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	12/15/09

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

Psyllids controlled by repeated LV application of 435 Oil during the growing season and insecticides by air during winter.

TITLE and CONTACT INFORMATION

Proposal Title Ultra low-volume and Aerial Application of Insecticides and Horticultural Mineral to Control Asian Citrus Psyllid in Commercial Orchards.

Principal Investigator Stansly, P. A	*PI Last Name* Stansly
Email pstansly@ufl.edu	*FDACS Contract Number* 210
Phone (239) 658 3400	*Project Duration (years)* 3 *Year of Project* 1
Organization SWFREC - IFAS - University of Florida	*Total Direct Funds (current year)* $108,132

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

First year objectives have been completed or exceeded 8 months after funds were released on 1 April 2009.
Objective 1: Compare aerial and conventional ground application of insecticides for psyllid control. Results from a comparison of low volume (LV) aerial applications (10 Gallons per acre -GPA-) versus conventional ground-based airblast (125 GPA) applications during the 2008 summer indicated that broad-spectrum insecticides work well by air and ground although the selective insecticides spinetoram and imidacloprid provided much better control with ground application. This spring, we followed up with a two selective insecticides (spinetoram and spirotetramat) compared with the broad spectrum organo- phosphate phosmet, all applied at the same volumes as above by air and ground in replicated (N=4) 24-acre plots of mature orange trees. This time, the distinction between broad spectrum and selective insecticides was less clear: all materials worked better when applied by ground than by air and phosmet provided the best control with either method. Nevertheless, the voluntary area wide dormant spray program we initiated with Gulf Citrus Growers association resulting in over 100,000 acres sprayed by air has demonstrated that aerial applications during winter are efficient and effective (see report on FDACS contract number 000). We also conducted a study on a highly infested, 38-acre block of 'pineapple' orange to compare LV applications conducted with a modified London Fogger 18-20 provided by Chemical Containers @ 2GPA applied to bed tops only (typical application) with conventional application using an airblast sprayer that treated both tops and swales @ 116GPA. Applying every other row weighted the odds against the LV, but we wanted to test a typical application made many growers are using LV. Spinetoram (4oz/ac) and dimethoate (24oz/ac.) were both applied with 2GPA of horticultural mineral oil (HMO). Conventional ground applications resulted in fewer ACP for the duration of the one month trial compared with the control, whereas LV applications resulted in fewer ACP for only the last two weeks. So again, conventional application proved superior in terms of control, at least with the products tested.
Objective 2: Assess the effects of frequent nocturnal LV applications of HMO on psyllids populations. In a preliminary replicated trial testing LV @1GPA HMO applied neat every two weeks for 4 months in summer, we found 14.1±3.8% of the flush was infested in untreated plots, compared with 2.1±1.2% for the HMO-treated plots. In 2009, we compared the modified London Fogger and the Proptec rotary atomizer P400D @ 2GPA, applied every 2 to 4 weeks depending on ACP populations, and monitored ACP every two weeks. High frequency LV applications of HMO maintained lower populations of ACP when compared with untreated trees: (Proptec rotary atomizer 1.4 ± 0.75, London Fogger: 4.4 ± 1.9, and the untreated control 6.3 ± 3.9 ACP adults x days). In 2010, we will conduct similar experiments in a block with a history of high ACP populations using LV-HMO as a control method after ACP populations are present rather than as a preventative (before populations are present) to better test the efficacy of this tactic. We are also collaborating with CREC and a private company in Gainesville, FL to assess the deposition of oil on citrus foliage by LV application using protocols we are developing to using gas chromatography to quantify residues eluted from leaves with a hexane wash.
Objective 3: extend results to the citrus industry. Results from these experiments have been presented at no less than 18 extension meetings across the state in 2009 including two Production Managers meetings and two CCA trainings, the Entomological Society of America (ESA), and the Florida State Horticultural Society (FSHS).
Arevalo, H. A. and P. A. Stansly. 2009. Comparison of Ground and Aerial Applications for Control of Adult Asian Citrus Psyllid, Diaphorina citri Kuwayama. Proc. Fla. State Hort. Soc. 122: (in press)