



January 31, 2023

Social media:



Web site: <https://swfrec.ifas.ufl.edu/>

Welcome to SWFREC Update E-news! This newsletter is distributed monthly and contains news about the center and its faculty and staff, program research updates, and upcoming events.

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Spotlight on . . . Seminars Draw Citrus, Vegetable Growers

Two seminars in January targeted issues growers are facing in citrus and vegetable production.

- Forty-plus growers and other industry representatives participated in person and via Zoom for a citrus seminar. SWFREC pathologist Dr. Ozgur Batuman presented “Plant Pathogens That May Exacerbate the HLB Effects on Citrus Trees” and Dr. Megan Dewdney, plant pathologist at the UF/IFAS Citrus Research and Education Center in Lake Alfred, presented “Canopy Disease Management of Citrus.” ([See more](#))

Grant Funds Back HLB Battle

UF/IFAS faculty have been awarded more than \$16 million in funding to combat HLB! Eight grants were awarded to IFAS by the USDA National Institute of Food and Agriculture’s emergency program designed to find solutions for citrus growers battling citrus greening (HLB) disease.

Two of the new awards include SWFREC faculty as part of the investigative teams. Citrus horticulturist Dr. Fernando Alferez received a grant for \$800,000 for the project “Combining Individual Protective Covers and Brassinosteroids to Prolong Health and Improve Fruit Yield and Quality in Newly Planted Trees under HLB.” Working with Dr. Alferez is SWFREC pathologist Dr. Ozgur Batuman, plant physiologist Dr. Ute Albrecht, and entomologist Dr. Jawwad Qureshi. The project will run for two years.

Details about this grant: The risk of new plantings to become infected is especially high for young trees, which flush frequently and attract more psyllids, thereby becoming more vulnerable to infection than mature trees. While IPCs (shown in the photo below from an article about the new grants in the January issue of Citrus Industry magazine) effectively protect young trees, it is only for the first two to three years after planting, and eventually covers must be removed, exposing the trees. Brassinosteroids are a group of naturally occurring plant growth regulators approved for use commercially in citrus in Florida and they have shown promise in reducing pests and diseases.

The project “Targeted Production of Non-transgenic HLB-tolerant Trees through Complementary Approaches” is led by Dr. Zhonglin Mou in the Department of Microbiology and Cell Science at UF’s main campus in Gainesville. Dr. Batuman from SWFREC is a co-investigator.



Researchers awarded new resources to help in the HLB fight

By Michael Rogers

University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) citrus faculty continue to pursue opportunities to support Florida citrus growers. Late in 2022, the U.S. Department of Agriculture (USDA) awarded UF/IFAS faculty over \$16 million in new funding to advance research projects to combat the deadly HLB disease. UF/IFAS scientists

million or more, and run from two to five years. Most of the projects are collaborations with UF/IFAS faculty from the Citrus Research and Education Center (CREC) in Lake Alfred, the Southwest Florida Research and Education Center in Immokalee and the University of Florida in Gainesville. A few of the projects engage scientists in California, Texas and Connecticut. Most of these

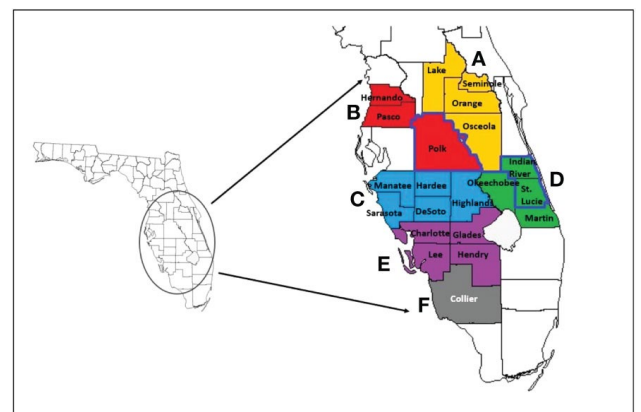
Details about this grant, which is for nearly \$1.5 million and runs for two years: The first goal is to produce non-genetically modified (non-GM) HLB-tolerant citrus trees by editing or silencing suspected target genes. The second goal is to educate the citrus communities about non-GM base co-editing and within-gene microRNA technologies and their benefits to the citrus industry and consumers. This will help establish market acceptance for citrus products from trees adapted using these new technologies.

Peer-reviewed Publications

The following is a list of recently released refereed journal articles authored by SWFREC faculty. Click on the links to access the full articles:

Britt-Ugartemendia, K., Turner, D., Sieburth, P., Batuman, O., & Levy, A. (2022). Survey and detection for citrus tristeza virus in Florida groves with an unconventional tool: the Asian citrus psyllid. *Frontiers in Plant Science*, 13. <https://doi.org/10.3389/fpls.2022.1050650>.

Castellano-Hinojosa, A., Mora, C., & Strauss, S.L. (2022). Native rhizobia improve plant growth, fix N₂, and reduce greenhouse emissions on sunnhemp more than commercial rhizobia inoculants in Florida citrus orchards. *Plants*, 11(22), 3011. <https://doi.org/10.3390/plants11223011>.



Castellano-Hinojosa, A., Noling, J.W., Bui, H., Desaegeer, J.A., & Strauss, S.L. (2022). Effect of fumigants and non-fumigants on nematode and weed control, crop yield, and soil microbial diversity and predicted functionality in a strawberry production system. *Science of the Total Environment*, 852, 158285.

<https://doi.org/10.1016/j.scitotenv.2022.158285>.

Cui, X., Guan, Z., Morgan, K.L., Huang K-M, & Hammami A.M. (2022). Multitiered fresh produce supply chain: the case of tomatoes. *Horticulturae*, 8(12), 1204.

<https://doi.org/10.3390/horticulturae8121204>.

George, J., Kanissery, R., Bashyal, M., Tamayo, B., & Stelinski, L.L. (2022). Survival and feeding behavior of *Diaphorina citri* (Hemiptera: Liviidae) adults on common cover crops in citrus. *Agriculture*, 12(12), 2175.

<https://doi.org/10.3390/agriculture12122175>.

Momeny, M., Jahanbakhshi, A., Neshat, A.A., Hadipour-Rokni, R., Zhang, Y-D., & Ampatzidis, Y. (2022). Detection of citrus black spot disease and ripeness level in orange fruit using robust and generalized deep CNN based on learning-to-augment strategy. *Ecological Informatics*, 71, 101829,

<https://doi.org/10.1016/j.ecoinf.2022.101829>.

Shahbaz, E., Ali, M., Shafiq, M., Atiq, M., Hussain, M., Balal, R.M., Sarkhosh, A., Alferez, F., Sadiq, S., & Shahid, M.A. (2022). Citrus canker pathogen, its mechanism of infection, eradication, and impacts. *Plants*, 2023, 12(1), 123. <https://doi.org/10.3390/plants12010123>.

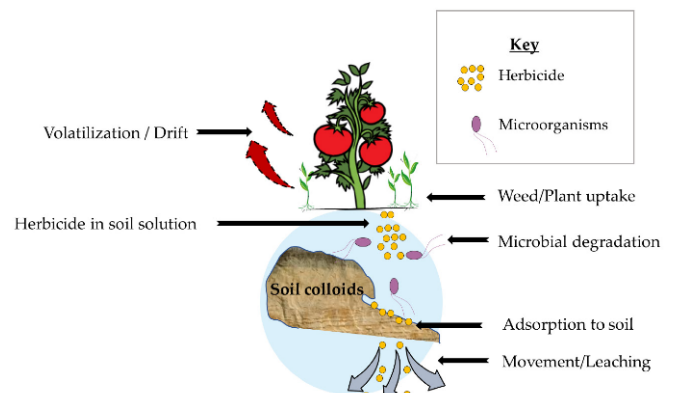
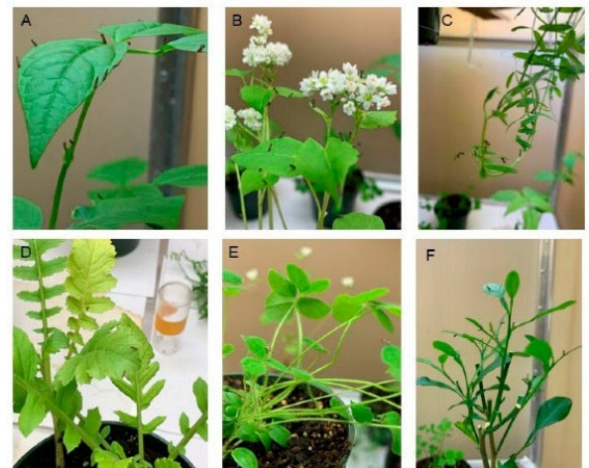
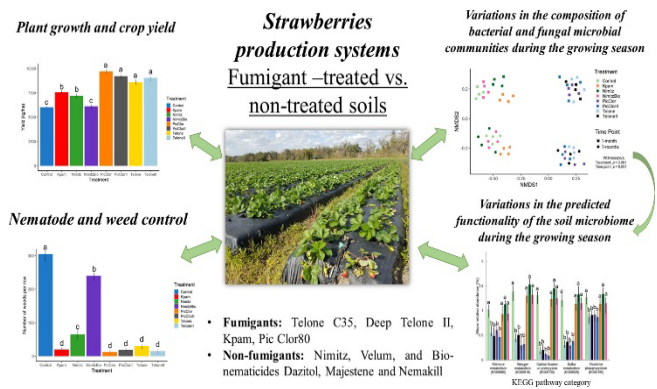
Tiwari, R., Bashyal, M., & Kanissery, R. (2022). Weed management strategies for tomato plasticulture production in Florida. *Plants*, 11(23), 3292.

<https://doi.org/10.3390/plants11233292>.

Xu, N., Bhadha, J.H., Rabbany, A., Swanson, S., McCray, J.M., Li, Y., Strauss, S.L., & Mylavarapu, R. (2022). Sugarcane bagasse amendment mitigates nutrient leaching from a mineral soil under tropical conditions. *Pedosphere*, 32(6), 876-883.

<https://doi.org/10.1016/j.pedsph.2022.06.020>.

Zhou, X., Ampatzidis, Y., Lee, W.S., Zhou, C., Agehara, S., & Schueller, J.K. (2022). Deep learning-based postharvest strawberry bruise detection under UV and incandescent light. *Computers and Electronics in Agriculture*, 202, 107389. <https://doi.org/10.1016/j.compag.2022.107389>.



SWFREC in the News

- SWFREC ag and biological engineer Dr. Sanjay Shukla's research on ecosystem services and ag water storage and treatment is featured in the January Florida Grower magazine. To view "Sustainability and Ecosystem Services," written by editor-in-chief Frank Giles, click here: <https://floridagrower.net/2023/01/16/ecosystem-services-move-forward-in-florida/>.
- UF/IFAS Senior Vice President for Agriculture and Natural Resources Dr. Scott Angle writes a UF/IFAS Citrus State column for Citrus Industry magazine. His article in the January issue titled "Investing in Artificial Intelligence (AI)" includes SWFREC precision ag engineer Dr. Yiannis Ampatzidis' Agroview program that uses drones and AI to count trees and assess plant stress. To view the story, click here: <https://swfrec.ifas.ufl.edu/docs/pdf/general/2023-01-UF-Investing-AI-Citrus-Industry.pdf>.
- SWFREC soil microbiologist Dr. Sarah Strauss' research is featured in the January Research Connections section of the Commercial Vegetable Production news that's emailed to growers monthly by UF/IFAS Hendry County Extension director Craig Frey and UF/IFAS Palm Beach County Extension agent Anna Meszaros. "Studying Fumigation Impacts on Soil Microbes to Improve Production" can be viewed here: <https://commercialveg.ifas.ufl.edu/research-connections/>.
- UF/IFAS Communications senior public relations specialist Brad Buck wrote a blog post recently that promotes SWFREC precision ag engineer Dr. Yiannis Ampatzidis' research to utilize artificial intelligence to assess crop damage following extreme weather events. "UF Ag Engineer to Assess Crop Damage after Tropical Storms, Hurricanes using AI" was picked up by numerous media outlets, including Morning Ag Clips, Specialty Crop Industry, and southwest Florida's Fox-4 TV news. To view the blog article, click here: <https://blogs.ifas.ufl.edu/news/2023/01/18/uf-ag-engineer-to-assess-crop-damage-after-tropical-storms-hurricanes-using-ai/>.

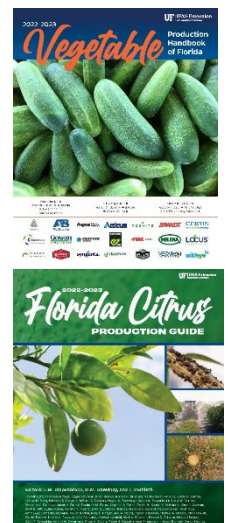


Grower Handbooks Available

Two 2022-2023 publications are available for pickup at SWFREC!

The Vegetable Production Handbook of Florida provides guidance on vegetable production in Florida and includes extensive pesticide tables for each type of crop covered. The book is also available online (with printable sections) here: <https://edis.ifas.ufl.edu/publication/CV292>.

The Florida Citrus Production Guide contains general pesticide information, horticultural practices, and chapters on mites/insects/nematodes, diseases, and weeds. The book is also available online (with printable sections) here: <https://edis.ifas.ufl.edu/publication/CG101>.



Two New Faculty Set to Begin at SWFREC

Dr. Pavlos Tsouvaltzis has been named the new SWFREC assistant professor of vegetable horticulture. He comes to UF/IFAS from the Aristotle University of Thessaloniki in Greece, where he is an associate professor of vegetable crop horticulture. In 2019, he was a visiting researcher in the UF Horticultural Sciences Department in Gainesville. Dr. Tsouvaltzis earned his bachelor of science degree in agriculture, his master's in horticulture, and his Ph.D. in vegetable crops all while studying at his current university.



Dr. Nikolaos Tziolas has been named assistant professor of soil science/artificial intelligence (AI). This is a brand-new position at SWFREC, the result of a UF-wide push to increase its AI footprint by hiring fifteen new faculty members across the state. Dr. Tziolas currently works as a research associate for the Interbalkan Environment Center in Lagadas, Greece. He earned his bachelor's degree in soil science and agricultural engineering from the Aristotle University of Thessaloniki, his master's in geo-information from Wageningen University in the Netherlands, and his Ph.D. in the laboratory of remote sensing, spectroscopy, and GIS from Aristotle University.



The newly hired faculty are expected to start at SWFREC near the end of February.

New AI Space Construction in Full Swing

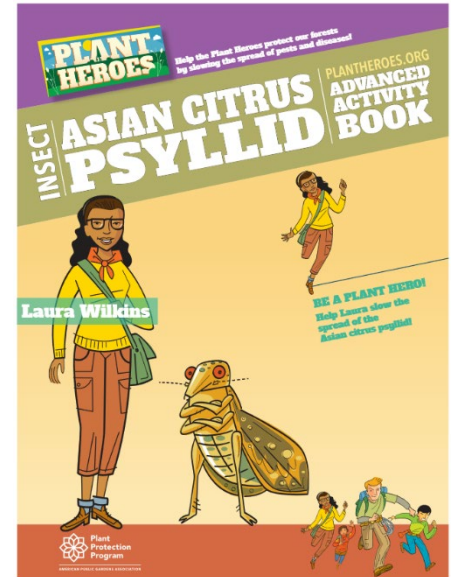
Construction on a new addition to the SWFREC main building is well under way. The 1,200-square-foot space will house a soil science/artificial intelligence (AI) office and laboratory. UF is building up its AI research programs, including hiring fifteen new faculty members. That person at SWFREC is Dr. Nikolaos Tziolas (see story above), who is expected to start work near the end of February.



Kids Corner

Be a plant hero! Plant Heroes is part of the American Public Gardens Association's Plant Protection Program. Plant Heroes is "a valuable resource for public garden professionals, parents, and teachers looking for innovative ways to educate young learners about the importance of plants and engage them in protecting forest health."

Among the numerous resources and teaching tools found on the Plant Heroes are four educational items about the Asian citrus psyllid, the insect that causes huanglongbing (HLB), otherwise known as citrus greening disease: a field guide, a comic book, a resources list, and activity books for children ages four-seven and eight-ten. The latter invite kids to help Plant Hero Laura slow the spread of the Asian citrus psyllid. It provides education about the insect and asks students to answer questions and complete other creative tasks.



For more information about becoming a Plant Hero, click here: <https://plantheroes.org/>.

Upcoming Events

February 14-16, 2:30-5:30pm daily—Zoom Only

Produce Safety Alliance Grower Training

SWFREC state specialized food science agent Matt Krug is among the presenters. For more information and registration details, click here: <https://www.eventbrite.com/e/produce-safety-alliance-grower-training-remote-registration-482637761537>.

March 2, 12:00-3:00pm, SWFREC

UF/IFAS South Florida Vegetable Growers Meeting: Improving Irrigation Management

Speakers include SWFREC ag and biological engineer Dr. Sanjay Shukla, and commercial vegetable specialist and UF/IFAS Hendry County Extension service director Craig Frey. For a detailed agenda and to register, click here: <https://www.eventbrite.com/e/south-florida-vegetable-growers-meeting-irrigation-management-tickets-524800371037>.

March 16 (CORE) and 17 (PRIVATE), 8:30am-5:00pm, UF/IFAS Hendry County Extension office, LaBelle General Standards/Core and Private Applicator Ag Pesticide Training/Exam

For more information and to register, click here: <https://swfrec.ifas.ufl.edu/docs/pdf/events-agendas/2023-03-HendyCountyExtensionOffice-CorePrivateApplicatorTraining.pdf>.

April 11, 8:30am-4:30pm, SWFREC

Certified Pile Burners Course

The first 50 people to register will fill this class. For more information, click here:

https://swfrec.ifas.ufl.edu/docs/pdf/events-agendas/2023-04-11-Certified_Pile_Burner-Immokalee.pdf.

April 13, 8:00am-4:00pm, UF/IFAS Indian River Research and Education Center, Fort Pierce

The Florida Citrus Show

Agenda and registration information coming soon. For more info, click here: <https://floridagrower.net/2023-florida-citrus-show/>.

April 17-19, Marriott Orlando Airport Lakeside

AI in Agriculture: Innovation and Discovery Conference

SWFREC precision ag engineer Dr. Yiannis Ampatzidis serves on the organization committee. For more information, registration details, and sponsorship opportunities, click here: <https://abe.ufl.edu/2023-ai-conference/>.

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