

INSIDE TREC

Spring 2025

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Inside TREC is a quarterly newsletter distributed by the Communications & Marketing Development Unit of the UF/IFAS TREC via e-mail and can be found 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

As summer begins in south Florida, and nature turns up the thermostat to its max, we here at the UF/IFAS Tropical Research and Education Center (TREC) in Homestead are celebrating the sweat—not the sweat caused by the hot humid conditions, but that which has resulted in the remarkable achievements of our faculty and students. Their work continues to elevate UF's global reputation in the tropical and sub-tropical agricultural and natural resources sciences.

For instance, all four of our faculty members (Drs. Jonathan Crane, Yuncong Li, Bruce Schaffer, and Shouan Zhang) who submitted their body of work covering the past five years for post-tenure assessment were successful, receiving a rating of Exceeds Expectations. And, recently, it was announced that Dr. Xingbo Wu, our ornamental breeder, has been honored with the American Society for Horticultural Science (ASHS) Early Career Award. This national recognition is awarded to scientists who have made significant contributions to horticultural science within the first seven years of their career. Dr. Wu's pioneering research in the genetic improvement of vanilla, hibiscus, and hydrangeas is advancing plant breeding while also supporting sustainable agriculture and economic development in tropical regions. ([Click here for more information.](#))

Our students also have been reaping the

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benefits of their sweat by earning several prestigious awards. Four students received scholarships from the Dade AGRI-Council (Ms. You's Kertye Myrtil, Ms. Marielle de Moraes Berto, Ms. Maria Alejandra Canon, and Mr. Jesse Potts) and were recognized at the 60th Annual Farm / Agricultural Tour luncheon. Mr. Jesse Potts was also selected as a winner of the 2025 Golden Key Outstanding Member Award. Both he and Ms. Alejandra Taco have received general scholarships from the National Horticulture Foundation. A paper co-authored by Ms. Ketsira Pierre ("Potential of the Small Molecules Piperidine and Pyrrolidine against Copper-Resistant *Xanthomonas perforans*, Causal Agent of Bacterial Spot of Tomato") has been selected as the Plant Disease Editor's Pick. Ms. Gabriela Reyes received the National Science Foundation Graduate Research Fellowship – awarded to graduate students demonstrating outstanding potential in STEM research. This fellowship supports innovative projects in agroecology and plant pathology, helping students at TREC explore solutions to real-world agricultural challenges. She was also the recipient of the Florida Sea Grant Fellowship – this fellowship supports research that addresses coastal and marine issues. And, at the 2025 FSHS student competition, Mr. Sudeep Adhikari and Ms. Simranjot Kaur placed first in the Oral Presentation Award and Poster Award, respectfully. These are just a few examples.

These awards and accolades matter beyond personal and monetary achievements—they reflect our role in conducting cutting-edge research and education; they indicate that our faculty, staff, and students do not take for granted the public funds placed at our disposal; and they demonstrate how we are carrying out the mission of the University in training future leaders, supporting local agriculture, and contributing to global scientific progress. So here at TREC we continue to sweat but it is not just from the heat.

Edward "Gilly" Evans



Research Report



In this installment of the UF/IFAS TREC's Research Report, we'll share some of the progress taking place in Dr. Geoffrey Meru's vegetable breeding and genomics lab. The overarching goal of Dr. Meru's program is the development of high yielding subtropical and tropical vegetable varieties with acceptable resistance / tolerance to abiotic and biotic stresses using contemporary and traditional technologies.

Creating resistant varieties, conventionally

Cucurbits are economically important vegetable crops in Florida and include squash, cucumber and watermelon. Some of the biotic stresses that cucurbits are prone to include powdery mildew, downy mildew, phytophthora capsici, anthracnose, aphid transferred viruses, and whitefly transferred viruses and disorders. Developing resistant cucurbit varieties through conventional methods can be an arduous and resource intensive process. First, researchers must identify resistant sources from a vast germplasm collection, a process likened to "searching for a needle in a haystack". The resistance sources are typically found in wild crop relatives, and these beneficial traits must be transferred into elite cultivars through breeding and selection. Historically this process has been labor intensive, taking up to 15 years.

Creating resistant varieties, now

With the aid of genetics and genomics tools, this process has been accelerated. By leveraging advances in sequencing technologies and bioinformatics, the vegetable breeding and genomics lab has developed a suite of breeding tools for efficient selection of suitable cucurbit varieties in the research program. Current successes include the application of marker-assisted selection to advance resistance to phytophthora crown rot and aphid transmitted viruses, such as zucchini yellow mosaic virus and papaya ringspot virus. In addition, the researchers are deploying genomic selection methodologies to develop cucurbit varieties with resistance to powdery mildew. Overall, the application of these tools has accelerated the breeding process and shortened the resistance variety development process to roughly 6-8 years.

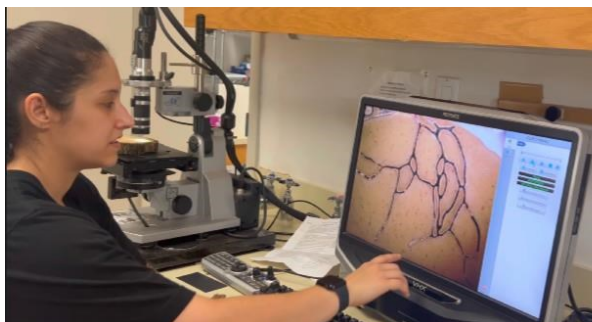
Developing superior calabaza varieties

Calabaza squash, also known as tropical pumpkin, is a popular delicacy in Florida and the Caribbean. The flesh of calabaza is rich in nutrients including vitamin A and C and beneficial phenolic compounds. Researchers at TREC are developing hybrids of calabaza that combine high yield with superior flesh quality and rich flavor. Three precommercial hybrids (UFTP8, UFTP32 and UFTP80) have done well in field trials across the southeastern US and Puerto Rico. [Click here to learn more about Dr. Meru's lab.](#)

TREC in

Graduate Student

Marielle de Moraes Berto is a fourth year PhD candidate in Dr. Daniel Carrillo's tropical fruit entomology lab at the UF/IFAS Tropical Research & Education Center (TREC). Marielle is a native of Piracicaba, Brazil where she studied Biological Sciences at the University of Sao Paulo. Originally, she came to TREC in 2017 to study *Brevipalpus* mites that attack citrus. Since then her interests have expanded to phoretic mites and ambrosia beetles and she has worked with colleagues from around the world to find solutions for laurel wilt's impact on Florida's avocado industry.



In this video, Marielle explains how the ambrosia beetle establishes colonies inside the trunk of an avocado tree. The beetles cultivate a symbiotic fungi in their galleries which is used to feed their young. Also in these galleries, researchers have identified several species of mites. Of particular interest is the *Histiogaster arborsignis* due to its feeding on the symbiotic fungi of the Ambrosia beetles. Because of its high reproductive rates, researchers believe the *H. arborsignis* may be useful in future biological control programs against ambrosia beetles and other wood-boring insects.

For more details on this research, we encourage you to access [Beyond phoresy: Interactions between *Histiogaster arborsignis* \(Acari: Acaridae\), ambrosia beetles and their fungal symbionts in Florida avocados.](#)

Check out the "TREC Student Spotlight" playlist on YouTube to learn more about the efforts of TREC graduate students.

Advisory Board

Kim Hosang is a native of Miami, Florida. She graduated *Summa Cum Laude* from the Agriscience and Engineering Magnet Program at Coral Reef High School and is a University of Florida graduate. Currently she is the Director of Sales and Client Relations at KimSue Foliage, a third-generation, family-owned and operated business founded by her grandfather and parents. KimSue Foliage specializes in indoor ornamental foliage and tropical plants catering to the niche industries of interiorscape, plant shoppe, florists, and independent garden center markets.

Ms. Hosang is a past officer of the Miami-Dade FNGLA Board of Directors and presently serves on the UF/IFAS Ornamental Advisory Committee and Dade County Farm Bureau Board of Directors.



F^{OCUS}

In this edition of TREC's Post Doc Exposé, we feature Dr. Aline Tassi, a post doctoral researcher in Dr. Daniel Carrillo's Tropical Fruit Entomology Lab.

Post doc Exposé

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

A: At TREC we have a direct connection between research and its practical application in the field. While my background is in plant virology and *Brevipalpus* mite vectors, here I've expanded my work to include other insect vector systems and have closely collaborated with extension specialists and regulatory teams. This has allowed me to engage directly with growers, working in real-world pest and disease challenges.

Q: Who has had the greatest influence on your career?

A: The greatest influence on my career has been my graduate advisor, Dr. Elliot Watanabe Kitajima. He inspired my passion for acarology, virology, microscopy, and related fields by helping me develop diverse skills and connecting me with collaborators who encouraged an integrative approach, combining taxonomy, ecology, and plant pathology.

Q: What is the hardest aspect of your position?

A: One of the biggest challenges is translating complex scientific findings into practical solutions that growers can actually use. That and time management, especially when working with different crops and multiple vector-pathogen systems at the same time.

Q: How do you spend your free time?

A: I enjoy being outdoors, spending time with pets, and relaxing by watching series and movies. I also value time with family and friends.

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

A: Charles Darwin. Not only because of his importance to biology and evolutionary theory field, but also to hear stories he must have from his Galápagos expedition.



Congratulations

Graduating Students

This semester, the following students concluded their research at TREC and have crossed into the next stage of their scientific careers:

- ◆ Catherine Kaylor earned an M.S. from SWES. Her advisors were Drs. Ashley Smyth and Laura Reynolds. You can view Catie's seminar on "Florida hard clams: A comparative study of morphology, physiology, and biogeochemical cycling" [here](#).



Student Awards

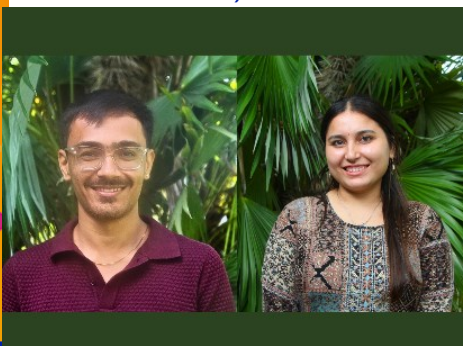


Gabriela "Bella" Reyes, a Ph.D. candidate in Dr. Ashley Smyth's lab, is a recipient of both the National Science Foundation Graduate Research Fellowship and the Florida Sea Grant Fellowship. Upon graduation, Bella will become a David H. Smith Conservation Research Postdoctoral Fellow working with local communities to enhance the "understanding of the complex socio-ecological interactions that affect carbon dynamics and the management of blue carbon ecosystems". Bella's dissertation research was recently fea-

tured in a Student Spotlight. [You can watch it here](#).

Alejandra Taco, a Masters student in Dr. Xingbo Wu's tropical plant breeding and genetics lab, received \$1,000 from the National Horticulture Foundation's general scholarship award.

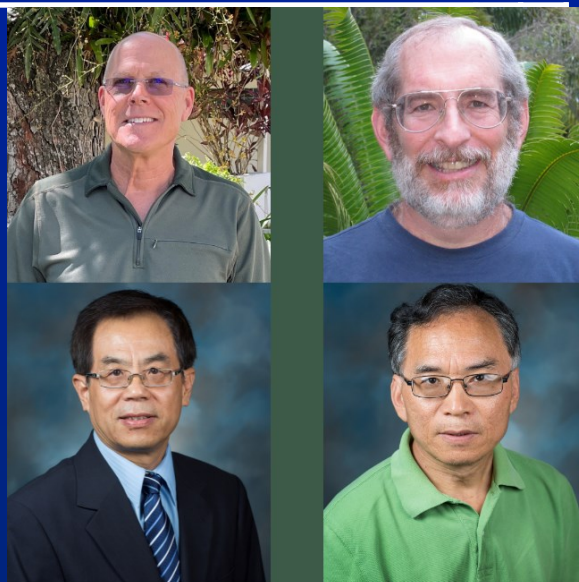
Jesse Potts, a PhD student in Dr. Wu's lab, was also selected as a recipient of the National Horticulture Foundation's general scholarship award. Jesse Potts was awarded \$3,000. Jesse was also recognized as a winner of the 2024 Golden Key Outstanding Member Award, earning a prestigious scholarship award of \$500!



Not one, but two Ph.D. students from Dr. Geoffrey Meru's vegetable plant breeding lab earned first place prizes at the recent Florida State Horticultural Society 2025 Conference in Bonita Springs. Sudeep Adhikari won first place for his Oral Presentation on "Battling whiteflies in Cucurbita crops — Exploring host resistance for cultivar development". Simranjot Kaur won first place in for her Poster, "Evaluating yield performance in commercial cucumber varieties under Anthracnose pressure".

Faculty & Staff Awards

Recently four TREC faculty members achieved post-tenure status in recognition of their exceptional productivity and contributions to the University and the wider academic and non-academic communities. Drs. Jonathan Crane, Bruce Schaffer, Shouan Zhang, and Yuncong Li each received the highest rating, “Exceeds Expectations”, based on contributions they made over the last five years, highlighting their dedication to excellence in teaching, research, Extension, and service. Their outstanding achievements have significantly enriched our academic community.



Dr. Xingbo Wu, an Assistant Professor in the Department of Environmental Horticulture specializing in tropical plant breeding and genetics, has been awarded the 2025 ASHS Professional Early Career Award for Research, Innovation and Creativity. Dr. Wu will accept his award at the 122nd ASHS Annual Conference at the Hyatt Regency New Orleans on July 29.

[Learn more about Dr. Wu and his accomplishments here.](#)

To read “Potential of the small molecules Piperidine and Pyrrolidine against copper-resistant *Xanthomonas perforans*, causal agent of Bacterial Spot of Tomato”, [click here](#).

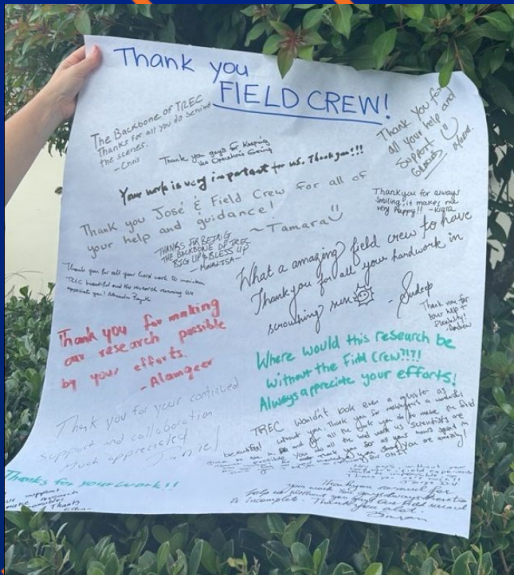
To learn about alternative management strategies on tomatoes that researchers in Dr. Zhang's lab are working on, [check out this Student Spotlight featuring Ketsira Pierre's research](#).



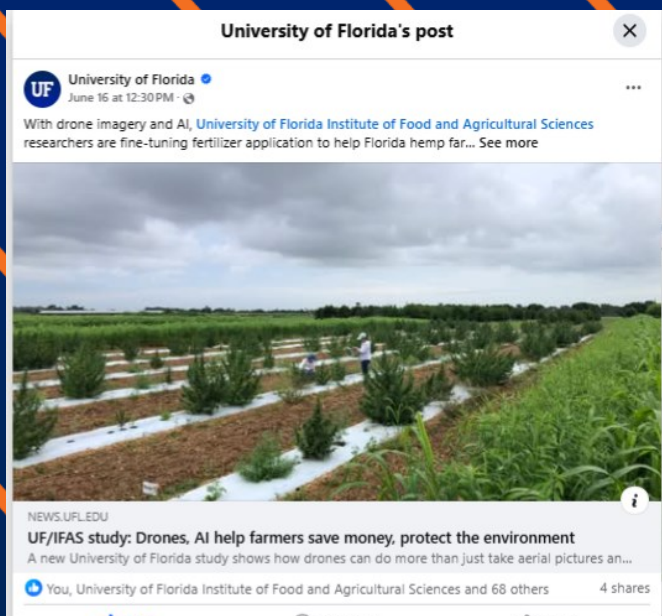
Celebrating Research



The South Florida Graduate Student Organization was awarded \$250 thanks to the efforts of TREC's 2025 Social Committee and the Communications and Marketing Development Unit (CMDU). In honor of Graduate Student Appreciation Week, TREC's Social Committee hosted a pizza party. Featured at that luncheon were a variety of sweets and desserts from Latin America, the Caribbean, and Asia that were on the menu. Yomiris Reyes, of the CMDU, photographed the sweets to win first prize in the category of "Taste of Success."



In addition to celebrating graduate students, TREC's 2025 Social Committee thought to celebrate the Field and Shop Crews whose dedication and hard work keep the Center and the research moving.



Notable Moments

On April 8, 2025, Dr. Edward “Gilly” Evans, the UF/IFAS TREC Center Director, and Dr. Shoaib Rashid Saleem, the Director of the Center for Precision Agriculture, PMAS Arid Agriculture University, had the opportunity to commemorate the Memorandum of Understanding (MOU) entered into by the UF/IFAS Tropical Research & Education Center and PMAS Arid Agriculture University. The MOU aims to

- ⇒ Promote the enrichment of their teaching, learning, research, and discovery missions;
- ⇒ Strengthen and expand the mutual contact between the universities; and
- ⇒ Provide for a variety of collaborative opportunities for employees.

The scope of the collaborative activities to be pursued through this MOU include academic collaboration, student exchange

programs, professional development, research collaboration, and exchange of knowledge of resources. At the occasion, Dr. Evans said that the signing of the Agreement is in keeping with one of TREC’s priorities “to strengthen and expand strategic partnerships at all levels.”



Stay tuned for the results of this collaboration! In the meantime, we encourage you to view [Dr. Shoaib Rashid Saleem’s presentation here.](#)

Yomiris Reyes, the social media specialist within the CMDU at TREC, produced a short video highlighting the impact that TREC'S research has on the local community as a part of her coursework as a Digital Journalism major at FIU. This video was shared on Caplin News, a publication of FIU's Lee Caplin School of Journalism & Media.



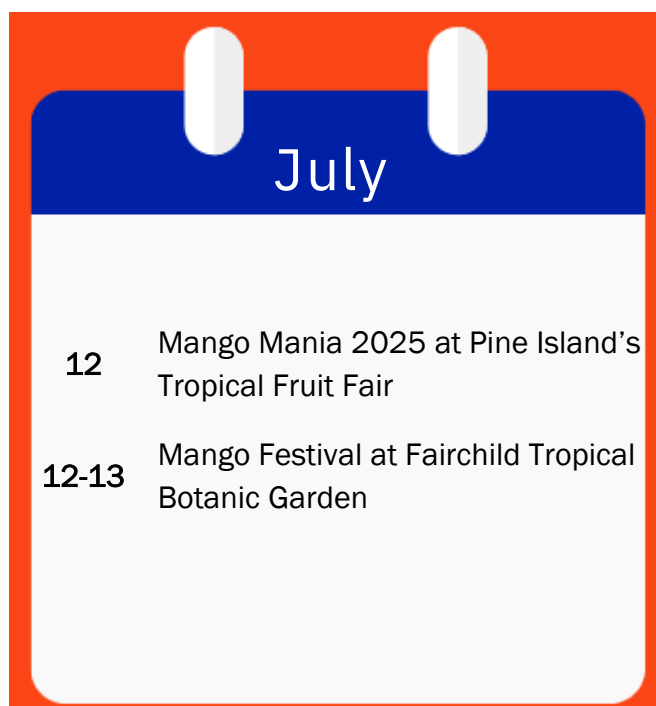
You can learn more about Yomiris Reyes and the motivation behind this video, by visiting her profile on LinkedIn.

EDIS Publications

- Bayabil, H. K.**, Hailegnaw, N. S., & Sharma, V. (2025). “Variable Rate Irrigation Technology: A step-by-step guide to field implementation: AE609, 2/2025.” *EDIS*, (2). DOI: <https://doi.org/10.32473/edis-AE609-2025>
- Evans, E. A. & Ballen, F. H.** (2025). “An overview of global papaya production, trade, and consumption: FE913, 3/2025.” *EDIS*, (2). Link: <https://edis.ifas.ufl.edu/publication/FE913>
- Sarkhosh, A., Jimenez Pardo, J. D., Clavijo-Herrera, J., Khalil, U., & **Crane, J. H.** (2025). “Passion fruit propagation: A comprehensive guide: HS1491, 3/2025.” *EDIS*, (2). DOI: <https://doi.org/10.32473/edis-hs1491-2025>
- Vought, K., **Bayabil, H. K.**, Martin-Ryals, A. (2025). “How efficient are hydroponic lettuce production systems in nutrient usage under low and high salinity?: AE610, 2/2025.” *EDIS*, (2). DOI: <https://doi.org/10.32473/edis-AE610-2025>



Upcoming Extension Events



Research Publications

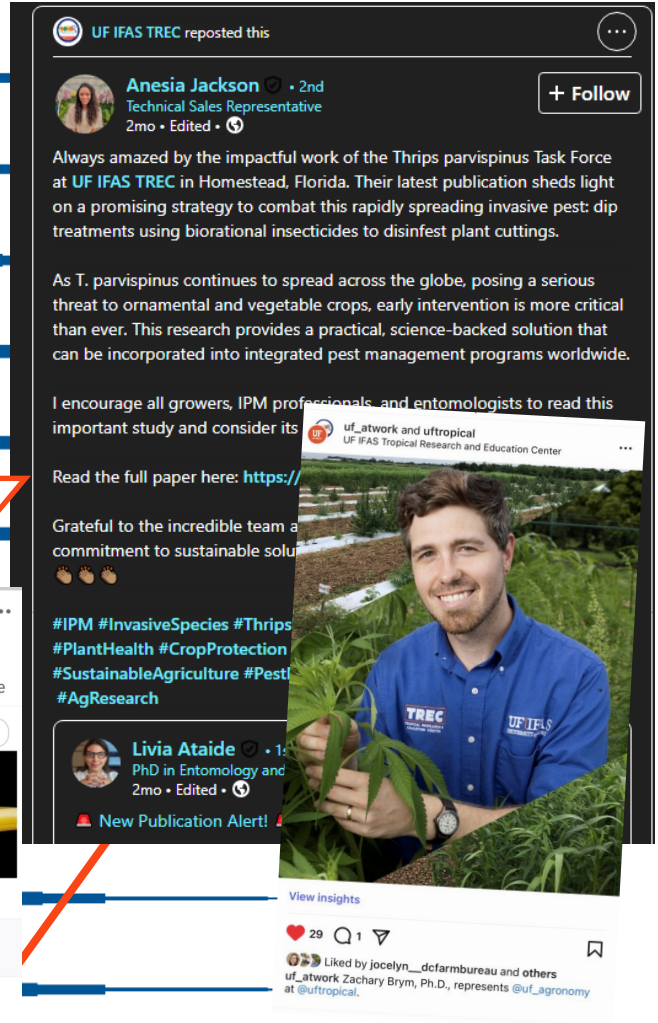
- Calzadilla, D., **Brym, Z.**, Canavan, S., Baecher, K. M., **Martin, C. G.**, & Flory, L. (2025). Emergence and persistence of volunteer hemp in south Florida. *Invasive Plant Science and Management*, 2025, 1-29. DOI: <http://dx.doi.org/10.1017/inp.2025.13>
- Cardenas, D. E., Aguilar, C., Bhatta, U., Bugingo, C., Cochran-Murray, S., **Gazis, R.**, Miles, T., Jurick III, W. M., Quesada –Ocampo, L. M., Thiessen, L., & Cano, L. M. (2025). Rotten to the core: Challenges with postharvest disease management of fruit crops. *Plant Disease*, DOI: <https://doi.org/10.1094/PDIS-10-24-2263-FE>
- De Souza, J. R. M., Leal, L. Y.de C., Paulino, M. K. S. S., Nunes, J. A., de Medeiros, R. L. S., dos Santos, M. A., Lins, C. M. T., de Souza Junior, V. S., **Schaffer, B.**, & **Rodrigues de Souza, E.** (2025). Cowpea (*Vigna unguiculata*) water relations, growth, and productivity as affected by salinity in two soils with contrasting mineralogies. *Soil Systems*, 9(2), 36. DOI: <https://doi.org/10.3390/soilsystems9020036>
- Gastelbondo, M., **Michael, V.**, Wang, Y., Chambers, A., & **Wu, X.** (2025). Comparative transcriptome profiling of vanilla (*Vanilla planifolia*) capsule development provides insights of anillin biosynthesis. *BMC Plant Biology*, 25(343). DOI: <https://doi.org/10.1186/s12870-025-06360-w>
- Hailegnaw, N. S., **Awoke, G. W.**, de Camargo Santos, A., **Schaffer, B.**, **Vargas, A. I.**, **Rodriguez de Souza, E.**, & **Bayabil, H.** (2025). Assessing salinity-induced impacts on plant transpiration through machine learning: from model development to deployment. *Modeling Earth Systems and Environment*, 11(173). DOI: <https://doi.org/10.1007/s40808-025-02343-w>
- Hussain, S.**, Teshome, F. T., **Tulu, B. B.**, **Awoke, G. W.**, Hailegnaw, N. S., & **Bayabil, H. K.** (2025). Leaf area index (LAI) prediction using machine learning and UAV based vegetation indices. *European Journal of Agronomy*, 168(2025), 127557. DOI: <https://doi.org/10.1016/j.eja.2025.127557>
- Karlsen-Ayala, E., Jusino, M. A., Smith, M. E., & **Gazis, R.** (2025). Salt Life: Salinity drives ectomycorrhizal community structure in the endangered pine rocklands. *Molecular Ecology*, 21, e17737. DOI: <https://doi.org/10.1111/mec.17737>
- Kefelegn, G. A.**, Hailegnaw, N. S., & **Bayabil, H. K.** (2025). Soil flooding increases greenhouse gas fluxes. *Atmospheric Environment: X*, 10333. DOI: <https://doi.org/10.1016/j.aeaoa.2025.100333>
- Kefelegn, G. A.**, Hailegnaw, N. S., **Smyth, A. R.**, **Li, Y.**, Gao, B., & **Bayabil, H. K.** (2025). Mitigating seawater flooding induced greenhouse gas emissions and nutrient leaching using soil amendments. *Journal of Hazardous Materials Advances*, 100702. DOI: <https://doi.org/10.1016/j.hazadv.2025.100702>
- Kim, D. H.**, Wade, T., **Brym, Z.**, Ogisma, L., Bhattarai, R., Bai, X., Bhadha, J., & **Her, Y. G.** (2025). Assessing the agricultural, environmental, and economic effects of crop diversity management: A comprehensive review on crop rotation and cover crop practices. *Journal of Environmental Management*, 387, 125833. DOI: <https://doi.org/10.1016/j.jenvman.2025.125833>
- Lugo-Duque, M. A.**, Navia-Urrutia, M., **German Muñoz-Perea, C. G.**, & **Gazis, R.** (2025). Flutriafol as a promising fungicide for the management of Laurel Wilt in avocado production. *Plant Health Progress*, 26, 1. DOI: <https://doi.org/10.1094/PHP-02-25-0050-RS>
- Sanchez, F. W.**, **Crane, J. H.**, **Bayabil, H. K.**, **Sarkhosh, A.**, **Shahid, M. A.**, **Schaffer, B.** (2025). Brassino-steroid priming mitigates negative physiological responses of *Garcinia humilis* to flooding and salinity. *Plant Stress*, 16(June), 100892. DOI: <https://doi.org/10.1016/j.stress.2025.100892>
- Tassi, A. D.**, Ramos-González, P. L., Flechtmann, C., Amrine, Jr., J. W., Sarkhosh, A., Freitas-Astúa, J., Elliot, K., Rodrigue Marques, J. P., Harmon, P. F., & **Carrillo, D.** (2025). Eriophyid mites vector the Kitavirus blueberry necrotic ring blotch virus: Insights into the viral transmission and its infection on blueberry plants. *Phytopathology*. DOI: <https://doi.org/10.1094/PHYTO-02-25-0063-R>

Let's get Tropical!

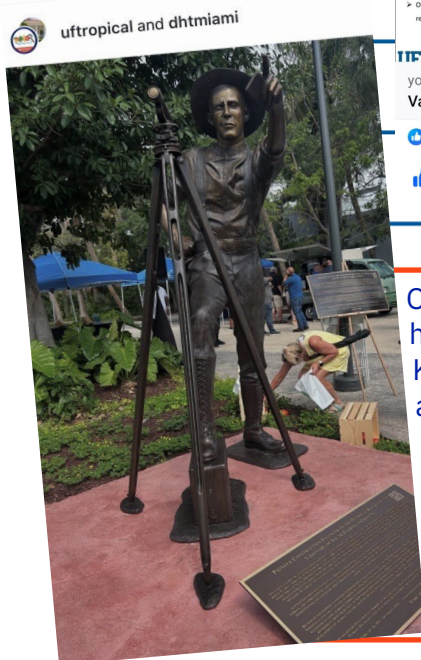
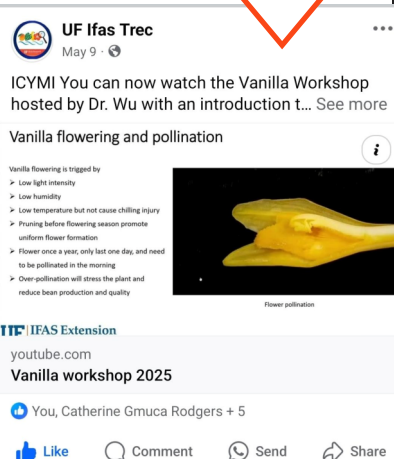
Here are some of the memorable moments from social media.



Click here to watch the Dr. Xingbo Wu's latest Vanilla Workshop video.



Click here to watch Dr. Patricia Manosalva's seminar on Avocado rootstocks.



On April 8, the City of Homestead honored the legacy of William J. Krome by unveiling a statue of him and sharing information on the Krome legacy in Homestead.

The UF/IFAS TREC was established in 1929 on lands donated by the Krome family and Charles E. Schaff.

