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	1/13/10

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

Establishment of research plots, validation of data collection techniques, and collection of preliminary and initial data.

TITLE and CONTACT INFORMATION

Proposal Title Spatial and Temporal Incidence of Ca. Liberibacter in Citrus and Psyllids Detected Using Real Time PCR

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Organization SWFREC, University of Florida	*Total Direct Funds (current year)* 90,120

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

Spatial and Temporal Incidence of Ca. Liberibacter in Citrus and Psyllids Detected Using Real Time PCR
Funds for this project were released on 19 Mar 09.

Objective 1. Assess seasonal patterns of pathogen incidence in citrus trees and psyllids in regions of high HLB incidence. This objective includes establishing field plots, which has been done, and sampling plant and psyllid for the HLB pathogen at the different locations over time. This objective has been established and sampling has been initiated and it ongoing. Included in the sampling objectives was to validate our PCR test at SWFREC for the psyllids by comparing field to 'hot' colonies and to results from similar sampling for USDA-Riverside. A 12 acre block of 'Valencia' orange trees was selected at a commercial grove in 2008 and a block at SWFREC was established for these experiments. Monthly samples of 100-200 psyllids collected from SWFREC and commercial groves have been collected since November 2008 and are under analysis at the SWFREC-HLB and USDA-Riverside. Plant and psyllid samples for commercial experiment conducted in December 2009 using shoots infested with natural populations and lab reared psyllids adults are also being analyzed. A sample of psyllid adults collected in the block in November 2008 and analyzed at USDA-ARS Riverside labs contained 28% HLB positive psyllids. Subsequent sampling in spring and fall in 2009 during the months of April, May, and August detected 5-10% positive in April and 10% positive in May of adult psyllids from the blocks. Psyllids from 'hot' colonies tested 18% positive on grafted plants by the USDA-Riverside lab and the psyllids from the same test site tested 0-27% positive in duplicated runs at SWFREC lab. The 'cold' colonies tested 11% positive by USDA-Riverside lab and 5% at SWFREC in August 2009. Hot colony on plants with field psyllids tested 9% positive by USDA-Riverside in August 2009 and a similar colony tested by SWFREC in September and October was less than 10% positive.
Similarly, plants infested with natural populations or lab reared psyllids were tested throughout the year in commercial and SWFREC test blocks. The percentage of positive samples from trees in the commercial grove were 16, 44, 45, 10, 35 and 42% for two samples dates each in June, Aug and September respectively. The 10% sample was collected on August 7, 2009. Plants grafted from HLB positive source and plants inoculated with field psyllids were followed for percentage of HLB from April through August. Initial samples were negative but 75% were positive by PCR within 6 weeks of inoculation. The percentage of positives dropped slightly in June, probably due to sampling issues, but otherwise has been fairly consistently above 90% positive in subsequent testing indicating that a positive source of HLB has been established for future research. Sampling of the block receiving two levels of micronutrients+SAR, insecticide treatments, or left as control continues. Plant and psyllid samples are collected at four months intervals to test for Candidatus Liberibacter asiaticus using PCR. Insecticide applications significantly suppressed psyllids compared to control.
Other objectives are pending completion of objective 1.