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	1/13/10

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

Efficient monitoring program for Asian citrus psyllid being tested and disseminated.

TITLE and CONTACT INFORMATION

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

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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)

Significant progress with funds released in June 2009 is described below by objective number. 1) We developed a rapid and easy to use tap sample method to monitor psyllid adults and other insect pests and beneficials in citrus trees (Qureshi and Stansly, 2007). A tap sample consists of 3 consecutive strikes on a randomly chosen branch using the hand or a PVC pipe, and counting fallen insects on a laminated white sheet of paper held 1 ft below the foliage. Studies were undertaken in response to FCPRAC review panel suggesting comparison of different sampling methods in addition to the proposed objectives. Four sampling methods, the tap, Yellow Corn Rootworm Trap (YCRW), ACP Trap, and sweep net, were compared at low and high density psyllid populations in insecticide treated and untreated blocks of mature citrus. 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 1.1 ± 0.02, 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. Sticky traps have a high cost (approx. $ 1 per trap), only provide data after at least a 1-week delay, and require an average 7 minutes per trap to deploy and collect data compared to an average of 3 seconds for a tap sample that provides instant information. Therefore, many samples can be taken in the time one sticky trap can be processed, and at less cost. Sampling conducted at the experimental grove of Southwest Florida Research and Extension Center compared two tap samples and two net sweeps on the same tree. 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 were obtained at high density and 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 between the two methods 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) Regression analysis based on bootstrapping of the first set of low density data indicated that to obtain an SEM:Mean ratio of 0.1, considered necessary for research purposes, numbers of YCRW traps, ACP traps, and tap samples needed would be 130, 219, and 1929, respectively, compared to 75, 74, and 66, respectively, for the high density data. For a ratio of 0.25, considered necessary for routine monitoring, required numbers of YCRW traps, ACP traps, and tap samples were 16, 43, and 267, respectively, at low density, and 12, 13, and 8, respectively, at high density. For the second data set at low density, the required numbers of tap or sweep net samples were 554 and 1281, respectively, for a SEM:Mean ratio of 0.1 and 98 and 158, respectively, for a ratio of 0.25. Therefore, the sweep net would take more time to provide the same data and more work and difficulty in counting at high densities. These results have been prepared for submission to a refereed journal in an article entitled: "Efficiency of sampling methods for the adult Asian citrus psyllid, Diaphorina citri (Hemiptera: Psyllidae) at low and high population densities". 3) We continue to obtain satisfactory results after 4 years of using the tap sample for our many field studies in young and mature citrus at experimental and commercial groves. The method has also gained wide acceptance by growers and consultants in SW Florida. A recent survey of grove managers covering 106,148 acres of citrus reported all 95% conducting sampling use tap method, along with shoot examination (76%), sticky traps (14%), and sweep nets (9%). We made 4 presentations specifically on monitoring, conducted 4 workshops at SWFREC with a total of over 200 attendants and put up details of sampling procedures on our website at http://www.imok.ufl.edu/entlab/.