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*	Psyllid	7/15/10

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

Asian citrus psyllids disperse long distances and carry HLB-pathogen from abandoned into managed groves

TITLE and CONTACT INFORMATION

Proposal Title Quantitative measurement of the movement patterns and dispersal behavior of Asian citrus psyllid in Florida for improved management

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Organization UF/IFAS CREC	*Total Direct Funds (current year)*

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

We have continued our research on the movement behavior and seasonal dispersal of Asian citrus psyllid. Our main objective is to improve psyllid management by gaining a better understanding of the psyllid's dispersal behavior and capabilities. To investigate the potential impact of abandoned citrus on nearby managed citrus, we used an in situ immunomarking technique, in combination with ELISA to quantify the movement of ACP from abandoned citrus plots into nearby managed plots. Pairs of abandoned and managed citrus plots were chosen that were separated by a distance of 100 meters. Two crude food proteins were used to mark abandoned citrus plots (bovine casein on the edge row, and chicken egg albumin 150 meters to the interior). Yellow sticky traps were placed within the marked areas of the abandoned plots, as well as between groves and on the edge rows and 150 m to the interior of the managed plots. Traps were collected 5 days after application of the protein markers, and captured ACP were subjected to an ELISA to determine the presence of a protein mark. This study has been conducted monthly for 14 months. We found significantly more ACP, and correspondingly a higher number of ACP moving from abandoned into managed plots during June, July and August 2009 than at any other time during the experiment. Populations are much lower this summer than last. In July of 2009, we trapped 674 adult ACP; of those, 42% were found to have moved from abandoned plots into managed plots. In July of 2010, we trapped only four ACP; all of which were found to have moved from abandoned plots into managed plots. In addition to quantifying ACP movement, we used PCR analysis on all ACP that had moved from abandoned into managed citrus over the course of the study to determine whether they were carrying Ca. Las. Through ELISA and PCR we confirmed that HLB-infected psyllids are moving from abandoned citrus into nearby managed citrus.

To evaluate the dispersal range of ACP, we used the in situ immunomarking technique, spraying chicken egg albumin on 200 citrus trees in the central area of a managed grove. Yellow sticky traps were placed within the marked area, and concentrically at distances of 100, 300, 400, 500, 650, 1000, 1200, and 2000 meters away from the marked area. This experiment was expansive and trap distances extended well beyond the border of the grove in which the marker protein was applied; into other managed groves, as well as some abandoned groves. Traps were removed 11 days after application of the marker protein, and captured ACP were subjected to an ELISA to determine the presence of the marker. A total of 179 adult ACP were captured, and 19% carried the protein mark. Marked ACP were found on traps within the marked area, and at each distance except for 1000 meters. Our results indicate that ACP can move at least 2000 m within 11 days.