Florida Citrus Advanced Technology Program

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

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2009-2010 REPORT	CATEGORY (drop-down)	TODAY'S DATE (m/d/yr)
◉ *Quarterly Report* ○ *Annual Report* ○ *Final*	Management	1/15/10

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

Horticultural Approach to Maintaining Citrus Trees with HLB

TITLE and CONTACT INFORMATION

Proposal Title Cultural Practices to prolong productive life of HLB infected trees and evaluation of systemic acquired resistance inducers combined with psyllid control to manage greening NAS179

Principal Investigator Robert Rouse	*PI Last Name* Rouse
Email rrouse@ufl.edu	*FDACS Contract Number* 00070950
Phone 239-658-3400	*Project Duration (years)* 3 *Year of Project* 1
Organization UF/IFAS	*Total Direct Funds (current year)* 214,881,00

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

Cultural Practices to Prolong productive Life of HLB Infected Trees.

Through the summer of 2009 trees receiving the nutritional/SAR trees were vigorous and green with only normal HLB symptoms typical of HLB infected trees. This fall of 2009 at our 100% infected trial site we have observed numerous visual HLB symptoms in multiple sectors of the trees. Although our other two sites with lower infection rates of 50% and 15-20% had increased visual symptoms of HLB this fall and winter typical of greening trees, the symptomatic leaves were not as abundant as in the more infected trees. Fruit color break from green to yellow in Valencia oranges began early (late September) at the site with 100% infected trees and was not observed at the two other sites where fruit remained green as typical in uninfected trees. Fruit drop has been observed this fall only in the 100% infected trial. Data collected show treatments with the complete Maury Boyd cocktail, with or without hydrogen peroxide, and the foliar feed macronutrients in a typical range of 2 to 5% fruit drop. The other treatments ranged from 8 to 17% fruit drop. No abnormal coloring of fruit or fruit drop has been recorded in sites with 40-50% or 15-20% HLB infection.

Evaluation of Systemic Acquired Resistance Inducers Combined with Psyllid Control to Manage Greening infected Groves

We are monitoring Asian citrus psyllid (ACP) populations and Can. Libericacter asiaticus (CLas) titer in plants and psyllids, and impacts in a young citrus block as the result of the main effects and interaction of two treatments: 1) micronutrients + systemic acquired resistance inducers (Micro+SAR), and 2) Psyllid chemical control applications based on scouting. This trial was designed as a replicated (n=4) complete block for a 2x2 factorial experiment on a 12-acre commercial block of now 7-years-old 'Valencia' oranges on 'Swingle' rootstock that was held back by defoliation for canker control in 2006. Adult ACP populations have been maintained three times higher on the average, and up to 50 times higher on occasion in insecticide-treated plots compared to treated plots throughout both years of the experiment. Insecticides have been applied 6 times during that period, either as a single scheduled dormant spray per year or when adult populations exceeded a threshold of 0.5 per biweekly "tap" sample made by striking a limb while holding a laminated sheet underneath to catch falling psyllids. The Micro+SAR treatment has had no effect on ACP populations. ACP adults and nymphs have been collected 4 times since Nov 2008 for PCR analysis along with a leaf sample from the most symptomatic branch from every 5th tree in the block. Insect samples were sent to our collaborators at the USDA in Riverside, CA for analysis and plant tissue samples were processed at the PCR laboratory at SWFREC. In November 2008 and April 2009, 34% of the plants were positive for HLB over all treatments using a cutoff CT value of 36. This jumped to from 86 to 100% of the plants positive in Aug. 2009 with no significant differences among treatments by ANOVA. However, the two treatments employing insecticidal control had significantly higher Ct values (avg. 28.5) than the two non-insecticide treatments (avg. 25.5) indicating lower CLas titer in plants protected by insecticides. Yield was assessed on the entire block, plot by plot in March 2009. Despite the high percentage of infected trees, we observed that trees receiving both insecticidal and nutritional treatments produced 1.32±0.15 boxes per tree of fruit, a 30+% increase over 0.95-0.99 boxes per tree from the other 3 treatments. Fruit was analyzed by the CREC pilot plant in Lake Alfred and no significant treatment effects on fruit or juice quality were observed. These results could be interpreted to mean that the Micro+SAR package is capable of staving off negative impacts of HLB if CLas titer can be maintained below some threshold level through psyllid management. However, we will not feel comfortable with this conclusion until we see similar results from the March/April 2010 harvest.