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*	Management	8/6/10

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

Economic Thresholds for the Psyllid will help to decrease HLB incidence in Commercial Citrus Treated with Nutrient/SAR

TITLE and CONTACT INFORMATION

Proposal Title Thresholds for Vector Control in Young Citrus Treated for symptoms of HLB with a Nutrient/SAR Package

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Phone (239) 658 3400	*Project Duration (years)* 3 *Year of Project* 1
Organization SWFREC - IFAS - University of Florida	*Total Direct Funds (current year)*

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

We reported (FDACS contract 00070950) that insecticidal treatments of HLB infected trees decreased bacterial titer and coupled with nutrient treatments increased yield compared to infected trees that were not treated with insecticides. This may indicate that an important portion of the Liberibacter population in the system resides in psyllids, that weaken the tree's ability to resist the disease by continuous inoculation with bacteria. These results indicate that insecticides are still a necessary component of an HLB management program, even for infected trees. The goal of the present project is to establish economic thresholds under different juice price scenarios that optimize returns on investment when a nutrient/SAR package is being applied in groves with moderate to high incidence of HLB.

Dr. Cesar Monzo Ferrer, graduate of the Agricultural Research Institute of Valencia (Spain) has been employed as a Post Doctoral Associate under supervision of P. Stansly to undertake these studies. Two 3-year field experiments have been initiated in commercial orange blocks in Hendry County (southwest Florida). One block consists of 30 acres in 32 rows of 10 year old 'Early Gold' on 'Swingle' citrumelo rootstock. Average HLB incidence estimated in this grove based on symptoms is 74% and randomized samples for PCR analysis are being processed. The second block consists of 12 acres of 'Valencia' orange also on 'Swingle' and appears to have similar incidence of positive trees which will also be confirmed by PCR. Experimental design is randomized complete block with 4 replicates and 4 treatments: (1) No insecticide, (2) Calendar applications, in order to drive vector populations close to 0, (3) nominal threshold of 0.2 psyllids per tap, and (4) nominal threshold of 0.7 psyllids per tap. Calendar applications will be applied approximately every 1-2 months and consist of a rotation insecticides recommended for managing this pest. Because the dormant season has been previously demonstrated to be the most effective time to treat with insecticides, treatments 3 and 4 will receive one or two "dormant" sprays in February and in December and February respectively without considering any threshold.

Adult psyllid populations are being monitored every two weeks by tap sampling. Flushing patterns and flush infestation is being estimated by assessing the the number of new shoots per tree and evaluating the proportion infested with psyllids. Negative incidence of spray applications on natural enemy populations will be evaluated by counting beneficials in tap samples and flush observations. Economic thresholds will be calculated using the following parameters: treatment costs (pesticides and foliar nutrient applications), fruit price, insecticide efficacy, yield loss, and a pest density-dependent function. Annual yield will be determined as the average kg of fruit per tree obtained in each treatment after harvest. Yield loss will be calculated as the proportional difference between the yield obtained by trees receiving the 'Calendar Applications' treatment and the yield from each of the remaining treatments. Yield loss will be related by non-linear regression with the accumulated number of adults/tap obtained from biweekly monitoring in each of the treatments as well as the incidence of HLB and the average bacterial titer in each plot as estimated using Q-PCR.

At the beginning of the experiment average psyllid infestation in the 'Early Gold' block was estimated at of 0.26 ± 0.04 adults/tap. On July 30, treatments (2) and (3) were sprayed using the spinosyn Delegate at 4 oz/ac plus 5% 435 horticultural mineral oil. The treatment drove psyllid populations in sprayed plots down to 0.01 ± 0.01 adults/tap in treatment (2), and 0.03 ± 0.01 in treatment (3). Comparisons between sprayed and unsprayed treatments have revealed no negative effect yet of the spray on beneficial insects.