SWFREC UPDATE

Southwest Florida Research and Education Center

UNIVERSITY of FLORIDA

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Center Director's Corner

Welcome to the new edition of the SWFREC Update, the official newsletter of the UF/IFAS Southwest Florida Research and Education Center!

This publication will be produced quarterly and e-mailed to our grower clientele, industry representatives, elected officials, and members of policy-issuing boards and groups in the five counties that we serve: Collier, Lee, Charlotte, Hendy, and Glades. It will include coverage of SWFREC events, insight into our latest research projects, news related to our faculty and staff members, and a calendar of upcoming programs. In addition, future issues will spotlight the various programs that operate at the center.

This new issue of the SWFREC Update comes at the perfect time, as there are many great things happening here at the center:

- Utilizing \$2 million in funding earmarked for the SWFREC by the legislature, construction will begin in April to create new laboratory and office space and complete renovations to existing labs and offices.
- The SWFREC Plant Disease Diagnostic Clinic reopened this past October. It is part of the UF/IFAS Statewide Plant Disease Diagnostic Network, which is managed by the UF Plant Pathology Department on the main campus in Gainesville.
- The South Florida Agricultural Council, which supports the SWFREC and its programs, has reenergized its efforts to encourage the Florida state legislature to

support the **UF/IFAS** request for additional funds to help the center stay productive for its grower clientele. The council, comprised of key agricultural producers, shippers, and packers in southwest Florida, is in-



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In his second stint as SWFREC Center Director, Dr. Calvin Arnold will celebrate his first year back in April. Patty Brant/Caloosa Belle

strumental in encouraging the legislature to appropriate recurring funds to UF/IFAS in the 2015 state budget, allowing the establishment of new faculty positions at the center.

 The First Annual SWFREC Open House took place on December 5 and was a great success. About 130 people participated and enjoyed farm tours, science demonstrations, and tours of center laboratories. For complete coverage, see pages 2-3.

Calvin Arnold cearnold@ufl.edu PAGE 2

Open House Provides Insight to Ag

The First Annual SWFREC Open House took place at the center in early December 2014. About 130 people attended the event, designed primarily to give folks not familiar with agriculture insight into citrus and vegetable production in southwest Florida.

The open house featured three main components: rolling tours of the SWFREC farm aboard tractor-pulled trolleys, walking building tours that spotlighted center laboratories, and an auditorium full of science demonstrations by each SWFREC program. The demos provided "show -and-tell" elements designed to educate attendees about various aspects of the research conducted at the center.

The open house included lunch for all participants. The meal was prepared and served by students in the culinary arts program at Immokalee High School's I- Tech. The program is led by chef Peter Sullivan.

A special thanks to these sponsors of the event: Mike Murphy with Cooperative Producers Incorporated/Florida's Natural, who donated orange and grapefruit juice for the refreshment area, and Shane Miller with Farm Credit of Florida, who donated plates, cups, and napkins for the lunch, as well as bottled water for participants on the farm tours.

Among the most popular activities during the open house was the opportunity for attendees to tour a variety of science demonstrations created by SWFREC program staff members.







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Narrated farm tours enabled attendees to get up-close views of ongoing research trials.











Lunch was prepared and served by culinary students at the Immokalee High School Technical Center. The program is led by chef Peter Sullivan. The meal included hamburgers, chicken sandwiches, fresh Immokalee salad, and chips and salsa.



Center Director Dr. Calvin Arnold talked with growers; "UF" cupcakes were a sweet hit.

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Latest SWFREC Research

Is Your Water Reducing Your Yields?

Dr. Kelly T. Morgan, Soil and Water Scientist Irrigation water in Florida that comes from wells in a limestone aquifer, such as the Floridan or Biscayne, or from lakes or canals that cut into limestone, contain dissolved bicarbonates, which are liming materials. Irrigation with such water can increase soil pH with time and can cause adverse effects on plant growth; reduce yields; and may cause irrigation emitter plugging problems. The pH is a measurement of the relative acidity or basicity of the water. The pH range is from 0 to 14. Values from 0 to 6.9 are acidic. and those from 7.1 to 14 are basic or alkaline, with 7.0 being neutral. The effect of soil pH depends on the concentration of the bicarbonates in the water, the amount of the water applied, the buffering capacity of the soil, and the sensitivity of the plants being grown. A water test is the surest means of determining if a problem exists. If the pH of your irrigation water is below 7.0, then you may safely assume that it will not be a problem. However, if the pH is above 7.0, the water contains bases such as bicarbonates. If your water has a pH greater than 7.0, send a sample to a testing labora-



Bryan Belcher with Davis Groves measures his grove irrigation water for pH levels.

tory and request a test for bicarbonates. Calcium (Ca) and magnesium (Mg) will be associated with bicarbonate and carbonate salts. Heavy or frequent irrigations applied to soils will present the most problems to sensitive crops. All plants have greater difficulty in taking up many fertilizer elements from soils with elevated soil pH, regardless of the crop plants sensitivity to bicarbonates.

Crops which are particularly sensitive to high pH soil are usually the first to show ill effects of high bicarbonate water. Blueberries, azaleas, and pine seedlings

> are well known for their sensitivity to pH-induced iron deficiencies. However, just about any



crop may be affected given the right conditions. Soil pH under citrus trees and within the irrigated zone has been increasing for the past several decades. With the exception of Swingle

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and Carrizo rootstocks, citrus trees did not show adverse effect of high soil Ca and bicarbonates prior to Citrus Greening (HLB) entering the state. Citrus trees with HLB have been found to have reduced root systems and react to any stress placed on them, including high soil pH. This stress may

contribute to fruit and leaf drop. Several research projects under commercial grove conditions are now being conducted to determine the impact of high soil pH and bicarbonates on citrus production and the best methods of reducing these impacts.

Drip irrigation on sand soil, mainly used in vegetable production, is another problematic situation. Water does not move very far laterally in sands, so the typical wetting pattern under a dripper is typically less than 12 to 15 inches in diameter. A high irrigation rate can rapidly raise the pH of the soil within the irrigated zone. This rapid rise in soil pH can reduce fertilizer availability. Also, the openings in drip emitters are very small. Calcium carbonate in water forms scales that can block drip emitters, even in a relatively short cropping season.

Water and soil pH and bicarbonates can be reduced by injecting acids or acid-forming materials to the irrigation system or applying the same mate-



A tank of acid is used for irrigation acidification at Davis Groves.

rials to the soil. This is typically accomplished by the addition of acid in the irrigation water, use of acid-forming fertilizer in certain cases, or application of elemental sulfur to the soil. Injecting nitric, sulfuric, or combinations of nitric and sulfuric acid into irrigation water, in much the same way as fertilizer, should be monitored to not reduce water pH below 5.0. Remember, the soil pH will increase after acid injection if you continue to irrigate with high bicarbonate water without acidification; thus, water acidification should be a continuing effort. It is important to note that the acid-producing effect of sulfur comes from the formation of sulfuric acid when soil bacteria act on the elemental sulfur. The sulfate form of nutrients in fertilizers such as potassium sulfate, magnesium sulfate, or gypsum (calcium sulfate) does not have the acidproducing effect of elemental sulfur. Fertilizer materials that form acids in soils can be used in fertilizer formulations to reduce soil pH and include ammonium nitrate, ammonium sulfate urea, and ammonium thiosulfate. Sulfur application rates of 300 to 500 pounds per acre should not be exceeded. Overapplication of sulfur or acid can cause damage to plants, an effect you certainly want to avoid. Therefore, monitor changes in soil pH carefully. For more information, contact Dr. Morgan at conserv@ufl.edu.

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Field Day Targets Vegetables

More than 50 growers, managers, and other industry representatives attended the SWFREC Fall Vegetable Field Day in December.

In-field presentations featured soil scientist Dr. Kelly Morgan ("Results of nutrient rate drip fertigation project for tomato produc-



tion); plant pathologist Dr. Pam Roberts ("Bacterial Spot on tomato" / "Bacterial Spot on pepper"); and entomologists Dr. Phil Stansly and Dr. Jawwad Qureshi ("Evaluation of BT Corn" / "Biological control of Whitefly with predaceous plant bugs on tomato" / "Insecticidal control of Southern Armyworm on tomato" / "Evaluation of Closer for control of Whitefly on tomato" / "Insecticidal control of Whitefly on yellow zucchini" / "Insecticidal control of Pepper Weevil on jalapeno pepper").

Indoor presentations included vegetable horticulturalist Dr. Monica Ozores-

Hampton ("Effect of controlled-release and soluble fertilizer on tomato grown with seepage irrigation in Florida sandy soils"); water resources scientist Dr. Sanjay Shukla and graduate student Nathan Holt ("Evaluation of alternative plastic mulch bed geometries for tomato production in southwest Florida"), and ag economist Dr. Fritz Roka and program assistant Primo Garza ("Certificate of Farm Labor Management").

The event was generously sponsored by Pablo Navia with ADAMA, who promoted Nimitz, a new nonfumigant contact true nematicide registered by the EPA.

Dr. Kelly Morgan talked specifics with two field day attendees; Nathan Holt presented information about tomato bed geometries.



Spotlight On . . . Farm Labor Management

Carlene Thissen, Education/ Training Coordinator

The objective of the Certificate of Farm Labor Management from the University of Florida is to enhance the professionalism of qualified farm labor supervisors and encourage others to increase their professionalism as well. and harvesting companies have earned the Certificate of Farm Labor Management. Many more need to take only one or two additional classes to earn the certificate.

The Farm Labor Supervisor (FLS) training program has been in place since 2010. Courses focus on four broad topic areas:



ensuring that farm workers are properly paid (Wage & Hour); increasing awareness and preventing discrimination and harassment in the workplace (Human Resource Compli-

This certificate program is designed to provide farm labor contractors, crew leaders, bus drivers and other farm and grove supervisory personnel with knowledge to successfully manage farm workers in compliance with all the associated rules and regulations.

To earn the Certificate of Farm Labor Management, attendees are required to attend eight Farm Labor Supervisor (FLS) classes and pass a test for each class. The format of each test varies according to the topic. Attendees who do not pass may retake the test. To date, seven individuals from growers ance); enhancing agricultural safety; and maintaining safe vehicles that transport farm workers with drivers who are properly licensed and drive defensively (Transportation).

Wage & Hour, Human Resource Compliance, and one class related to worker safety are required. Five additional classes are to be selected by individual attendees. Classes previously taken elsewhere, such as First Aid or CPR/AED, will count toward the eight classes if their certification is good through the end of 2015.

Since 2010, more than 800 farm labor supervisors have attended

FLS training classes, earning "certificates of attendance" for each class. This one-class-at-atime training, without testing, is valuable; however, it does not document individual expertise and knowledge. The Certificate of Farm Labor Management does.

During winter and spring 2015, classes will be taught on request at grower locations. If desired in UF/IFAS locations, we can do classes if at least 10 people commit to attend. Next fall, the complete set of classes will be offered at various UF/ IFAS locations around the central and southern areas of the state.

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Time and locations of all classes will be finalized soon and posted on the FLS website: <u>http://</u> <u>swfrec.ifas.ufl.edu/programs/</u> <u>economics/fls.php</u>.

For more information, contact Carlene at <u>carlene@ufl.edu</u>.

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Staff News

- **Five SWFREC students** graduated from the University of Florida in December: Asmita Shukla, PhD in Agricultural and Biological Engineering (ABE) (committee chair Dr. Sanjay Shukla), Nathan Holt, MS in ABE (chair Dr. Shukla), Angelica Engel, MS in ABE and beginning her PhD work (chair Dr. Shukla), Zachary Lahey, MS in Entomology and Nematology (chair Dr. Phil Stansly), and Miurel Bermudez-Herrera, MS in Soil and Water Science (chair Dr. Kelly Morgan).
- A book co-edited by

Dr. Stansly, "Bemisia: Bionomics and Management of a Global Pest,"



has been reviewed by the Journal of Economic Entomology. To see the review, visit the

SWFREC web site and scroll down to the "Highlights" section: http:// swfrec.ifas.ufl.edu/.

New students at SWFREC include: Timothy Ayankojo, seeking a MS in Soil and Water Science under Dr. Morgan; Ali Atta, seeking a PhD in Horticulture under Dr. Monica Ozores-Hampton; Rajendra Shishodia, seeking a PhD in Agricultural and **Biological Engineering** under Dr. Shukla; and Max Wallace, seeking a MS in Agricultural and **Biological Engineering** under Dr. Shukla. Max just won the American society of Agricultural and Biological Engineers Roger R. and Laura M. Yoerger Preprofessional Engineer of the Year Award. He will receive the honor at the association's International meeting in New Orleans, Louisiana, in July.

Coming Events

March 18: Growing Citrus Trees Undercover and Citrus Nutrition and Irrigation Including BMPs and the 4Rs Concept. 10am-1pm, SWFREC, Immokalee. 2 CEUs each for pesticide license renewal and Certified Crop Advisors. Registration is required. Call Hendry County Extension office 863-674-4092 or e-mail Mongi Zekri at <u>maz@ufl.edu</u>. For agenda, click here and scroll down to "Upcoming Events": http://swfrec.ifas.ufl.edu/.

March 25: Collier County Ag Tour. An all-day guided bus tour of Collier County's ag industry. For more information: http://collier.ifas.ufl.edu/.

April 23: UF/IFAS Spring Vegetable Field Day. 9am—Ipm, SWFREC, Immokalee. Agenda and registration information coming soon.

May 8 and 9: UF/IFAS Farm Safety Day. 7:30am-1pm, SWFREC, Immokalee. For agenda and registration information, click here and scroll down to "Upcoming Events": http://swfrec.ifas.ufl.edu/.

May 25. Memorial Day Holiday. SWFREC will be closed and will reopen Tuesday, May 26.