

INSIDE TREC



Summer 2023

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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

We were fortunate not to be in the path of Idalia. We extend our sympathies to those who were less fortunate and wish them a speedy recovery. As I watched horrid scenes on the television, I saw trees being blown down, breaking while others bent with each gust of wind before straightening up. I could not help but think of the adage "the trees that get broken are the ones that cannot bend". Adversity will come, but a factor of life is that we must learn how to adapt. The vegetable industry in South Florida has figuratively been going through a storm, and while bending considerably to the pressure of international trade and pests and diseases, to name a few, it is not broken.

To assist the industry in coping, here at our Center, we have just completed the search and screening process for a Vegetable Horticulturist. We were blown away by the number of applicants and the caliber of the applicants who applied for the position, which made our final decision extremely difficult. We recognize that the challenges facing that person will be enormous as the industry seeks to adapt and weather the storm. For one thing, we are witnessing major changes within the

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From the Desk of the Director (continued)

demographics of the producer community, such as the shift from older to younger farmers, the addition of new ethnic groups (e.g., Asian- and Hispanic- Americans), and the interest in alternative and more diverse cropping systems. The tasks confronting these changes will involve efforts to support commercial (including commercial urban and protected) vegetable production in the region while investigating innovative production systems that lead to increased diversification of alternative and emerging crops and adopting precision crop production practices, which will assure sustainability, climate resilience, and profitability for vegetable crop farms. It also calls for the development of vegetable crop production systems that will assist growers to compete in the local, regional, national, and global economy while, at the same time, making sure we reduce/minimize any adverse impact of agricultural activities in the South Florida environment. This will require developing interdisciplinary research and extension projects in collaboration with other faculty in areas such as breeding and genetics, entomology and nematology, plant pathology, soil and water sciences, agricultural engineering, hydrology, food and resource economics, and precision agriculture.

The above represents a tall order but, with the effort that went into the search, we feel confident we have found the right person to assist with weathering the storm and look forward to welcoming her on board next January.

Edward 'Gilly' A. Evans



Learn more about luffa, an Asian vegetable, [here!](#)



Research Report

In this installment of TREC's Research Report, you'll learn about Dr. Haimanote Bayabil, an Assistant Professor in the UF/IFAS Agricultural and Engineering Department and his research.

Meanwhile, climate-smart soil and water management practices aim to optimize land and water resource use, enhance productivity, and mitigate climate change impacts. Two of the major thematic areas of Dr. Bayabil's research program are highlighted below:

Precision irrigation and nutrient management decision support systems: Dr. Bayabil is leading research in this area by employing advanced ground-based sensing and drone imaging technologies using funding from UF/IFAS and USDA NIFA. Dr. Bayabil's research investigates the responses of different sweet corn cultivars to variable rate irrigation and the development of crop coefficient curves specific to south Florida's conditions. Dr. Bayabil's research in this area includes developing precision irrigation management practices for snap beans and sweet corn and the development of site-specific phosphorous recommendations for snap beans production on calcareous soils of south Florida. The machine learning (ML) algorithms and drone-based imaging techniques developed by Dr. Bayabil's lab can be effectively used to estimate sweet corn yield and yield components. The tools implemented by Dr. Bayabil's lab have provided valuable support to growers in identifying the most effective irrigation and nutrient management practices for achieving optimal crop yield.

Climate-smart soil water management practices: Coastal regions in the US, including south Florida, are expected to face a ten-fold increase in flooding and a sea level rise of up to 12 inches by 2050. However, the effects of soil salinity from flooding and salt-water intrusion on hydrology, nutrient availability, and productivity of agricultural soils are not understood. Dr. Bayabil is conducting research, using funding from USDA-NIFA, that aims to develop novel management options to mitigate the adverse effects of soil salinity through a better understanding of salinity impacts on hydrology, water quality, and greenhouse gas emissions. Dr. Bayabil's group has developed and tested a novel hydrogel material with a high water-holding capacity, significantly reducing salinity from salt-affected soils. In addition, Dr. Bayabil's group researches climate change adaptation strategies, including irrigation, soil management, and other cultural practices that can be implemented at different scales.

To learn more about the research conducted by Dr. Bayabil's lab, [click here](#).



Congratulations

Student Awards

Jesse Potts, a Ph.D. student in Dr. Wu's Plant Breeding and Biotechnology lab, was awarded a scholarship in the amount of \$1,000 from the [African Violet Society of America \(AVSA\)](#). The award will go towards Jesse's proposed research on developing African violet lines that are resistant to powdery mildew using CRISPR gene editing.

Jesse was also inducted into [Phi Kappa Phi Honor Society, UF chapter](#). Phi Kappa Phi is the nation's oldest and most selective honor society for all academic disciplines and only extends invitations to the top 10 percent of seniors and graduate students at more than 300 colleges and universities nationwide.



M. Sohail Waqas, a Ph.D. student in Dr. Bayabil's Water Resources lab, was awarded first place in the Graduate Student Oral Presentation Competition at the Florida Section Summer Meeting of the [American Society of Agricultural and Biological Engineers \(ASABE\)](#) in Duck Key. His presentation was titled 'Irrigation and phosphorous best management practices for snap bean production in calcareous soils of south Florida'.

Fitsum Teshome, also a Ph.D. student in Dr. Bayabil's Water Resources lab, was awarded second place for his presentation 'Evaluating field scale crop growth simulation models in south Florida'.

Prerna Sabharwal, a Ph.D. student in Dr. Meru's Vegetable Breeding lab, won third place in the [Florida State Horticultural Society's \(FSHS\)](#) Oral Student Competition at the 136 Annual Meeting in Daytona. Prerna's presentation was titled "Evaluation of tropical pumpkin for yield and horticultural traits".

Prerna was also awarded the Bobby F. McKown Scholarship/Fellowship Endowment Fund from CALS.

Marielle de Moraes Berto, a PhD student in Dr. Daniel Carrillo's Tropical Fruit Entomology lab, was awarded the A. S. Herlong, Sr. Graduate Scholarship from CALS.

Marcello De Giosa, a PhD student in Dr. Alexandra Revynthi's Ornamental Entomology lab, was awarded the Doris and Earl and Verna Lowe Scholarship.

Faculty & Staff Awards

Drs. Romina Gazis, Geoffrey Meru, and Young Gu Her for being tenured and promoted to Associate Professor. We wish them continued success in their careers!

Dr. Geoffrey Meru and colleagues received a nearly \$5 million grant from the [USDA NIFA Specialty Crop Research Initiative \(SCRI\)](#)! Of this amount, \$276,573 will go directly to [Dr. Meru's Vegetable Breeding and Genetics Lab](#). The project, "Sustainable Anthracnose Management for Watermelon and Cucumber Growers in the Eastern U.S.", will focus on developing resources for the management of anthracnose disease in watermelon and cucumber. Dr. Meru's lab will deploy breeding and genomics to develop a resistant cucurbit germplasm.

Dr. Zachary Brym and colleagues received a grant from Carbek for more than \$1 million to research agricultural carbon sequestration and land restoration.

Yomiris Reyes, the Social Media Specialist, was awarded the prestigious NBCU Academy Fellows Scholarship at Miami Dade College. Yomi received a \$5,000 scholarship awarded by NBCUniversal News Group to educate future journalists and content creators.

The 136th annual meeting of the Florida State Horticultural Society took place in Daytona Beach, Florida this summer. The following faculty and staff were recognized for their accomplishments:

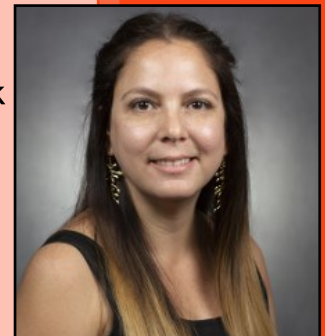
Rafia Khan, Dak Seal, Catherine Sabines, and Shawbeta Seal won Best Paper for "Pest and disease incidence in different tomato varieties".

Dr. Jonathan Crane, Dr. Alan Chambers, and their co-authors received the Best Paper Award in the Handling and Processing Section for paper titled "Determination of mango flavor formation through pathway based metabolomics (H-4)."

Rafia Khan, Dak Seal, Catherine Sabines, and Shawbeta Seal won the award for Best Tomato Research Project.



Dr. Geoffrey Meru



Dr. Romina Gazis



Dr. Young Gu Her



Members from Dr. Seal's Vegetable Entomology Lab examine a sweet corn crop for insects.

From left to right: Rosan Adhikari, Victoria Adeleye, Shawbeta Seal, Dr. Rafia Khan, Dr. Dakshina Seal, and Cathie Sabines.

TREC IN FOCUS

Interns

In this edition of TREC's *In Focus* series, we want to zoom in on the interns we have recently hosted. From watering and monitoring the growth of plants to pipetting buffer into ground leaf tissue for DNA extraction, the internships provide local students with experiential learning opportunities to conduct scientific research in field and laboratory-based environments. For students with aspirations to



work in STEM-related careers, the skills acquired through these internships are entry-level. In addition to creating spaces for skill development, we anticipate that the experience of working along side world-class scientists and elite graduate students will encourage the next generation of scientists to consider the agricultural and natural sciences as viable career options. Watch [this video](#) to see some of the interns in action.

PostDoc Exposé(d)

In this edition of TREC's PostDoc Exposé(d), we feature Dr. Mulatu Liyew Berihun, a post doctoral researcher in Dr. Haimanote Bayabil's Water Resources lab.

Q: Where did you complete your Bachelor's, Master's, PhD?

A: I completed my bachelor's degree at Arba Minch University in Ethiopia, followed by my master's degree at Addis Ababa University, also in Ethiopia. For my Ph.D., I pursued my studies at Tottori University in Japan. I worked as a lecturer and Assistant Professor at Bahir Dar Institute of Technology, Ethiopia since 2010. Prior to joining TREC, I had the privilege of serving as a Visiting Associate Professor at the renowned Arid Land Research and Research Center, Tottori University, further elevating my research experience.

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

A: One unique aspect of a role at TREC could be the opportunity to work on innovative and sustainable water and nutrient management practices that aim to address specific challenges in the local community or region. This could involve developing and





"This internship at TREC helped me protect my career path, fostering resilience in the face of professional tides, much like mangroves do for coastal regions and the diverse community they host."

-Sandy Del Sol Santana, MDC STEM Smart Intern

Here is more feedback from some of the interns

[T]his [experience] has proved that I will enjoy a career in the science field.

Is a unique experience to start getting involved in the actual work.

I would recommend this internship to other students because it is a great learning experience and you can explore many scientific fields.

All of the staff, and faculty provide support to aid in increasing your educational and professional experience.

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



implementing new methods for water conservation, soil management, or crop production that are tailored to the unique environmental and socioeconomic conditions of the area. This kind of applied research and extension work would require collaborating closely with farmers, policymakers, and other stakeholders to design and implement practical solutions that have a positive impact on agricultural practices and the local ecosystem. This focus on finding sustainable solutions to real-world challenges is a distinct and exciting aspect of working at TREC that may not be encountered before in my teaching or research settings.

Q: What is your next step? How has TREC prepared you for it?

A: My next step is to secure a faculty position where I can apply the knowledge and experience gained at TREC to advance my career in hydrology and water resources management. TREC has prepared me for this transition in multiple ways. Firstly, it provided a strong research foundation and exposure to cutting-edge methodologies, enhancing my critical thinking and research skills. Secondly, the extension program and activities at TREC offer a new dimension to disseminate my research outputs to growers and stakeholders. Thirdly, the collaborative and interdisciplinary environment broadened my perspective and equipped me to excel in diverse teams. Additionally, TREC facilitated valuable networking opportunities and emphasized effective communication and knowledge dissemination. Overall, TREC has equipped me with the necessary foundation, skills, and abilities to contribute significantly to water resources management research and innovation.

TREC EXTENDED

Advisory Board

Barney Rutzke, Jr. is a member of a family that has been farming and ranching in Florida since 1907. He is the current owner of Railroad Nursery, Inc., a 350-acre plant nursery in South Florida. Established in 2001, Railroad Nursery focuses on producing high-quality Tropical Foliage and Ornamental plants for a variety of wholesale and retail customers.



Mr. Rutzke, Jr. currently serves as the President of Dade County Farm Bureau, the Vice President of the Miami-Dade Chapter of the Florida Nursery Growers and Landscape Association (FNGLA), the Miami-Dade Agricultural Practices Advisory Board and on the Florida Farm Bureau Federation Advisory Committee for Environmental Horticulture. In addition, he is also very active in various Task Forces and Committees that focus on Agricultural Issues for Miami-Dade County. Some examples include: the Hibiscus Bud Weevil and Thrips Parvispinus Task Forces, worked with local and state elected officials on the DERM Interim Guidance, Truck Parking, Heat Ordinance, Agri-Tourism Event Venue and Immigration issues.

Because of his family history and personal farming experience, Barney is not only well versed in field/fruit crop production and the nursery business but works hard to ensure that Agriculture continues to be a profitable and viable entity.



As President of the Dade County Farm Bureau, Mr. Rutzke presented Dr. Evans with a check in the amount close to \$10,000! Mr. Rutzke expressed his and the community's pleasure with the support the Center provides.

UF Interim Provost Dr. Scott Angle and Ashley Smyth paddle in Oleta River State Park.




Scott Angle and Ashley Smyth paddle in Oleta River State Park. (UF/IFAS)

Upcoming (Extension) Events



Background:

Thrips parvispinus or pepper / short-spined thrips is a recently introduced invasive insect that continues to pose a serious problem to certain plants, like gardenias, pinwheel jasmines, mandevillas, and scheffleras, within Florida's horticultural industry. The goal of this FREE workshop is to provide in-person learning on identification, geography and spread, ongoing trials, and integrated pest management strategies for nursery and landscape professionals. A free set of thrips scouting resources will be included with registration. Capacity is limited for each location - please register via eventbrite (see QR codes or hyperlinks below).

9/19 8:30 AM - 11:30 PM UF/IFAS Extension Palm Beach County - Exhibit Hall A 559 N. Military Trail	9/19 2 PM - 5 PM UF/IFAS Fort Lauderdale Research & Education Center (FLREC) 3205 College Ave.	9/20 9 AM - 12 PM UF/IFAS Extension Miami-Dade County 18710 SW 288 St. Homestead, FL, 33030
 Eventbrite Link C		

September	
19— 20	Thrips parvispinus Multi-County Workshop Tour
26	Hemp webinar

October	
2	Hemp informational Session: Hemp products
5	Climate Smart Floridians Virtual Course
24	A Holistic Assessment of Using Shellfish Aquaculture for Water Quality Improvement Initiatives in Florida



November	
4	One Night in the Tropics

- Brym, Z.**, Cohen, H., Wooten, H., Matcham, E., Outerbridge, D. (2023). Introducing agroecology: AGR476, 6/2023. DOI: <https://doi.org/10.32473/edis-AG472-2023>.
- Li, Y.**, Zhu, Q., Mylacarapu, R., Morgan, K., Liu, G., **Crane, J.**, Wang, Q., Mayer, H., Wasielewski, J., Vasquez, L., Liu, Q., Olczyk, T. (2023). Nutrient management recommendations based on Mehlich-3 extractant for calcareous soils in Miami-Dade County: SL504. DOI: <https://doi.org/10.32473/edis-SS717-2023>
- Meru, G.**, **Fu, Y.**, **Scoggin, M.**, Balerdi, C. F., Vasquez, L. y Olczyk, T. (2023). Semillas desnudas de calabaza en el sur de Florida: HS1323S. DOI: <https://doi.org/10.32473/edis-HS1463-2023>.
- Revynti, A. M.**, **Ataide, L. M. S.**, **Carrillo, D.**, **Seal, D. R.**, Vassilaros, E. V., & Kendra, P. E. (2023). O caracol indiano (*Macrochlamys Indica*): Uma nova praga invasora na Flórida: ENY2078P, 6/2023. DOI: <https://doi.org/10.32473/edis-IN1402-2023>.
- Revynti, A. M.**, **Ataide, L. M. S.**, **Crane, J. H.**, Wasielewski, J., Kendra, P. E., **Carrillo, D.** (2023). O ácaro da erinose da lichia (*Aceria Litchii keifer*): ENY2073P, 8/2023. DOI: <https://doi.org/10.32473/edis-IN1409-2023>.
- Revynti, A. M.**, **Ataide, L. M. S.**, **Velazquez Hernandez, Y.**, Kendra P. E., **Carrillo, D.**, Mannion, C. (2023). O bicudo do botao do hibisco (*Anthonomus testaceosquamosus linell*, *Coleoptera: Curculionidae*): ENY2069P, 7/2023. DOI: <https://doi.org/10.32473/edis-IN1413-2023>.
- Revynti, A. M.**, **Vargas, G.**, **Carrillo, D.**, **Seal, D.**, Vassilaros, E. V., Kendra, P. E. (2023). El caracol de cuerno (*Macrochlamys indica*): una nueva especie invasive en Florida: ENY20785, 6/2023. DOI: <https://doi.org/10.32473/edis-IN1404-2023>.
- Roberts, P. D.**, Vallad, G., **Zhang, S.**, Dufault, N., Parent, M. (2023). Anthracnose on cucurbits in Florida: PP370, 6/2023. DOI: <https://doi.org/10.32473/edis-PP370-2023>.
- Seal, D.**, Khan, R., Osborne, L., & Gibson, I. (2023). Thrips parvispinus (Karny, 1922) (Insecta: Thysanoptera: Thripidae): A new invasive pest: EENY-805, 6/2023. DOI: <https://doi.org/10.32473/edis-in1407-2023>



University of Florida students harvest floral hemp. Most hemp cultivars flower very early in southern latitudes like Florida, often reaching illegal THC levels before gaining much biomass. Photo courtesy of Zachary Brym.

Tropical Plant Clinic & Research Lab
@ClinicPlant

Lots of hard work went into this study, which includes greenhouse and field experiments 🌱🌱🌱 We showed that propiconazole is ineffective at preventing the spread and multiplication of the pathogen regardless of the application method 🚫🦠

5:34 AM · Aug 27, 2023 · 576 Views

Research Publications

- Adeleye, V. O., Seal, D. R.,** Liburd, O. O., Martini, X., & **Meru, G.** (2023). Integrated approach using insecticides in combination with reflective plastic mulch for the management of pepper weevil, *Anthonomus eugenii* (Coleoptera: Curculionidae). *Environmental Entomology*, nvad033. DOI: <https://doi.org/10.1093/ee/nvad033>
- Ataide, L.,** Tabanca, N., **Canon, M. A.,** Schnell, E. Q., Narvaez, T. I. Cloonan, K. R., Kendra, P. E., **Carrillo, D., Revynthi, A. M.** (2023). Volatile characterization of Lychee plant tissues (*Litchi chinensis*) and the effect of key compounds on the behavior of the Lychee Erinose Mite (*Aceria litchii*). *Biomolecules* 2023, 13(6), 933. DOI: <https://doi.org/10.3390/biom13060933>
- Berihun, M. L.,** Tsunekawa, A., Haregewyn, N., Tsubo, M., Yasuda, H., Fenta, A. A., Dile, Y., **Bayabil, H.,** Tilahun, S. (2023). Examining the past 120 years' climate dynamics of Ethiopia. *Theoretical and Applied Climatology*. DOI: <http://dx.doi.org/10.1007/s00704-023-04572-4>
- Bijak, A. L., Reynolds, L. K., **Smyth, A. R.** (2023). Seagrass meadow stability and composition influence carbon storage. *Landscape Ecology*. DOI: <https://doi.org/10.1007/s10980-023-01700-3>
- Greene, A. D., Yang, X., **Velazquez-Hernandez, Y., Vargas, G.,** Kendra, P. E., Mannion, C., & **Revynthi, A. R.** (2023). Lethal and sublethal effects of contact insecticides and horticultural oils on the Hibiscus Bud Weevil, *Anthonomus testaceosquamosus* Linell (Coleoptera: Curculionidae). *Insects*, 14(6), 544. DOI: <https://doi.org/10.3390/insects14060544>
- Lefler, F. W., Barbosa, M., Zimba, P. V., **Smyth, A. R.,** Berthold, D. E., Laughinghouse, H. D. (2023). Spatiotemporal diversity and community structure of cyanobacteria and associated bacteria in the large shallow subtropical Lake Okeechobee (Florida, USA). *Frontiers*, 14(2023). DOI: <https://doi.org/10.3389/fmicb.2023.1219261>
- Liu, H., Fu, G., Li, W., Liu, B., Ji, W., **Zhang, S.,** Qiao, K. (2023). Oxidative stress and mitochondrial damage induced by a novel pesticide fluopimomide in *Caenorhabditis elegans*. *Environmental Science and Pollution Research* 30(91794-91802). DOI: <https://doi.org/10.1007/s11356-023-28893-z>
- Mendel, Z., Freeman, S., Hulcr, J., Recht, E., Zagron, G., Bear, A., Orshan, L., Samra, S., Golan, O., Walczak, M., Silberstein, M., Golani, S., Birnbaum, N., Bensimon, D., Benjamin, P., **Carrillo, D.,** Eisenband, A., & Ment, D. (2023). Black twig borer and other ambrosia and bark beetles in Israel. *Phytoparasitica*. DOI: <https://doi.org/10.1007/s12600-023-01089-4>
- Navia-Urrutia, M., Sendoya-Corrales, C. A., Crane, J. H., Gazis, R.** (2023). Reevaluation of the application method and efficacy of propiconazole in controlling Laurel Wilt in avocado orchards in south Florida. *HortTechnology*, 33(5). DOI: <https://doi.org/10.21273/HORTTECH05232-23>
- Stafne, E. T. Blare, T., Posadas, B., 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). Survey of US passionfruit growers' production practices and support needs. *HortTechnology*, 33(4), 357-366. DOI: <https://doi.org/10.21273/HORTTECH05240-23>
- Soares, J. M., Karlsen-Ayala, E., **Salvador-Montoya, C. A., Gazis, R.** (2023). Two novel endophytic *Tolypocladium* species identified from native pines in south Florida. *Fungal Systematics and Evolution*, 11(1), 51-61. DOI: <https://doi.org/10.3114/fuse.2023.11.04>

FIND US ON SOCIAL!

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](#).

