




July 16, 2021

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 . . . Project Targets BMPs for Growers

When then-new vice president of UF/IFAS Dr. Scott Angle decided several months ago to put a wide focus on best management practices (BMPs) for growers in Florida, he reached out to SWFREC center director and soil and water scientist Dr. Kelly Morgan to help lead the charge. Legislative funding for this project was approved and the project is ramping up significantly!

“We have known for some time that growers have had concerns about UF/IFAS phosphorus fertilizer recommendations and wanted us to review those recommendations for both citrus and vegetable production,” Dr. Morgan explains.

“As a result of Senate Bill 712, FDACS is asking for additional information from growers including fertilizer records, particularly on phosphorus. IFAS is ready to conduct a state-wide series of large-scale projects on grower fields via a BMP phosphorus testing project.” [\(See more\)](#)



## Student Graduates to Doctor!

SWFREC graduate student Clayton Nevins successfully defended his Ph.D. thesis this week in the UF/IFAS Soil and Water Sciences Department. He will present his research, “**Biological Soil Crusts Impact Nutrient Cycling and Soil Microbiome in Agroecosystems**,” next week, and a recoding of the seminar will be available on the department’s seminar page: <https://soils.ifas.ufl.edu/academics/seminars/archives-all-seminars/>. Clayton’s research advisors were Dr. Patrick Inglett in Gainesville and SWFREC soil microbiologist Dr. Sarah Strauss. Congratulations, Dr. Nevins!

**Soil & Water Sciences Department**  
**Graduate Student Research Seminar**

Wednesday, July 21st, 3:00 PM

**Biological Soil Crusts Impact Nutrient Cycling and Soil Microbiome in Agroecosystems**

Biological soil crusts (biocrusts) contain surface soil consortia of microscopic and macroscopic organisms including bacteria, fungi, algae, lichens, and moss. Biocrusts are commonly found in arid and semi-arid ecosystems and complete biological nitrogen fixation, build soil carbon stocks, and increase soil moisture. Biocrusts were recently identified in Florida agroecosystems, and based on traits of biocrusts in other ecosystems, could contribute to soil health and crop growth. This research investigated the impact of biocrusts on subsurface soil nutrient cycling and microbiome (bacterial and fungal communities) in the upper root zone of sandy agroecosystems. Overall, results revealed that agroecosystem biocrusts can alter soil nutrient conditions and the soil microbiome composition and have the potential to support crop growth.



**Clayton Nevins**  
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## Articles Highlight Program Research

Two articles published on the Vegetable and Specialty Crop News web site tout research being conducted by SWFREC vegetable horticulturist Dr. Phillip Williams. “Cover Crops: Benefit Now and in the Future,” focuses on the many ways Dr. Williams is finding that cover crops can benefit producers. To read the article, click here: <https://vscnews.com/cover-crops-uf-ifas-research-florida/>. And “Sulfur Key Tool in Reducing Soil pH” discusses the importance Dr. Williams has found in growers maintaining their soil pH at the optimal level of 6.5. To read the article, click here: <https://vscnews.com/sulfur-florida-soil-ph/>.

## SWFREC Well Represented at Virtual Conference

Multiple programs are represented during this week’s virtual 2021 Annual International Meeting of the American Society of Agricultural and Biological Engineers. Presentations and posters occur in these categories:

### Hyperspectral Imaging Advances and Applications

- Detecting and Monitoring the Progress of Downy Mildew Disease in Watermelon by Utilizing UAV– Based Hyperspectral Imaging and Machine Learning. Presented by: **Jaafar Abdulridha** University of Florida, Immokalee Florida; **Jaafar Abdulridha, Yiannis Ampatzidis, Jawwad Qureshi, Ozgur Batuman, Pamela Roberts, Sri Charan Kakarla**

### Machine Vision for Agriculture and Food Processing

- Automatic Postharvest Strawberry Bruise Detection Using Deep Learning. Presented by: Xue Zhou University of Florida, Gainesville Florida; Xue Zhou, **Yiannis Ampatzidis**, Won Suk Lee, Shinsuke Agehara
- Prediction of Citrus Yield with AI Using Ground-Based Fruit Detection and UAV Imagery. Presented by: **Vinay Vijayakumar** University of Florida, Immokalee Florida; **Vinay Vijayakumar, Lucas Costa, Yiannis Ampatzidis**
- Citrus Fruit Maturity Prediction Utilizing UAV Multispectral Imaging and Machine Learning. Presented by: **Israel Ojo** University of Florida, Immokalee Florida; **Israel Ojo, Lucas Costa, Yiannis Ampatzidis, Fernando Alferez, Sanjay Shukla**

### Machine Vision for Precision Agriculture and Robotics

- Autonomous Smart Sprayer for Precision Weed Management Using Machine Vision and AI. Presented by: **Vinay Vijayakumar** University of Florida, Immokalee Florida; **Victor Partel, Yiannis Ampatzidis**, Abhisesh Silwal, George Kantor, **Vinay Vijayakumar**

### Advances in Soil-Plant-Machine Dynamics and Systems Simulation II

- Remote-controlled Ground Penetrating Radar (GPR) for Tree Root Detection and Mapping. Presented by: **Sri Charan Kakarla** University of Florida, Immokalee Florida; **Sri Charan Kakarla, Jaafar Abdulridha, Yiannis Ampatzidis**

### Phosphorus Research and Management: Field, Soil, Wastewater, and Stormwater Systems

- Circular Economy Approach for Managing Agricultural Stormwater Phosphorus. Presented by: **Sanjay Shukla** University of Florida, Immokalee Florida; **Asmita Shukla, Sanjay Shukla**, Alan W Hodges

### Water Challenges and Urban to Global Sustainable Solutions

- A Sustainable and Resilient Fresh Produce Production System for Reducing Inputs, Costs, and Production Risks While Improving Efficiency and Human Health. Presented by: **Vijay Santikari** University of Florida, Immokalee Florida; **Kira Hansen, Rajendra Sishodia, Gregory Hendricks, Sanjay Shukla, Vijay Santikari**

### Information Technology, Sensors & Control Systems Poster Session

- A High-Level Task Planning of Autonomous Robots Carrying Multiple Herbicides and Treating Specific Weed Types. Presented by: Georgios Adosoglou University of Florida, Gainesville Florida; Georgios Adosoglou, Seonho Park, **Yiannis Ampatzidis**, Panos M. Pardalos

## Machinery Systems Poster Session

- An Automated Delivery System for Therapeutic Materials Using Needle-Based Trunk Injection to Treat HLB Affected Citrus. Presented by: **Vinay Vijayakumar** University of Florida, Immokalee Florida; **Vinay Vijaykumar, Leigh Archer, Yiannis Ampatzidis, Ute Albrecht, Ozgur Batuman**

## Trade Journal Articles

“**Ways to Stay on Top of Watermelon Vine Decline**” has been published on the Growing Produce web site. Associate director for stakeholder relations Gene McAvoy is the author. To read the article, click here: <https://www.growingproduce.com/vegetables/how-to-stay-on-top-of-watermelon-vine-decline/>.

Two articles written by SWFREC faculty, students, and staff have been published in the July issue of Citrus Industry magazine that targets rootstocks and varieties.

- “**Valencia Performance and Rootstock Propagation Methods**” (plant physiologist Dr. Ute Albrecht and graduated master’s student Sameer Pokhrel are first and second authors, respectively) begins on page 14.
- “**Maximizing Rootstock Seed Production**” (citrus horticulturist Dr. Fernando Alferez, visiting Ph.D. student Deived Uilian de Carvalho, Ph.D student Daniel Boakye, and biological scientist Tim Gast are first-fourth authors, respectively) begins on page 22.



To read these articles, click here and scroll to pages 14 and 22:

<https://www.mirabelsmagazinecentral.com/DigitalEdition/index.html?id=be814ee2-f10a-4f5d-825d-004fb578d7d9>.

“**Pest of the Month: Squash Vein Yellowing Virus**” appears in the July issue of Florida Grower magazine. Associate director for stakeholder relations Gene McAvoy is the author. To read the article, click here: <https://swfrec.ifas.ufl.edu/docs/pdf/mcavoy/2021-07-McAvoy-Pest-of-the-month-FL-Growers.pdf>.



Three articles included in the July issue of Vegetable and Specialty Crop News magazine are authored by SWFREC faculty and students:

- “**Pepper Weevil Pointers**” (associate director for stakeholder relations Gene McAvoy is author) is on page 8.
- “**Update on Tomato Brown Rugose Fruit Virus in Florida**” (citrus pathologist Dr. Ozgur Batuman and Ph.D. student Salih Yilmaz are first and second authors, respectively) begins on page 10.
- “**Organic Herbicide Options**” (master’s student Ruby Tiwari and weed scientist Dr. Ramdas Kanissery are first and second authors, respectively) begins on page 12.



To read these articles, click here and scroll to page 8, 10, and 12:

<https://www.mirabelsmagazinecentral.com/DigitalEdition/index.html?id=4af5a321-4e73-4cdc-9882-9283bbda9038>.

## Handbooks Available

The 2020–2021 Vegetable Production Handbook of Florida and the 2020-2021 Florida Citrus Production Guide are now available! To pick up a copy, visit SWFREC (please knock on the front doors) and the UF/IFAS Hendry County Extension office, 1085 Pratt Blvd., LaBelle, FL 33935, Office: (863) 674-4092. The books will also be available at any future in-person meetings and workshops.

In addition to the hard copies, the handbooks are available online (with printable sections):

vegetable <https://edis.ifas.ufl.edu/cv292> and citrus <https://edis.ifas.ufl.edu/cg101>.



## SWFL Fresh: Choose Local, Choose Fresh

SWFL Direct to Market Producers can now list their business profile on the SWFL Fresh web site. “SWFL Fresh: Choose Local, Choose Fresh” is a brand created by UF/IFAS Extension and the SWFL Regional Planning Council to connect consumers with local producers. If you are a producer selling any direct to market or local sold products, create your profile by clicking the website and scrolling down to “Producers Register Now!”: [www.swflfresh.com](http://www.swflfresh.com). For more information or to be involved in future development of this brand, contact Jessica Ryals, food systems agent, UF/IFAS Collier County Extension, Naples, at [jessicaryals@ufl.edu](mailto:jessicaryals@ufl.edu).



## Extension Publications Provide Virus Info

To read articles written by UF/IFAS faculty and staff about the Coronavirus, you can visit the Electronic Data Information Source here: [https://edis.ifas.ufl.edu/topic\\_covid19](https://edis.ifas.ufl.edu/topic_covid19).

## Upcoming Events

**July 27, 10am-12pm –In-person**  
**SWFREC Citrus Advisory Committee Meeting**  
SWFREC

**August 10, 10am-12pm—In-person**  
**SWFREC Vegetable Advisory Committee Meeting**  
SWFREC

**August 18, 8:45am-5pm**  
**Citrus Expo**  
Lee Civic Center, North Fort Myers  
For seminar lineup and to register, click here: <https://citrusexpo.net/>.

Three SWFREC faculty will make presentations:

- 2:20pm: Soil microbiologist Dr. Sarah Strauss, **“Soil Health and Microbes: How They Fit Together and Why They’re Important”**
- 3:20pm: Citrus horticulturist Dr. Fernando Alferez, **“Solving Preharvest Fruit Drop by Understanding Abscission in HLB-Affected Trees: A Hormonal and Nutritional Approach”**
- 4:40pm: Plant physiologist Dr. Ute Albrecht, **“Update on Rootstock Trials on Florida Central Ridge and Flatwood-type Sites”**

**August 18, 5:30-9pm**

**FGCU Alico Arena, Fort Myers**

Gulf Citrus Growers Association Citrus and Agricultural Industry Celebration.

Invitations and sponsorship opportunities will be mailed soon.

**August 19, 8:45am-5pm**

**Specialty Crop Expo**

Lee Civic Center, North Fort Myers

For seminar lineup and to register, click here: <https://citrusexpo.net/>.

Four SWFREC faculty will make presentations:

10:15am: Ag economist Dr. Kim Morgan, “**Managing Farm Business Risks and Protecting Your People During a Global Pandemic**”

2:15pm: Vegetable pathologist Dr. Pam Roberts, “**Update on Emerging and Chronic Disease Challenges in Southwest Florida Watermelon Production**”

3:15pm: Center director and soil and water scientist Dr. Kelly Morgan, “**Improved Soil Test-based Recommendations Using Artificial Intelligence**”

3:30pm: Vegetable horticulturist Dr. Phillip Williams, “**pH and Phosphorus Tomato Fertility in Southwest Florida**”

**September 8, 9am-5pm**

**UF/IFAS Florida Tomato Institute and Food Safety Workshop**

LaBelle Civic Center, LaBelle

The morning program will include industry and research updates. SWFREC faculty members are expected to be among the presenters. The afternoon program will include sponsor new product updates and food safety workshop/T-GAP renewal.

Registration will be available soon. It will be free for employees of Florida tomato producers and packers, sponsors, and presenters. The cost for other attendees will be \$100. Lunch will be sponsored and catered by the Hendry County Cattlemen’s Association.

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