Florida Citrus Advanced Technology Program

QUARTERLY & FINAL REPORTS: Control of Citrus Greening, Canker & Emerging Diseases of Citrus

Instructions Complete the fields based on your project specs. When finished, save the form to your local disk using a unique name. Then, go to **http://research.fcprac.com**, and log in with your user name and password using Researcher Login in the lower left. Find this project title and click on **Submit a Report**. Update your profile information if needed, then upload this report as directed.

2009-2010 REPORT	CATEGORY (drop-down)	TODAY'S DATE (m/d/yr)
(●) *Quarterly Report* ( ) *Annual Report* ( ) *Final*	HLB Pathology	6/29/09

WHAT IS THE "HEADLINE" FOR THIS REPORT (e.g. a one-sentence "newspaper headline" describing what you accomplished)

Severity of citrus greening is not correlated with the amount of bacteria in the tree.

TITLE and CONTACT INFORMATION

Proposal Title Examine the response of different genotypes of citrus to citrus greening (Huanglongbing) under different conditions

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Organization UF, IFAS, CREC	*Total Direct Funds (current year)* $226,391

REPORT UPDATE (650 words; provide details about your headline)

This is a 3-year project with 3 main focal points:
1. To build a foundation of understanding of the host- Candidatus Liberibacter asiaticus (LAS) interactions that involves testing multiple genetic variants of citrus, examination of environmental and seasonal effects on symptoms and pathogen replication and movement, and understanding effects of genetic variation in the pathogen system, so that better methods of controlling the vector, detecting and monitoring the disease, and growing trees will allow better production of citrus; and,
2. To develop an understanding of how Las interacts with citrus genotypes to cause disease in sensitive varieties and to not cause disease in tolerant varieties in the hope that this information will lead to the development of approaches to produce citrus economically in the present situation with citrus greening in Florida; and,
3. To provide knowledge and resources to support and foster research in other laboratories. A substantial number of projects to be supported are based on our research and reagents (propagated healthy and HLB-infected plants, HLB inocula, nucleic acid extracts, etc.) supplied by our laboratory. We view this as one of our most important goals.

Year 1 milestones:
1) Propagate and prepare trees for year 2.
We have received seed from a range of different citrus relatives from the National Citrus Repository in Riverside, CA, and these plants are growing to be tested for response to HLB.
2) Begin screening of commercial varieties and additional citrus relatives to Las.
We have an experiment underway to test a range of different sweet orange and grapefruit varieties for sensitivity to HLB. The experiment also has some citrus relatives. HLB symptoms have just started to develop.
3) Obtain seeds fo Poncitrus trifoliata and poncirus hybrids from a series of independent sources, propagate plants, and start experiments to evaluate phenotypic differences in their response to HLB. We have several independent selections of Poncirus trifoliata growing. We also have a series of experiments underway to analyze Poncirus rootstocks and interstocks on the development of disease.
4) Evaluate C. latipes response: repeat an attempt to initiate infection of C. latipes trees using different sources of the trees, on different rootstocks, and using different sources of HLB inoculum.
We have a series of C. latipes trees infected with a series of different Las isolates, but nothing has induced the original symptoms that were associated with non-detection of Las. However, we have an interesting observation that the original trees are greatly inhibited when used as budwood. We are investigating this phenomenon.
5) Begin microscopy studies and develop an approach to analyze sugar metabolism in sensitive vs tolerant hosts in an attempt to understand what determines a differential host response to HLB.
We have found that phloem necrosis in stems parallel the degree of disease severity. Citrus that is tolerant to HLB has much less phloem necrosis than sweet orange and grapefruit.