CITRUS ADVANCED TECHNOLOGY PROGRAM

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

▶ INSTRUCTIONS

○ *Quarterly Report* ◉ *Annual Report* ○ *Final*

Required: What is the "headline" for this report (e.g. a one-sentence "newspaper headline" describing what you accomplished)

Prevalence in ACP and citrus is positively correlated for a year

Proposal Title

Prevalence in ACP and citrus is positively correlated

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
9/20/11	Citrus Research and Development Foundation	Epidemiology and Cultural Control

REPORT UPDATE (500 words; summarize your accomplishments)

The objective of this project was to investigate three questions: 1) what is the seasonal pattern of Ca. Liberibacter asiaticus (Las) prevalence in leaf tissue on a grove scale; 2) what are the flushing patterns of citrus and do the flushing patterns affect the prevalence of Las in Diaphorina citri or citrus leaves; and 3) what is the prevalence of Diaphorina citri carrying Las on a grove scale and how does it compare the results from the citrus trees in the same grove.

In 2008 and 2009 Ebert and Rogers demonstrated that the prevalence of Las in the Asian citrus psyllid (ACP) varied seasonally but the pattern between seasons was not consistent. It was suggested that perhaps the reason for the differences between the years related to the flushing patterns of citrus and the prevalence of the bacterium in the leaves where ACPs are feeding. This project aims to determine if there is a relationship between the frequency of disease on branches and ACPs.

Three sweet orange groves have been sampled from June 2010 for HLB prevalence in branches and ACP. Citrus phenology measurements began in October 2010. In each grove, two hundred trees were selected from 10 consecutive rows. One leaf/tree was randomly picked every fortnight. For qPCR detection of Las, the midribs of five random leaves were pooled to obtain 40 samples/date. An estimated Las prevalence in the branches was generated from the pools with PooledInfRate v3. Pooling needed to be reduced in the groves with high HLB prevalence as the the season progressed. Simultaneously, ACPs were collected from the same location to compare the seasonal prevalence of Las in citrus branches and ACPs. There were 2 peaks of Las prevalence in the moderately infected grove at approx. 0.50 mid-October 2010 and April 2011, dipping to 0.20 in February 2011. Las prevalence in ACP had a similar pattern but the main peak reached 0.75 in December. In the highly infected grove, there has been a steady increase of Las prevalence in branches since July 2010 until March 2011 where a plateau of 0.75 was reached. There was the same general trend observed with ACP although the prevalence levels were 0.15 to 0.20 higher, reaching 0.90 in March 2011, but there was a large decline in ACP prevalence to 0.60 in May 2011. In the low HLB intensity grove, no Las has been detected in since the initiation of sampling in July 2010. However, very low prevalence has been detected in branches. Prevalence has hovered below 0.02 until April 2011 when it reached 0.06. The phenology data was collected at all sites since November 2010. Flush was highly synchronous in 2011 likely because of the extended cold temperatures this winter and the drought conditions. As would be expected with the very dry conditions, there is currently little new flush on the trees.

Presentations at Conferences:

Parkunan V., Wang N.-Y., Ebert T.A., Rogers M.E. and Dewdney M.M. 2011. Seasonal prevalence of citrus Huanglongbing (Candidatus Liberibacter asiaticus) in a central Florida sweet orange grove. at the 2nd International Research Conference on Huanglongbing January 10-14, Orlando FL.

V. Parkunan, T. Ebert, N. Wang, M. Rogers, M. Dewdney. 2011. Seasonal variation of Candidatus Liberibacter asiaticus in citrus branches and in vector, Diaphorina citri, in Central Florida sweet orange groves. Phytopath 101:S138.

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Organization CREC, University of Florida

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Project Duration (years) 3 *Year of Project* 1

Total Funds (current year) $84,023.00

SUBMIT REPORT

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.