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	1/14/10

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

SAR is under evaluation for HLB control in young citrus trees in Florida and Brazil

TITLE and CONTACT INFORMATION

Proposal Title Does systemic acquired resistance (SAR) control HLB disease development?

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Phone 863-956-1151	*Project Duration (years)* 2 *Year of Project* 1
Organization UF, Citrus Research and education Center	*Total Direct Funds (current year)* $66,861

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

The objective is to test the effect of soil applied neonicotinoid insecticds used for systemic psyllid control as inducers of SAR to determine if possible the direct effect of SAR on HLB disease progress in newly planted citrus trees subjected to psyllid mediated infection or budwood-inoculated infection. Hamlin trees were planted in May 2009 at the USDA-ARS, Picos Farm in Ft. Pierce FL and treated as follows: 1) untreated check, 2) foliar insecticide to control psyllids, 3) soil applied imidacloprid/thiamethoxam to induce SAR, 4) soil applied imidacloprid/thiamethoxam plus the foliar insecticide to induce SAR and control psyllids, 5) HLB bud graft-inoculated untreated check, 6) HLB bud graft-inoculated with soil applied imidacloprid/thiamethoxam to induce SAR. The experimental design is 50 trees per treatment in a completely randomized block design (5 blocks of 10 trees per block). Tree and insecticide treatments commenced in May and HLB budwood graft inoculations occurred in July. In December 2009 (6 months post-HLB inoculum challenge), 34 of 300 trees in the experiment are positive (11%). Most of the infected trees are located on the west side of the trial area which is proximal to the infected citrus, but few infected trees occur on the east side bordered by pine flatwoods. Based on the incidence of pysllid transmission versus graft-transmission, the gradient of infected trees from west to east is unlikely to persist given the preponderance of HLB-infected citrus and pysllids in the site. The highest number of HLB positives trees (8) is in the untreated checks with or without graft inoculation (treatments 1 and 5), followed by 6 positives in the graft-inoculated soil applied imidacloprid/thiamethoxam (Treatment 6), 5 positives in the foliar insecticide and soil applied imidacloprid/thiamethoxam (treatments 2 and 3), and 2 positives in foliar insecticide plus soil applied treatment (treatment 4). The effect of SAR induction on HLB infection progress is inconclusive because the soil applied imidacloprid/thiamethoxam control of the psyllid is causing an uncontrolled interaction with psyllid transmission. Although the best treatment to control psyllids, foliar insecticide plus soil applied (Treatment 4) has the lowest incidence of infection, this treatment is still not completely preventing pysllid infection. Hence even the most stringent psyllid control (foliar insecticdes applied every two weeks plus systemic activity) has not protected trees from transmission by infected psyllids. In a separate project on SAR-Canker control (see annual report for contract no. 72642) we have confirmed that soil applied acibenzolar-s-methyl (Actigard, Syngenta) induces SAR in the field and provides similar levels of canker control as the imidacloprid/thiamethoxam neonicotinoid insecticides but not interact with psyllid control. Henceforth, the trial will utilize soil-applied Actigard instead of imidacloprid/thiamethoxam in treatments 3,4 and 6. Two HLB-SAR experiments of similar design have been set up in Parana, Brazil in late 2009 (spring for southern hemisphere). One is HLB graft-inoculated and other proximal to an unmanaged farm with HLB. Each of these trials will utilize soil applied Actigard for the SAR treatments.