

1. Reducing avocado losses to major challenges by improving resistance selection and disease management using next generation technologies

Numerous biotic and abiotic stresses affect avocado growers by causing severe reductions in fruit yield and quality. If not managed properly, biotic stresses such as Phytophthora Root Rot (PRR) and Laurel Wilt (LW) can combine with abiotic stresses (i.e. salinity) to destroy complete avocado orchards. The avocado world market is dominated by ‘Hass,’ that is susceptible to several diseases including PRR and LW. Currently, no avocado cultivars resistant to these diseases are available. This project proposes to manage these diseases using an Integrated Pest Management (IPM) approach. We propose to use next generation technologies for breeding (long-term approach) and disease management (short- to mid-term approaches) to assure the long-term sustainability and competitiveness of the U.S. avocado industry.

The successful candidate will work cooperatively with the Principal Investigator (Dr. Romina Gazis) and Co-PIs (Drs. Bruce Schaffer and Jonathan Crane), as well as in conjunction with other investigators from multiple states. Candidate must have an ability to work effectively in a team environment and will be expected to mentor graduate students and coordinate activities with program technicians. The successful candidate will work with the PIs to collect and analyze project data, prepare progress reports and manuscripts, and engage in extension activities to educate industry stakeholders (avocado growers) and forest health associates on research. This project entails laboratory work (culture and molecular-based), greenhouse experiments using potted plants, and field experiments.

Qualifications: A Ph.D. in plant pathology (forest pathology), mycology, or in a related field is required. The candidate is expected to design and conduct statistically valid research using appropriate statistical methods and software packages. The candidate should have experience working with fungi, conducting research in laboratory, greenhouse and field environments, and performing contemporary molecular biology and microscopy necessary for making an accurate diagnosis. **Experience in diagnostic techniques (primer development, qPCR/LAMP technology) is required.** The candidate should provide evidence of effective communication skills in verbal and written English.

Start Date: January 2021

Length of the appointment: The position is renewable for up to 3 years depending upon performance.

The salary (yearly) is \$50,000 in the first year, \$51,500 in the second year, and \$53,045 in the third year; and includes benefits.

2. Plant Safety, Horticultural Benefits, and Disease Efficacy of Essential Oils for Use in Organically Grown Fruit Crops: From the Farm to the Consumer

A trans-disciplinary team of plant pathologists, horticulturists, a whole-plant physiologist, a postharvest biologist, an entomologist, extension specialists, and certified organic fruit growers will investigate solutions to improve the feasibility of organic fruit production by substantially reducing the risk of producing organically grown fruit crops relative to disease development. This will be achieved through laboratory, field, and postharvest evaluation of the effectiveness of these organically certified plant essential oils (EOs) on targeted pathogens in targeted temperate and tropical fruit crops (blueberry, peach, avocado, and mango), and in five states (Florida, Georgia, South Carolina, California, and Hawaii). The project will determine the efficacy of these EOs and the best application rates and timing for the most efficient disease control. This will increase organic orchard productivity, low-residue fruit crops, and offer an organic spray program using organic plant EOs. This project is expected to contribute to both long-term profitability and sustainability of organic fruit crop production as the future of copper- and sulfur-based pesticides is limited.

The successful candidate will work cooperatively with the Principal Investigator (Dr. Romina Gazis) and Co-PIs (Drs. Bruce Schaffer and Jonathan Crane), as well as in conjunction with other investigators from multiple states. Candidate must have an ability to work effectively in a team environment and will be expected to mentor graduate students and coordinate activities with program technicians. The successful candidate will work with the PIs to collect and analyze project data, prepare progress reports and manuscripts, and engage in extension activities to educate industry stakeholders (tropical fruit growers). This project entails laboratory work (culture and molecular-based), greenhouse experiments with potted plants, and field experiments.

Qualifications: A Ph.D. in plant pathology is required. The candidate is expected to design and conduct statistically valid research using appropriate statistical methods and software packages. The candidate should have experience working with plant diseases (preferable with fruit diseases), conducting research in laboratory, greenhouse and field environments. **Experience in diagnostic techniques, disease rating, and *in vitro* and *in planta* disease testing is required.** The candidate should provide evidence of effective communication skills in verbal and written English.

Start Date: January 2021

Length of the appointment: The position is renewable for up to 2.5 years depending upon performance.

The salary (yearly) is \$49,000 in the first year, \$50,000 in the second year, and \$51,000 in the third year; and includes benefits.

3. Evolution of Endophytism in Entomopathogenic Fungi as an Evolutionary Strategy for Host Tracking

We propose to conduct a survey of trunk endophytes at two of Florida's main ecosystems: the tropical hardwood hammocks and Pine Rocklands. This project will advance understanding of the ecological role of endophytes within their host and at the ecosystem level, while addressing long-standing questions related to the ecological and evolutionary connections between entomopathogens and endophytes. This project will promote learning, research, and training of an early career scientist in **Forest Fungal Ecology**. Data generated here will promote further exploratory questions and inter-institutional collaborations in addition to opening new funding opportunities from different agencies (NSF, NIH, USDA-NIFA, USDA-Forest Service).

Qualifications: A Ph.D. in forest pathology, mycology, or in a related field is required. The candidate is expected to design and conduct statistically valid research using appropriate statistical methods and software packages. The candidate should have experience working with fungi (preferable with ascomycetes), conducting research in laboratory, greenhouse and field environments, and performing contemporary molecular biology and microscopy necessary for making an accurate fungal identification. **Experience in community ecology techniques (metabarcoding, environmental sequencing platforms), sample preparation, and data analysis for large datasets is required.** The candidate should provide evidence of effective communication skills in verbal and written English.

Start Date: January 2021

Length of the appointment: The position is available for 1 year

The salary is \$50,000/yearly and includes benefits. Funds come from the University of Florida.
