1917-2017

UF/IFAS Citrus Research and Education Center

100th Anniversary Celebration

November 29, 2017 | Lake Alfred, FL

UF IFAS
UNIVERSITY of FLORIDA

Dear Friends:

Anniversaries are a time to reflect on the past, celebrate the present and embrace the promise of the future. The 100th anniversary of the UF/IFAS Citrus Research and Education Center is an opportunity to do all of these things with pride and appreciation.

Our pride is rooted in the countless scientific breakthroughs and contributions discovered in the labs and groves, and in the relationships that led to greater production and unimaginable growth of the Florida citrus industry. The UF/IFAS scientists and staff of those early years could hardly imagine the impact of today's citrus industry across this state and the world. But their commitment and passion for changing the status quo was just as strong as that of the scientists who work at the center today.

Our appreciation rests with the hundreds of faculty and staff who built a global reputation for the UF/IFAS CREC over the past 100 years. Any breakthrough we proudly announce is only possible because someone spent hours and years working on building the body of knowledge surrounding citrus pathology, breeding, management, harvesting, etc. We are only as good as those who came before us, and we owe those who will come after us our best efforts in moving scientific knowledge forward.

Looking back, we know that we faced serious and daunting challenges in the past, just as we do today in the aftermath of Hurricane Irma and in the ongoing battle with citrus greening. Throughout all these challenges, one thing has remained constant — our mission to discover a treatment, breed a new variety, increase yields, reduce costs and find a way to a brighter and better future.

The UF/IFAS CREC will be different 100 years from now, just as it is dramatically different today from that first building, first lab and first plot. And while some things are ever-changing, our steadfast commitment to the citrus growers and citrus industry in Florida will never change.

Congratulations to all, and here's to the next 100 years.

Sincerely,

Jack M. Payne
Senior Vice President, Agriculture and Natural Resources

Dear Friends:

As I reflect on the significance of this 100th anniversary of the UF/IFAS Citrus Research and Education Center, I wonder if the first faculty and staff members who worked here could have envisioned this day. I wonder if they thought about what they did on any Tuesday or Thursday would make a difference in what we do today on any Monday or Wednesday.

Although how we conduct scientific experiments today may be dramatically different from what our colleagues did back then, some things are very similar. We probably have more things in common than we have differences. Sure, today we have different laboratories and advanced technology, but the scientific method, the quest for knowledge and the excitement of finding a breakthrough is just as relevant today as it was in 1917, 1947, 1987 or last week.

In fact, some things never change. The relationships among researcher, Extension agent and grower are as important as ever to our work. This center became a reality because of grower leadership and vision and a working partnership with the University of Florida and the State of Florida. Without the continued active engagement of our citrus producers, we would not be able to move our discoveries to implementation as quickly as we do. We have made it to this milestone because of the productive collaboration of the industry, the university and state agencies.

We will need these partnerships as we confront our current challenges of citrus diseases, natural disasters and changing communities. But despite recent hardships, we remain resilient and resourceful in our mission to support Florida's citrus industry and help it to remain the best in the world.

Thank you for your continued support of the UF/IFAS Citrus Research and Education Center. Together we will create a future that fulfills the great promise and potential of Florida citrus.

Sincerely,

Michael E. Rogers
Director, UF/IFAS Citrus Research and Education Center

The University of Florida Citrus Research and Education Center (CREC) is the oldest and largest off-campus research, Extension and education facility operated by the UF Institute of Food and Agricultural Sciences. Over the years, CREC's success has depended on many more people, in many more places, than just the faculty and staff members who work onsite.

Grower interest led to the founding of CREC in 1917. Concerned about an ongoing citrus canker outbreak and a recent freeze that had reduced yields, a small group of Central Florida citrus producers asked the Florida Legislature to authorize creation of an off-campus UF research site devoted to citrus. On June 4, 1917, legislators authorized creation of such a facility, but required growers to raise $10,000 to set the project in motion. In the late summer of 1919, the growers delivered and UF soon acquired an 84-acre site just north of Lake Alfred, in Polk County. Initially called the Branch Experiment Station for Citrus Investigations, it eventually became the world's premier academic research facility dedicated to a single commodity.

Many things changed through the ensuing years. Seventeen more U.S. presidents held office. The focus of Florida's citrus industry shifted from fresh fruit to juice production. Incalculable changes have influenced every aspect of production, processing and marketing, ranging from the varieties grown to the irrigation equipment available to the label designs printed on cans of frozen concentrated orange juice. Over the previous 100 years many challenges arose, too — challenges from bad weather and voracious pests. Challenges as fresh and urgent as the HLB crisis and the devastation caused by Hurricane Irma. But CREC personnel, like the growers they serve, are endlessly resilient, inventive and optimistic. Working hand-in-hand with growers, CREC helped build Florida citrus into one of the state's premier economic engines. Working hand-in-hand with growers, CREC will ensure that Florida citrus remains the top choice of citrus lovers and the envy of citrus producers worldwide.

100th Anniversary Program

9:00 – 9:30	Refreshments and registration	
9:30 – 11:30	100th Anniversary Celebration Ceremony	
	Welcome	Michael E. Rogers, Director Citrus Research and Education Center
	Remarks	Jack M. Payne, Senior Vice President Agriculture and Natural Resources
	Remarks	W. Kent Fuchs, President University of Florida
	Keynote Address	From Mount Everest to Mount Dora: The 8 Million Year Journey of Citrus to Florida Fred Gmitter, Professor Horticultural Sciences Department, CREC
	Remarks	G. Ellis Hunt, Jr., President Hunt Brothers, Inc.
	Closing Remarks	Michael E. Rogers, Director Citrus Research and Education Center
11:30 – 1:00	Tour signup and lunch Lunch prepared and served by friends from Florida Citrus Mutual	
1:00 – 4:00	Tours, exhibits and facilities open to the public	

Afternoon Lab and Field Tours – 1:00-4:00 p.m.

ENTOMOLOGY AND NEMATOLOGY

It takes a village: biological control of soilborne pests.
Dr. Larry Duncan – Professor / Nematology
Location: Building 7124, Room 9 (1st floor)
Tour Length: Open House
Tour Description: Learn how research into soil food webs has revealed tactics to manage soil in ways that conserve and enhance Florida's naturally occurring biological control agents. Watch insect pests being killed by beneficial nematodes, see how some micro-organisms capture and kill those nematodes, and learn how growers can assist insect-killing nematodes by creating a favorable habitat.

Step inside the Asian citrus psyllid microbiome!
Dr. Kirsten Pelz-Stelinski – Associate Professor / Entomology
Location: Building 7135, Room 28
Tour Length: 15 min., sign up for 1 of 3 time slots available
Tour Description: Learn about the inner life of the Asian citrus psyllid as we discuss the role of its symbiotic bacteria and transmission of the HLB pathogen. We will demonstrate micro-injections using live psyllids and view psyllid symbionts.

Asian citrus psyllid management
Dr. Lukasz Stelinski – Associate Professor / Entomology
Location: Building 7135, Room 9
Tour Length: 15 min., sign up for time slot
Tour Description: The tour will focus on management of the Asian citrus psyllid, vector of the pathogen causing HLB, including fundamental biology and insecticide resistance management. We will also showcase some of our work on ecologically based management of below-ground pests of citrus and our fundamental investigations of the biology of ambrosia beetle species affecting avocado and native Lauraceae in Florida. The presentation will be divided into brief summaries of each station, accompanied by summary posters and a show-and-tell feature where a laboratory technique or insect behavior (ex. Psyllid flying on lab flight mill apparatus) is briefly demonstrated during the presentation.

Wired-up psyllids!
Dr. Timothy Ebert – Post-doctoral Associate / Entomology
Location: Building 7185
Tour Length: Open House
Tour Description: Ever seen a psyllid sitting on a leaf and wonder what's it's doing? Well, now we know! Over the past decade, researchers at CREC have been using a scientific monitoring technique called electropenetrography (EPG) to answer many questions about psyllid feeding behavior. Visitors to the EPG lab will see first-hand live recordings of psyllids feeding on citrus plants. Researchers involved in EPG will be on hand to answer any questions.

USDA APHIS MAC Model grove planting

Dr. Michael Rogers – Professor / Entomology (Tour Leader)
Dr. Jude Grosser – Professor / Horticultural Sciences
Dr. Arnold Schumann – Professor / Soil and Water Sciences
Location: Bus transportation provided to grove
Tour Length: 30 min., sign up for time slot
Tour Description: Participants will visit a 74-acre model grove established with funding from the USDA APHIS MAC program. The goal of this planting was to establish a demonstration citrus grove utilizing all available techniques to bring the grove into economically viable production in the presence of HLB. This model grove comprises 70 sweet orange/rootstock combinations planted in 50-tree plots replicated 4 times. Although the trees were planted in June 2017 and are still too young to aid in future planting decisions at this point, growers may find of interest the 20-ft tall psyllid-proof windbreak surrounding a 19-acre section of the grove. The rationale for the artificial windbreak and further information on the grove management plan will be discussed during the site visit.

FOOD SCIENCE AND HUMAN NUTRITION

Citrus flavor and natural products chemistry lab

Dr. Yu Wang – Assistant Professor / Food Chemistry
Location: Building 7107, Room 2
Tour Length: Open House
Tour Description: Visitors are invited to tour the newly refurbished state-of-the-art Citrus Flavor Chemistry Lab led by Dr. Yu Wang, who holds the Tropicana Professorship for Florida Citrus Innovation. Dr. Wang will be available to discuss her research in flavor chemistry, which combines elements of cell biology and chemistry to investigate taste-active compounds or bioactive compounds that may aid in preventing obesity, inflammation and other conditions. Participants will have a chance to learn about flavor compounding, identify their potential to be a "super-taster," and experience taste modulators that can cause a tart lemon to taste like sweet lemonade without adding sugar.

Food safety research and Extension overview

Dr. Michelle Danyluk – Associate Professor / Food Microbiology and Safety
Mr. Travis Chapin – UF/IFAS Extension State Specialized Agent / Food Safety
Location: Building 7122 (Packinghouse), display located just through main loading door
Tour Length: Open House
Tour Description: Curious about what sort of food safety activities are going on at CREC? Wondering how the Food Safety Modernization Act rules might apply to you and your operation? Stop by the pop-up display located just inside the packinghouse to find out more information on recently completed and ongoing food safety research projects and continuing Extension efforts.

HORTICULTURAL SCIENCES

The citrus flowering monitor

Dr. Gene Albrigo – Professor Emeritus / Horticultural Sciences
Location: Building 7122 (packinghouse), Room 36 (1st floor FMC lab)
Tour Length: Open House
Tour Description: The 'Citrus Flowering Monitor Expert System' will be displayed. Its use for predicting spring flowering time and intensity will be shown. Additional uses of the model for timing of spring psyllid sprays and predicting the active bee period will be described. These timing predictions can help growers avoid applying harsh pesticide sprays during the active bee period and provide better timing for beekeeper movement of bees into and out of citrus.

Citrus breeding and genetic improvement

Dr. Manjul Dutt – Research Assistant Scientist / Horticultural Sciences
Location: Building 7107, Room 1
Tour Length: Open House
Tour Description: Visitors will explore our tissue culture facility and learn how new citrus varieties (scions and rootstocks) are developed. Visitors will also learn the process involved in the genetic engineering of citrus.

CREC Plant improvement fruit display

Dr. Fred Gmitter – Professor / Horticultural Sciences
Location: Building 7167, Room 109 (BHG Teaching Lab)
Tour Length: Open House
Tour Description: The fruit display will highlight some of the varieties previously released by CREC, as well as fruit from a handful of new selections.

Plant breeding and genetics

Dr. Fred Gmitter – Professor / Horticultural Sciences
Location: Building 7124, Rooms 201-203 (3rd floor)
Tour Length: Open House
Tour Description: Visitors can tour the lab and interact with researchers working on projects including tissue culture for seedless variety development, DNA fingerprinting and genomic breeding for HLB tolerance.

CREC/Tropicana New variety and rootstock field trial

Dr. Jude Grosser – Professor / Horticultural Sciences
Location: Offsite private grove, bus transportation provided (no personal vehicles, please)
Tour Length: 1 hour, sign up for time slot
Tour Description: Participants will visit a cooperative field trial supported by Tropicana and a private citrus grower that includes numerous new sweet orange and rootstock selections from the CREC breeding program. As visitors are guided through the 4.5-year old replicated trial, the tree health status and yields associated with certain combinations will catch the attention of anyone wondering what varieties to plant next.

Fruit drop and citrus nutrition

Dr. Tripti Vashisth – Assistant Professor / Horticultural Sciences
Location: Building 7124, Rooms 1 and 3 (1st floor)
Tour Length: 20 min., sign up for time slot
Tour Description: Visitors will learn about ongoing research investigating how HLB causes fruit drop in citrus. A hydroponic setup used to study nutrient uptake by citrus will also be showcased.

New tree physiology lab

Dr. Christopher Vincent – Assistant Professor / Horticultural Sciences
Location: Building 7103, Room 19
Tour Length: 20 min., sign up for time slot
Tour Description: This tour focuses on whole-tree physiology and how this concept can enhance our understanding of HLB. Visitors will get to tour the new citrus physiology lab that is being specially equipped to address important questions related to HLB.

MICROBIOLOGY AND CELL SCIENCE

Gene editing for HLB-resistant citrus

Dr. Nian Wang – Associate Professor / Microbiology and Cell Science
Location: Building 7124, Room 111 (2nd floor)
Tour Length: Open House (1:30 – 2:45 PM)
Tour Description: Visitors to the Wang lab will see first-hand the methods being used to develop non-transgenic disease-resistant citrus varieties using CRISPR (gene-editing) technology.

PLANT PATHOLOGY

Citrus pathology lab tour

Dr. Megan Dewdney – Associate Professor / Plant Pathology
Location: Building 7124, Room 57
Tour Length: Open House
Tour Description: Meet the pathogens that cause common citrus diseases. We will have information about the pathogens as well as cultures that are ready to examine through microscopes. We will also give demonstrations of the work currently conducted in our lab.

Citrus pathology: getting to the root of the problem

Dr. Evan Johnson – Research Assistant Scientist / Plant Pathology
Location: Building 7102 (wet lab)
Tour Length: Open House
Tour Description: Roots are an important and understudied tissue in citrus production. Diseases of roots, including HLB, cause significant damage to trees and production. The impact of diseases on citrus and methods used to study roots will be demonstrated.

CTV viral vectors for HLB management

Dr. Choaa El-Mohtar – Research Assistant Scientist / Plant Pathology
Location: Building 30, Room 2
Tour Length: Open House
Tour Description: Visitors to the virology lab will learn about the use of citrus tristeza virus (CTV) in conjunction with RNAi to control psyllids and/or control the HLB pathogen directly. Researchers from this program will be available to answer questions and discuss future prospects for use of this technology as part of future IPM programs for HLB management.

SOIL AND WATER SCIENCES

Citrus water and nutrient management field tour

Dr. Davie Kadyampakeni – Assistant Professor / Soil and Water Sciences
Location: Block 22, 2 miles NE of CREC (transportation provided in 15-passenger vans)
Tour Length: 1 hour, sign up for time slot
Tour Description: Visitors will view an ongoing experiment on 5-year-old trees. The goal of the experiment is to show the benefits of remediating HLB-affected trees with improved nutrition using macro- and micronutrients.

Citrus Under Protective Screen (CUPS)

Dr. Arnold Schumann – Professor / Soil and Water Sciences
Location: CUPS structure (screenhouse) adjacent to building 7167
Tour Length: Open House
Tour Description: The tour will visit the Citrus Under Protective Screen (CUPS) research facility, designed to grow high quality, disease-free fresh fruit by excluding psyllids, HLB and other pests and diseases. If weather permits, a robotic drone sprayer that is used in the CUPS screenhouse will be demonstrated. Due to quarantine protocols, visitors will not be taken inside the CUPS screenhouse.

CORE FACILITIES AND SUPPORT PROGRAMS

Citrus transformation lab

Dr. Vladimir Orbovic – Scientific Laboratory Manager
Location: Building 7124, Room 112 (2nd floor)
Tour Length: Open House
Tour Description: A short presentation will be given describing the methods used for production of genetically modified citrus plants from juvenile tissues. There will be a display of plant material at different phases of the transformation process and participants will see citrus plants that have been successfully transformed.

CREC microscopy lab

Dr. Ed Etxeberria – Professor / Horticultural Sciences
Dr. Amit Levy – Assistant Professor / Plant Pathology
Location: Building 7167, Room 126
Tour Length: 30 min., sign up for time slot
Tour Description: The microscopy lab is a core facility that accommodates the latest technology for the imaging of plant structures, insects and micro-organisms, as part of ongoing citrus research. During the tour, visitors will see equipment used in preparing plant tissue for imaging and learn about the basic use of the following microscopes: brightfield, fluorescence, transmission electron and scanning electron microscopes. They can also view a demonstration of the scanning fluorescence confocal microscope. The tour will be divided into two groups. One group will tour the microscopy lab while the other group gets a demonstration of the confocal microscope. The two groups will switch after 15 minutes.

CREC processing plant / packinghouse

Dr. Michelle Danyluk – Associate Professor / Food Science and Human Nutrition
Mr. Roy Sweeb – CREC Pilot Plant Manager (Tour Leader)
Location: Building 7122 (packinghouse), tours start at garage door
Tour Length: 20-30 min., sign up for time slot
Tour Description: The packinghouse portion of the tour will include washing, drying, grading and waxing of citrus. In the processing plant, section participants will learn more about the processing of citrus such as making frozen concentrated orange juice through an evaporator, and using citrus peel byproduct to produce essence oil. At the State test house we will discuss the testing of percent acidity and °Brix along with the state requirements for juice production.

Citrus Research and Development Foundation

Dr. Harold Browning – Chief Operating Officer
Location: Building 7124, Room 24 (1st floor)
Tour Length: Open House
Tour Description: Housed at CREC, the CRDF works closely with UF/IFAS scientists as a direct support organization of the university, using funding supplied by citrus growers and other outside sources. Visitors can meet CRDF program staff and discuss the programs and progress made in providing science-based solutions to HLB.

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