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	10/14/09

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

Preliminary data suggest that psyllids can pick up Las long before it can be detected by PCR.

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.

We have developed a containment plant growth room to allow natural infection of citrus trees by psyllid inoculation. We are testing a series of citrus relatives for preference and inoculation by aphids. This test includes a series of different sources of poncirus. This test is at the 4 month stage. Preliminary observations suggest that psyllids are able to acquire Las from exposed plants months before PCR detection and before development of symptoms. Preliminary observations suggest that psyllids prefer to feed on older infected plants compared to younger plants with new flush, although reproduction occurs on the new flush.

We also have a series of experiments testing the susceptibility of poncirus and latipes in the greenhouse. Most plants remain PCR negative after graft inoculation although the living inoculum is definitely positive. Yet an occasional plant becomes PCR positive. We continue to investigate whether this is a genetic response that can be used to produce resistant or tolerant trees. Similar experiments are being done by psyllid inoculation.

A wide range of citrus relatives have been inoculated with Las and are being evalutated in the greenhouse. We are also screening a range of elite lines for the citrus improvement group and a series of transgenic trees. All of these experiments are underway. We also continue to be be a resource to supply infected trees and infected psyllids to several other research laboratories.