climate models combined with the watershed models. Data generated by Dr. Her's modeling and projections are to be used to address claims that nutrient loading from agricultural lands in or near the Kissimmee River Basin is responsible for the pollution of the lake. In addition, the modeling study will show if climate change impacts on the water quality can be mitigated by canal gate operations for lake water level management practices.



97 100 103



2009 2092 2095 2098

lands

es

EDIS Publications



Bayabil, H. K., Migliaccio, K. W., Crane, J. H., Li, Y.

Irrigation scheduling tips for tropical fruit groves in south Florida. DOI: <https://doi.org/10.32473/edis-TR001-2022>

Blare, T., Ballen, F. H., Haley, N., Contreras, V., Crane, J.

H., Carrillo, D. (2022). Cost and profitability estimates for producing lychee (*Litchi chinensis*) in south and central Florida. DOI: <https://doi.org/10.32473/edis-FE1127-2022>

Blare, T., Ballen, F. H., Crane, J. H. (2022). Overview of US Tahiti lime production and markets: Trade and consumption analysis. DOI: <https://doi.org/10.32473/edis-FE1122-2022>

Demesyeaux, L., Brym, M., Chambers, A. H. (2022). Growing miracle fruit for specialty crop production in Florida: HS1449, 9/2022. EDIS, 2022. DOI: <https://doi.org/10.32473/edis-hs1449-2022>

Haman, D. Z., Zazueta, F. S., Clark, G. A., Guzman, S., Bayabil, H. (2022). Selecting a method for sealing ponds in Florida. <https://edis.ifas.ufl.edu/publication/WI012>

Faculty & Staff Awards

One of the many hats that **Maria Bernal** wears is that of TREC's Human Resources liaison. Recently she was spotlighted by UF at Work as one of the first participants to receive UFHR's Inclusive Hiring Badge. To learn more about how Maria is elevating hiring practices, [check out her interview](#).



Dr. Alexandra Revynthi, an Assistant Professor in the Department of Entomology and Nematology, was awarded \$6,500 from the FNGLA Endowed Research Fund, for her proposal titled "Evaluation of the Commercial Parasitoid *Catolaccus hunteri* as a Biocontrol Agent of the Hibiscus Bud Weevil". The FNGLA Fund continues to grow and is an important source of money for research and extension programs in UF/IFAS.



Dr. Revynthi was also awarded one of the 2022 UF/IFAS Archer Early Career SEED Grants. This program helps facilitate the development of new faculty research programs and provides a platform for their future success. The program honors Dr. Douglas Archer, who was a UF/IFAS Dean for Research and a staunch champion of faculty development. Dr. Revynthi's proposal was titled "Acaricide resistance on ornamentals: Characterization and management." As one of the few scientists to receive this award, Dr. Revynthi received nearly \$50,000!

Student Awards

Congratulations to

Swati Shesthra, a PhD candidate in **Dr. Geoffrey Meru's** lab, recently participated in iBiology—a group who aims to provide open-access videos to science leaders. To watch Swati's interview, click [here](#). To learn more about Swati's research on the Accelerated Development of Papaya Ringspot Virus (PRSV) Resistance in squash, click [here](#).

Aline de Camargo Santos, a PhD candidate in **Dr. Bruce Schaffer's** lab, won third place in the very competitive Graduate Student Oral Competition in the Crop Physiology and Metabolism section of the Crop Science Society of America's conference in Baltimore, Maryland. Her presentation was titled 'Novel tools to phenotype stress in crops: A case study with peanut' with Pam Moon, Mathew Baumgartner, Bruce Schaffer, and Elias Bassil as co-authors. She received a certificate and a travel grant to have attended the conference.

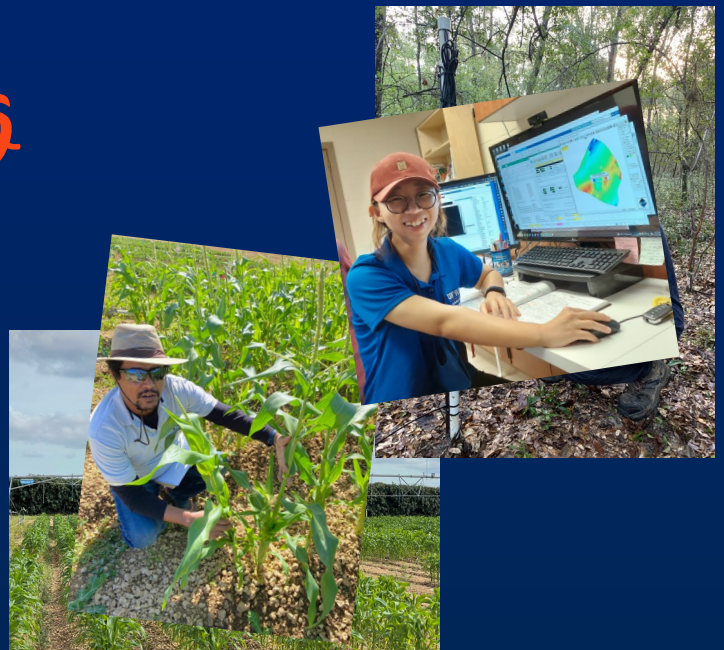
Marielle Berto, a PhD student in **Dr. Daniel Carrillo's** lab, for winning second place in the Acarological Society of America's Outstanding Student Presentation category. Marielle's presentation was on "Phoretic mites associated with ambrosia beetles in Florida avocados". **Marielle** also won the student competition at the XVI International Congress of Acarology. The conference took place in Auckland, New Zealand on December 1—5.

Marcello de Giosa, a PhD student in **Dr. Alexandra Revynthi's** lab, placed third in the same category. His presentation was titled "First record of *Cenopalpus wainsteini* (Acari: Tenuipalpidae) in the Americas and a description of the symptoms it causes on pines in Argentina, Chile, Italy, and Peru". **Marcello** was also awarded a Student Grant for his presentation "Spit it out: Extract of saliva from the lychee erineose mite" from the organizers of the XVI International Congress of Acarology.

Congratulations to

Satbyeol Shin, for completing her Doctoral degree in Hydrology under the supervision of **Dr. Young Gu Her**.

Fikadu Getachew, for completing his Doctoral degree in Crop Modeling under the supervision of **Dr. Haimanote Bayabil**.



TREC IN FOCUS

Advisory Board

Dr. Mike Merida received his Doctor of Plant Medicine (DPM) and Bachelors of Science in Horticulture from the University of Florida. He has worked at Costa Farms for over 16 years in various roles including IPM Manager, Grower, and Production Manager in Miami. During this time, Dr. Merida was awarded the Young Grower of the Year by GrowerTalk in 2009.

Currently, he works as the Senior Technical Director, for the Foliage Operation in Costa Farms where he manages over 800 acres of production. His primary responsibility is supporting the Head Growers and Operations throughout all operating units of Costa Farms. His main focuses are managing growing practices, pest & disease management, field scouts, the potting department, live goods receiving, standards and process improvements. In his spare time, Mike enjoys spending time with his wife and two girls, fishing, surfing and rooting for the Gators.



In this edition of TREC's graduate student In Focus series, we're zooming in on Fitsum Teshome, a Ph.D. student in Dr. Haimanote Bayabil's Water Resources Lab. In this video, Fitsum discusses a couple of the objectives of his dissertation, "Integrated Data from Ground Measurements and Unmanned Aerial Vehicle (UAV) System for Field Scale Evapotranspiration Modeling". Fitsum asserts that effective water resources management can help agricultural producers as the global demand for water increases.

Graduate Student



Fitsum expresses that his studies have empowered him to see how his specialty (Water Resources) can make a difference in the world. Fitsum recognizes that water is an essential resource, and he understands that a study focusing on the effective management of this resource can make a significant contribution to the Earth and its population. Being able to apply his studies in a real-world setting is part of the appeal of studying engineering.

Discovering and then educating people how to conserve and use water appropriately is another fulfilling aspect of his research because Fitsum can witness the effects immediately.

Check out [this video](#) to see how Fitsum's research could help farmers conserve water.



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

Making History

On Saturday, November 4, 2022, more than a handful of UF and UF/IFAS administrators were present at the Tropical Research & Education Center for the **Ground Breaking of the Pauline O. Lawrence Student Residence**, the first building in UF's history to be named after a black person. To learn more about Dr. Lawrence and her contributions to TREC, IFAS, and the University of Florida, click [here](#).

To keep up with the construction of the Student Residence, follow **#POLStudentResidence** on your favorite social media platform.

Ground Breaking of the
**PAULINE O. LAWRENCE
STUDENT RESIDENCE**

The Ground Breaking was followed by TREC's annual fundraising event, **One Night in the Tropics**. This year's fundraiser shattered the ceiling set at last year's event with more than 300 attendees and a total net revenue of more than **\$100,000!**

To learn more about *One Night in the Tropics*, visit our website [here](#) or follow #UFintheTropics on your favorite social media platform.



One Night in the Tropics Sponsors



THANK YOU TO OUR 2022 EVENT SPONSORS

Diamond

Platinum

Gold

Silver

Bronze


























Special Thanks to

Jorge Abreu

Timothy Garman

Anonymous Donors: M & SR

Dr. Christine Waddill

Sal Finocharrio

Mary Schneider



Tropi-Collaborations



The Wonderful World of Passion Fruit

UF Food Science & Human Nutrition | 01:02 | 14 views | a minute ago

Open

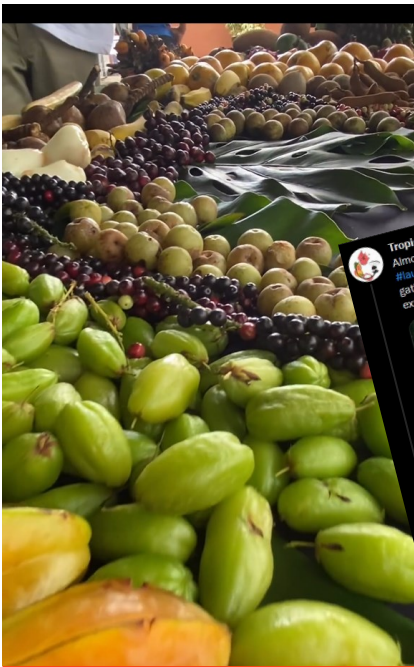
Watch together

The Department of UF/IFAS Food Science & Human Nutrition and TREC have joined forces to educate Floridians (& the world!) about various tropical fruits including various recipes to promote them.

“The Wonderful World of Passion Fruit” is the latest product of this collaboration. Click [here](#) to watch the video or [here](#) for the Amaretto Passion Fruit Yogurt Bar Recipe Card.

FIND US ON SOCIAL!

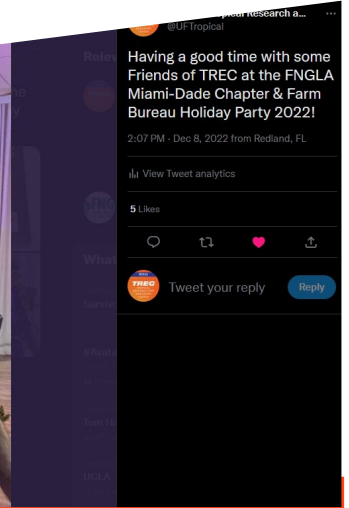
ICYMI — These are just some of the highlights from a very busy Fall semester at UF/IFAS TREC. To stay up to date on all of TREC's news and events, follow us on all platforms at [UFTropical](#) or check the *TREC in the News* page on our [website](#).



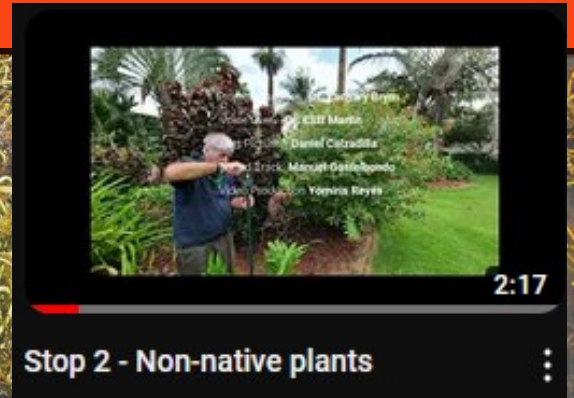
uftropical
Redland, Florida

uftropical Q: What should be the #1 factor in planting a fruit in Florida?
A: The historical weather patterns for your area. Read the article in our story to learn more and consider when planting fruit varieties.

#TropicalFruitTuesday #FloridaLandscaping



Stop 2 of Dr. Zachary Brym's *Plant Diversity Tour* is now available on YouTube! [Click here](#) to watch or listen to Dr. Cliff Martin narrate the unique (and tropical) plants that adorn the TREC campus.



If this newsletter was forwarded to you, you can subscribe [here](#).