

2023 Florida Citrus Growers' Institute: **IFAS Citrus Research Programs Update**

Michael E. Rogers

Center Director & Professor
UF/IFAS Citrus Research & Education Center



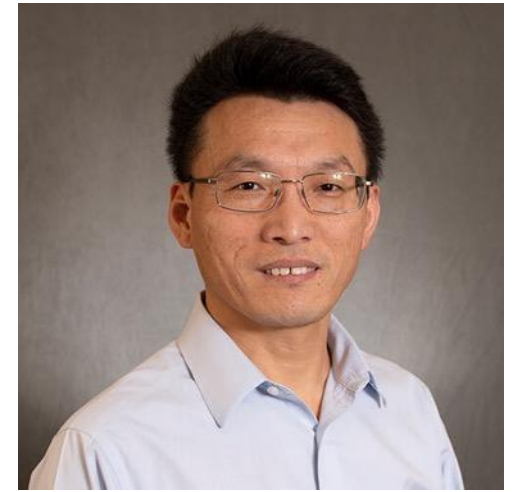
Today's presentation

- **Summary of 8 new USDA-funded research projects**
- **Canopy Assist Program**

USDA NIFA ECDRE Funding

- **Announced November 2022**
- **8 IFAS projects funded @ \$16.3 million**
- **Included faculty from:**
 - **CREC (Lake Alfred)**
 - **SWFREC (Immokalee)**
 - **UF Main campus (Gainesville)**

Development, evaluation, and delivery of citrus HLB management approaches by targeting its nature as a pathogen-triggered immune disease



- PI: Dr. Nian Wang (CREC) – 5-year project
- How to control HLB by managing plant stress caused by reactive oxygen species (ROS)?
- 3 approaches investigated
 - Horticultural practices (fertilization, plant hormones, etc..)
 - Use of CTV vector to express antioxidants that suppress ROS genes
 - Develop new varieties using CRISPR to silence edit genes responsible for ROS production

A coordinated network for the improvement of HLB research and Extension outputs



- PI: Dr. Megan Dewdney (CREC) – 2.5 year project
- Gathering and organizing research outcomes from numerous projects into one consistent format
- End product will be a database for growers to obtain results from past and future research projects to facilitate informed decisions in their own operations

HLB-resistant rootstock candidates for the citrus industry: Validating and understanding disease resistance



- PI: Dr. John Chater (CREC) – 2 year project
- Deeper investigation into citrus rootstocks that do not test positive for HLB (Clas)
 - Verify resistance/tolerance to HLB to improve current new grove planting strategies
 - Understand mechanisms of resistance for future breeding efforts

Targeted production of non-transgenic HLB-tolerant trees through complementary approaches



- PI: Dr. Zhonglin Mou (UF-Gainesville) – 2 year project
- Identified several HLB gene targets
- Will utilize new protocols to increase success in gene editing
- Will also develop intragenic rootstocks that could make scions tolerant to HLB

Combining Individual Protective Covers (IPCs) and brassinosteroids to prolong health and improve yield and quality in newly planted trees under HLB



- PI: Dr. Fernando Alferez (SWFREC)
- Project will examine the use of brassinosteroids as a tool to reduce HLB infection in new plants and slow the progression of HLB disease symptoms in plants once IPCs are removed

Toward a reliable, insect cell culture-based technique for culturing *Clas* bacteria



- PI: Dr. Kirsten Pelz-Stelinski (CREC) - 2-year project
- Use new optimized insect cell cultures to grow *Clas* bacteria artificially in the lab
- Would allow rapid screening of antimicrobial products against *Clas* in the future

Accelerating the delivery of conventionally developed HLB tolerant citrus scions and rootstocks as pathogen-free budlines for replicated multi-site testing



- PI: Dr. Jude Grosser (CREC) – 2 year project
- Development of a new protocol for cleaning up (pathogen-free) new plant varieties without the need for rejuvenation
- Would speed up delivery of new varieties to growers by 1.5-2 years

A method for generating an optimally attractive scent for Asian Citrus Psyllid (SCP) biocontrol



- PI: Alexander Aksonov (Connecticut) / Lukasz Stelinski (CREC)
- Mixtures of volatile organic compounds (VOCs) are effective attractants for psyllids, but technology lacking to deploy in the field
- New VOC dispersion technology will be coupled with AI-driven blend optimization to develop new attract-and-kill technology for ACP



COMING SOON!!!

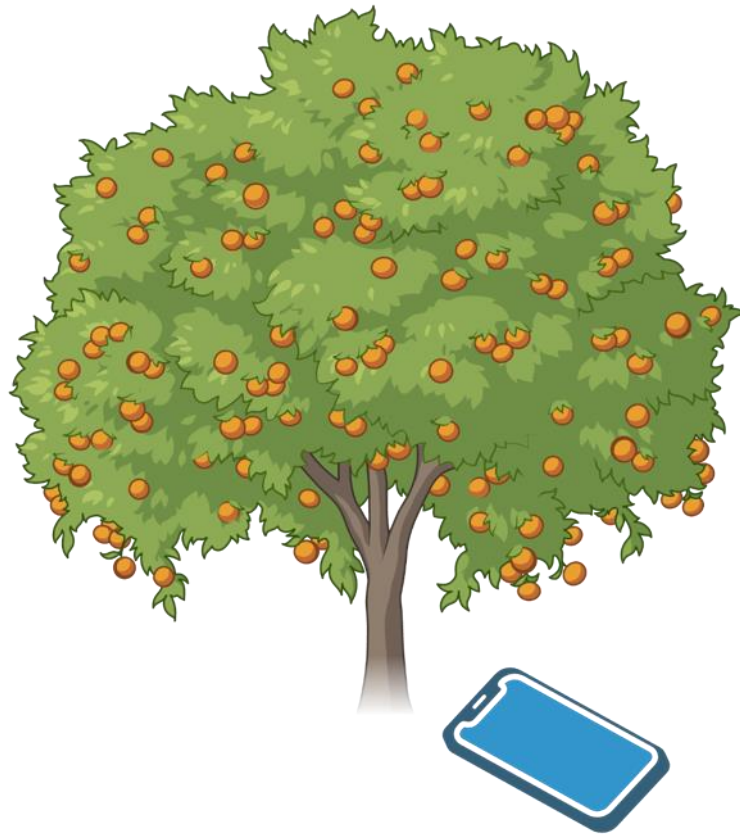
Canopy Assist Program



- New Extension program to assist growers in assessing tree health and future productivity
- Not for grove to grove comparison, but performance of a grove over time
- Ct values tell you about the bacteria levels at that time, but cant be correlated to yield
- How do you know if your treatments are working?



Canopy Assist Program



- Quick, easy and cheap method to assess improvement of tree health/yield over time
- Photos are upload to IFAS program to be analyzed
- A quantitative assessment of the canopy/tree health will be sent back to the grower

