UF UNIVERSITY of FLORIDA
Institute of Food and Agricultural Sciences
Tropical Research & Education Center

18905 SW 280 Street
Homestead, Florida 33031
786-217-9245 Telephone
305-246-7003 Facsimile

Recent and current research, extension, and teaching programming

Haimanote Bayabil*, Water Resources
- Improving irrigation management in urban and agricultural systems
- Assessing land and water management practices on water quality and quantity using field observations and model simulations
- Integrating field observations with remotely sensed data to better understand and mitigate plant stress
- Extension – Improve irrigation management of the green industries and for urban landscapes
- Teaching – Irrigation Principles and Management (AOM6735)

Zachary Brym*, AgroEcologist
- Data-supported adaptive management practices for resource conservation and profitability
- Sustainable, resilient, and biodiverse agroecosystems
- Feasibility of sustainable hemp production
- Distribution & management of invasive plant species
- Extension – increase literacy and awareness of agroecology and natural systems; sustainable hemp production

Daniel Carrillo*, Entomologist – Tropical Fruits
- Biology and management tactics for ambrosia beetle vectors of laurel wilt on avocado
- Biology and control of invasive pests of concern to the tropical fruit industry
- Biological control of papaya mite pests and fruit flies
- Pitaya and sapodilla insect pests and control
- Extension – IPM for tropical fruit crop systems and invasive species preparedness and management

Jonathan Crane*, Tropical Fruit Crop Specialist, Assoc. Director
- Extension programs - cultural practices and BMPs for tropical fruit crops
- Collaborator on avocado laurel wilt control, papaya plant breeding and selection, avocado scion-rootstock evaluations, pest management practices, annona pollination and development of sustainable irrigation and nutrient management practices for tropical fruit crops

Edward Evans, Director of TREC
- Leadership
- Advocacy
- Mentoring
- Guidance
- Fund raising
- Day-to-day operations
- Strategic planning and vision

Romina Gazis*, Plant Pathologist, Plant Diagnostic Clinic
- Understand biology behind various plant diseases (Fungi, Bacteria, Oomycetes, and Viruses) affecting agricultural and natural systems
- Biological control of plant pathogens
- Extension - Director of Plant Diagnostic Clinic – identification of biotic and abiotic stresses and recommendations for control and mitigation

Young Gu Her*, Hydrologist
- Natural resources – watershed monitoring and modeling of agricultural, natural areas, and the urban boundaries
- Sustainable agricultural water management
- Effect of climate change and sea level rise
- Extension - Agriculture, urban and environmental water issues – sea level rise, climate change, and freshwater management systems

Xiaoying Li, Horticultural Vegetable Crops
- Introduction and promotion of ethnic vegetable crops
- Optimization of production systems for new crops (e.g., planting time, variety selection) to improve product quality and yield
- Collaborator on developing preventative integrated pest management strategies on new crops
- Extension – client support on new crop adoption and cultivation

Yuncong Li*, Soil and Water Scientist
- Sustainable agriculture, best management practices for soil and water quality
- Fertilizer formulation development for sustainable agriculture
- Natural Resources – Soils and natural area restoration, environmental nutrient management and monitoring
- Extension – Plant nutrition management in agricultural and natural systems

Geoffrey Meru*, Genetics-Plant Breeding-Vegetable Crops
- Genetic mapping of disease resistance genes for improved plant breeding efficiency
- Genetic improvement of selected vegetable crops (e.g., watermelon, squash/ pumpkin, and snap beans)
- Development, selection, and release of improved vegetable crops
- Extension – client education on plant breeding and crop cultivars

Alexandra Revynthi*, Acarologist/Entomologist – Ornamentals
- Developing IPM programs for invasive pests plaguing the ornamental industry (i.e., the Hibiscus Bud Weevil, the horntail snail, and *Thrips parvispinus*)
- Improving existing IPM programs for established pests in south Florida nurseries and landscapes (spider mites and whiteflies)
- Extension – Train clientele on agricultural acarology and on the implementation of novel IPM for invasive and established pests of ornamentals

Bruce Schaffer, Ecophysiology of Tropical and Subtropical Horticultural Crops
- Effects of light, drought, wind, and flooding stress on physiology and growth of subtropical and tropical horticultural crops
- Effect of laurel wilt on physiology and susceptibility of avocado and other susceptible tree species
- Effect of salinity stress on physiology and growth of tropical and subtropical horticultural plants
- Interactions between abiotic and biotic (arthropods and diseases) stresses on physiology of subtropical and tropical plants

Dak Seal*, Entomologist – Vegetable Crops
- Biology and management of pepper weevil, *Thrips palmi*, corn silkfly, melon thrips, nematodes, and whiteflies on peppers, tomatoes, sweet corn, eggplant, lettuce, etc.
- Extension – IPM of commercial vegetable production

Ashley Smyth*, Biogeochemist/Ecosystem Ecologist
- Aquatic ecology and water quality management
- Nutrient dynamics of lakes, wetlands and estuaries
- Assessing restoration of seagrass and native bivalve
- Effect of stormwater ponds on microbial communities and downstream ecosystem functioning
- Impact of a changing climate and nutrient pollution on coastal resources
- Extension – climate change, coastal resilience, living shorelines, water quality and oyster shell recycling

Xingbo Wu*, Genetics-Plant Breeding-Ornamentals
- Genetic and genomic resources development of ornamental crops for the genetic improvement of ornamental crops
- Breeding, selection, and release of improved ornamental plants
- Extension – client education on plant breeding and cultivars

Shouan Zhang*, Plant Pathologist – Vegetable Crops
- Invasive pathogens in vegetables, alternative crops, and dragon fruit
- Biology, epidemiology, and integrated management of bacterial, fungal, and viral diseases and root-knot nematodes on vegetable crops, stem, and fruit canker on dragon fruit
- Impacts on soil salinity on plant growth and diseases of vegetable crops
- Extension – Disease diagnosis and IPM of vegetable and dragon fruit production

Teaching programs by TREC faculty members
1. Tropical Fruit Production and Research (HOS5555; at TREC)
2. Orchidology (ORH4280 distance ed) – undergraduate
3. Orchid Biology and Culture (ORH5282 distance ed) – graduate
4. Orchid Short Course (in person on main campus)
5. Special Topics – Micropropagation (ORH4932; live at TREC)
6. Communication in Academia (distance ed)
7. Irrigation Principles and Management (distance ed)

Collaborating institutions include USDA-ARS, Miami; University of Miami; Florida International University; Fairchild Tropical Botanical Garden; Florida Dept. of Agriculture and Consumer Services and numerous other state, national, and international institutions

TREC
- Major teaching/research/extension areas
  - Sustainable agriculture—nutrient and water management and IPM of ornamental and landscape crops, vegetable crops, tropical fruit crops, agronomic crops, new crops, and cultivars
  - Natural Resources and ag/natural area/urban resiliency
- Located in the most populous region of Florida; gateway to Latin America and the Caribbean
- Florida is one of the most vulnerable states to sea level rise
- Located adjacent to major natural areas (e.g., Everglades National Park, Biscayne National Park, Big Cypress, etc.)
- Miami-Dade County is no. 2 of 67 Florida counties in agricultural receipts (annual $800+ million economic impact)
- With 1,200 miles of coast, 79% of Florida's economy is linked to coastal resources

*Research/Extension appointment