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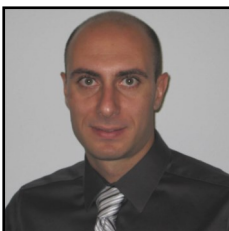
## Center Director's Corner

Nearly 200 people attended our center's Open House in late March. The event featured guided tours of our laboratories and farm facilities and the opportunity to participate in educational science demonstrations. For more info and photos of the event, see page 7 of this issue.



On the SWFREC faculty front, we are pleased to announce that Dr. Fernando Alferez started as our new Citrus Horticulturist in February and Dr. Tara Wade began as our new Agricultural/Resource Economist in April. In addition, Matt Krug recently started at the center as the new State Specialized Agent for Food Science/Food Safety. For more information about these new faculty, please see page 4.

We are also pleased to announce that Dr. Yiannis Ampatzidis has accepted our newly created position of Assistant Professor of Preci-



sion Agricultural Engineering. He currently is an Assistant Professor in the Department of Physics and Engineering at California State University in Bakersfield. Dr. Ampatzidis will start at the center in July.

As you might remember, following the 2015 renovation of our existing main building and the addition of a new wing to provide more office and lab space, one of our key facility-related



goals was to construct four new greenhouses on our property. They are nearing completion and will serve the soil microbiology, citrus pathology, plant physiology, and weed science programs.

Calvin Arnold

[cearnold@ufl.edu](mailto:cearnold@ufl.edu)

# Latest SWFREC Research

## Assessing Microbial Populations in Citrus and Vegetable Soils

Dr. Sarah Strauss, Soil Microbiologist

Until recently, soil microbiology was generally regarded as a



**Trials examine effect of fulvic acids, microbes, seaweed, and combinations of these products.**

“black box” in relation to overall nutrient cycling and plant growth. However, in the last 10-15 years, and even more in the last 6 years, technology has advanced to provide scientists with the

tools to examine soil microbial communities in detail. One of the most important technological contributions has been the development of “next-generation” sequencing or massively-parallel sequencing, which was initially developed and used for human genome sequencing and medical research. This type of sequencing allows scientists to determine the identity and abundance of all the bacteria or fungi in the soil at one time and allows for the processing of many samples at once. Prior to this development, scientists could only determine this information at great cost for one sample at a time, and even then could only account for a fraction of the total organisms present. For example, in 2007, it cost nearly \$10 million to sequence one genome. Today, that cost is closer to \$1,000.

Thanks to next-generation sequencing, we now know that only 1% of all soil microorganisms can be grown in the lab. Innovations and continued reduction in sequencing costs allow scientists to better understand the other 99% of the soil microbial community. Additional technology, called shotgun metagenomics sequencing, can sequence the entire genome of every bacteria and fungus in a soil sample, allowing scientists to not only identify the organisms in the sample, but also the functions of those organisms. These sequencing techniques allow us to determine how different treatments, crops, fertilization methods, and environmental factors can influence the soil microbial community, and how the soil microbial community influences crop growth and productivity.



These sequencing techniques are used by the SWFREC Soil Microbiology program for a variety of projects. To do this, we collect soil samples and bring them back to SWFREC. The microbial DNA is extracted from these samples in the Soil Microbiology Lab and then sent to a commercial facility for sequencing. We analyze the data at SWFREC, which requires the use of UF's HiPerGator computing system, as the data files can contain several million sequences. Some of the goals of the SWFREC Soil Microbiology program are to use these methods to better understand the baseline soil microbial community of citrus and vegetable crops, and determine how some of the common variables, including crop, field management, and soil conditions, influence the soil microbial community. The program also aims



**After soil samples are collected from tomato plant roots, DNA is extracted from the soil samples in the SWFREC Soil Microbiology Lab. The DNA is sent to a sequencing lab to identify the bacteria in the soil.**

to examine how the soil microbial community of different crops can be manipulated to improve crop health and production. For example, preliminary results from a greenhouse trial in collaboration with SWFREC plant physiologist Dr. Ute Albrecht found significant differences in the microbial community composition of citrus seedling rhizosphere soil of different rootstocks, which may contribute to different responses to soil-applied biostimulant products. In the long term, the SWFREC Soil Microbiology pro-



gram hopes to determine the microbial community composition required for a “healthy” agricultural soil, based on the crop, soil type, and location.

For more information, contact Dr. Strauss at [strauss@ufl.edu](mailto:strauss@ufl.edu).

# Meet the New SWFREC Faculty

Dr. Fernando Alferez began as the SWFREC Citrus Horticulturist in February. He previously worked as a visiting research scientist



at the UF/IFAS Citrus Research and Education Center in Lake Alfred on systemic acquired resistance of citrus plants.

Dr. Alferez earned his Ph.D. in plant biology from the University of Valencia, Spain. His graduate studies dealt with determining and understanding exogenous endogenous factors regulating fruit development, maturation, and quality.

At SWFREC, Dr. Alferez' research and extension programs will be interconnected and strive to serve the citrus industry in southwest Florida and the entire state. Some of his projects will include systematic

characterization of novel varieties being released for both processing and the fresh market and assaying novel ways to manage postharvest fruit drop under HLB pressure.

Dr. Tara Wade started as the SWFREC Agricultural and Natural Resource Economist in April. Prior to SWFREC, she was a postdoctoral research associate at the USDA Economic Research Service in Washington, DC, where her work dealt with determining the economic factors that affect choices to adopt conservation practices.

She earned her Ph.D. in energy



and environmental systems and economics at North Carolina A&T State University in Greensboro.

At SWFREC, Dr. Wade's extension and research programs will focus on helping farmers to reach their conservation and environmental goals in economically efficient ways.

Matt Krug began at SWFREC in April as a Food

Science State Specialized Extension Agent.

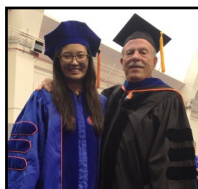


He recently obtained his master's degree in food science at Kansas State University in Manhattan.

Matt will be housed at the SWFREC and will provide oversight for the new food quality lab at the Culinary Accelerator facility slated to open in August at the Immokalee Regional Airport in Collier County.

# Staff News

- ◆ Three students graduated this spring with advanced degrees from the University of Florida: Xulin



Chen with a Ph.D. in entomology

(committee chair Entomologist Dr. Phil Stansly), Gilma Castillo with a master's in vegetable horticulture (chair Vegetable Horticulturist Dr. Monica Ozores-Hampton), and Max Wallace with a master's in agricultural and biological engineering (chair Water Resources Engineer Dr. Sanjay Shukla). Congratulations, students!

- ◆ Dr. Shukla was featured in a video news story aired



by WINK-TV, the CBS affiliate that operates out of Fort Myers. The feature story focused on the great need for everyone from growers to residents in southwest Florida to conserve water. Click on this link to watch the video: <http://www.winknews.com/2017/05/22/study-warns-of-deepening-florida-water-shortage-issues/>

- ◆ Plant Pathologist Dr. Pam Roberts and senior biological scientist Dr. Katherine Hendricks had a paper published as a Nature Scientific Re-

port. “Spatial and Temporal Patterns of Commercial Citrus Trees Affected by *Phyllosticta citricarpa* in Florida”

was also co-authored by Mary Christman in UF's Department of Statistics and was published online in May: <https://www.nature.com/articles/s41598-017-01901-2>

- ◆ Dr. Stansly was featured on the cover of the February Citrus Industry magazine. “Phil Stansly: Psyllid Slayer” was a profile article written by Ernie Neff about Dr. Stansly's efforts to help the citrus industry combat citrus greening disease.





## Field Day Draws Growers

Forty-plus growers and industry representatives participated in a mini vegetable field day at the SWFREC in early May. Topics covered entomology and bed geometry research trials and included “Reflective Mulch on Different Bed Geometries for Control of

Pepper Pests” by Entomologist Dr. Phil Stansy and Water Resources Engineer Dr. Sanjay Shukla. The event was sponsored by Ralf Dujardin with Imaflex.



## Meet Our Committee Chairs



**Gravley**

**Jim Gravley**, Citrus Advisory

Company/Title: Director of Citrus Science/Grove Operations with Old Florida Citrus since 2013

Education: B.S. in horticulture science (concentration in citrus), Florida Southern College

Family: Wife Britt, sons Mac and Hayden

Hobbies: Hunting, surfing, and fishing

Committee Experience: It's an honor to sit as chair of this Committee. It's an opportunity to discuss what's working and share that knowledge to utilize it in the field with full confidence. I have committed my life to this industry, because I enjoy having the opportunity to make it better for future generations.



**Richards**

**Ryan S. Richards**, Vegetable Advisory

Company/Title: Wedgworth Territory Manager since 2012

Education: B.S. in wildlife ecology/natural resource management, UF

Family: Wife Lori, son Jack, daughter Lauren

Hobbies: Guitar, gardening, time with family

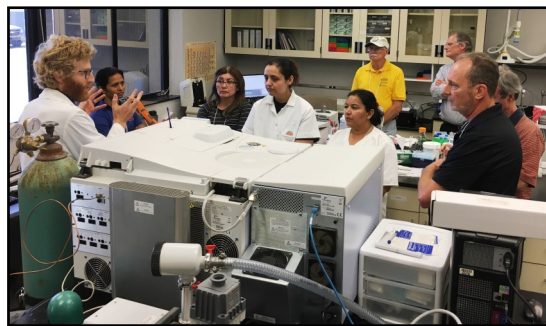
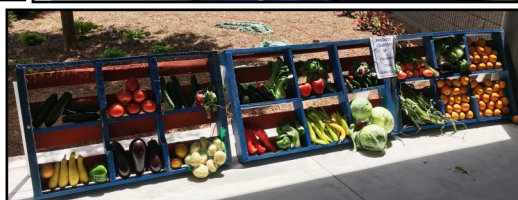
Committee Experience: I have a passion for Florida agriculture and want to see our local industry survive the constant barrage of pressure from pest problems, rising costs, and competition outside the country. The Committee brings together a diverse group to discuss problems and solutions and is a valuable tool to guide research and extension efforts at the center.

# Spotlight On . . . Open House

Nearly 200 people attended the SWFREC Open House in late March. They experienced science demonstrations, lab and field tours, county extension booths, door prizes, and a barbecue lunch.

A huge thank you to our sponsors: Creel Tractor Company, Everglades Farm Equipment, Florida's

Natural, C & B Farms, Duda, and Garguilo, Inc.







**SWFREC** graduate student **Nicholas Johnston** shows off his bug collection to elementary school students from Ave Maria.

## Coming Events



**June 8:** Florida Seed Association-UF/IFAS Seed Seminar. 9:30am, SWFREC. For more information, contact Arlen Wood at 863-660-6540 or [awood92014@aol.com](mailto:awood92014@aol.com).

**June 14-15:** Food Entrepreneurship Workshop. 8:30am, SWFREC. For more information, click here: <https://uf-ifas-foodbusiness2017imk.eventbrite.com>.

**June 28:** Citrus Squeezer: Citrus Undercover Produc-

tion Systems (CUPS) and Controlled-Release Fertilizers (CRFs). 10am, SWFREC. Pre-registration required at 863-674-4092 or [maz@ufl.edu](mailto:maz@ufl.edu).

**July 14:** SWFREC Citrus Advisory Committee Meeting. 10am, SWFREC. RSVP at 239-658-3400 or [jderleth@ufl.edu](mailto:jderleth@ufl.edu).

**July 26:** Citrus Squeezer: "The Unseen Soil: The Importance of Soil Microbes in Agriculture," SWFREC Soil Microbiologist Dr. Sarah Strauss, and "Use of Soil

Microbial Amendments and Other Plant Health Products in Agriculture," Plant Physiologist Dr. Ute Albrecht. 10am, SWFREC. Pre-registration required at 863-674-4092 or [maz@ufl.edu](mailto:maz@ufl.edu).

**July 27:** Certified Pile Burner Course. 8am, SWFREC. Pre-registration required at 863-674-4092 or [maz@ufl.edu](mailto:maz@ufl.edu).

**July 28:** SWFREC Foundation Meeting. 10am, SWFREC. RSVP at 239-658-3400 or [jderleth@ufl.edu](mailto:jderleth@ufl.edu).