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	4/5/10

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

Development, dissemination, and adoption of an efficient monitoring program for Asian citrus psyllid.

TITLE and CONTACT INFORMATION

Proposal Title Sampling Plans to Guide Decision Making for Control of Asian Citrus Psyllid (ACP)

Principal Investigator Qureshi, J. A.	*PI Last Name* Qureshi
Email jawwadq@ufl.edu	*FDACS Contract Number* 164
Phone (239) 658 3400	*Project Duration (years)* 2 *Year of Project* 1
Organization SWFREC - IFAS - University of Florida	*Total Direct Funds (current year)* $66, 791

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

Two years funding for this project was recommended by NAS panel. Significant progress was made during the first year for all 3 objectives. 1) Evaluation and refinement of the tap sample method developed by Qureshi and Stansly (2007) to monitor psyllid adults. We compared tap sample, the Yellow Corn Rootworm Trap (YCRW), the ACP Trap, and a sweep net, at low and high density psyllid populations in insecticide treated and untreated blocks of mature citrus at two locations. At low density, adult psyllids on YCRW traps and ACP traps hung within the canopies of citrus trees in a commercial grove for two weeks averaged 1.8 ± 0.3 and 1.04 ± 0.2, respectively, compared to 0.08 ± 0.04 per tap sample made once per tree at the end of the two week period. Averages of 9.3 ± 1.2, 4.8 ± 0.6, and 0.5 ± 0.1 were obtained for YCRW trap, ACP trap, and tap sample, respectively, at the high density. One sticky trap cost approximately $1, only provides data after at least a 1-week delay, and requires an average 7 minutes to deploy and collect data compared to an average of 3 seconds for a tap sample that provides instant data with no more supplies than a laminated sheet of letter size paper or a smooth white surface such as a clipboard, and a one-foot piece of PVC tube. Therefore, many tap samples can be taken in the time one sticky trap can be processed and cost much less. Comparison of the two sampling methods in mature citrus at Southwest Florida Research and Extension Center showed that significantly more adults were detected using the tap sample compared to the sweep net at low density, with means of 0.1 ± 0.02 and 0.06 ± 0.01 per tap or sweep sample per tree, respectively. Means of 0.3 ± 0.1 per tap and 0.4 ± 0.1 per sweep per tree at high density were not significantly different. Time to conduct one sweep (3.1 ± 0.04 s) was significantly greater than one tap sample (2.9 ± 0.04 s) at low density but did not differ at high density and averaged 3.4 ± 0.1 s. However, sweep samples are more tiring, require more equipment, knock off fruit and can spread canker, especially when foliage is wet. 2) Test the influence of adult density and shoot infestation rates on precision of estimated means and distribution of population within blocks. Regression analysis based on bootstrapping of the data from the first trial indicated that the precision targets of 0.25 and 0.01 SEM:mean were reached at high psyllid density with 8 and 66 tap-samples, respectively, compared to 12 and 75 YCRW traps and 13 and 74 ACP traps. At low psyllid density, 267 and 1929 tap-samples, 16 and 130 YCRW traps, and 43 and 219 ACP traps were needed to attain these precision ratios, respectively. In the second trial at low psyllid density, 98 and 554 tap-samples and 158 and 1281 sweep net samples were needed at ratios of 0.25 and 0.1, respectively, compared to 35 and 196 tap samples and 37 and 198 sweep net samples at high density. Therefore, the sweep net would take more time to provide the same data and more work and difficulty in counting at high density. We are conducting more sampling and integrating shoot density and infestation data into overall sampling for psyllid. 3) Evaluate and integrate methods for assessing psyllid density, shoot density, and infestation rates into a user friendly system accessible to consultants and managers. A rapid system that includes tap samples, flush inspections and natural enemy evaluations along with forms and spreadsheets is available on our website swfrec.ifas.ufl.edu/entlab/. We made 5 presentations specifically on monitoring psyllids and conducted 5 workshops at SWFREC with a total of over 250 attendants. The tap sampling method has gained wide acceptance and is adopted by growers and consultants in SW Florida and our cooperators in California and Mexico. A recent survey of grove managers by SWFREC and IFAS extension covered 106,148 acres of commercial citrus and reported that all 95% conducting sampling use the tap method, along with shoot examination (76%), sticky traps (14%), and sweep nets (9%). Findings from the above studies have been submitted for publication in citrus industry and Florida Entomologist.