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	9/29/09

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

Asian citrus psyllids disperse frequently and abandoned groves serve as a source of HLB infection

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 University of Florida/IFAS	*Total Direct Funds (current year)* 101631

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

The movement patterns and dispersal capabilities of Asian citrus psyllid (ACP) required investigation to better understand the spread of huanglongbing (HLB) and to improve management strategies for ACP. Recently, we adopted an immunomarking technique which utilizes crude food proteins (chicken egg albumin, bovine casein, and soy protein) to track the movement of ACP in Florida citrus. As ACP has become quickly established in Florida (and now other citrus producing states in the US), it is obvious that there is the capacity for substantial dispersal. Understanding movement patterns and dispersal behaviors of ACP will be essential in creating optimal pest control strategies with the hope of curbing the spread of HLB, and protecting citrus production in Florida. Findings on the rate of spread of HLB have been inconsistent, possibly due to variable rates of transmission and latency periods. Most recently, we have been investigating both the seasonality of psyllid movement and the limits of short-range dispersal capabilities. Specifically, we have tracked psyllid movement on a monthly basis to determine when movement is greatest. By determining the annual seasonality of psyllid movement/dispersal, we will be able to better identify periods of greatest need for supplemental border sprays. Thus far, we have measured psyllid movement in the months of June, July, August, and September. Thus far, we have found that the total number of psyllids moving from unmanaged into managed groves during the months of June, July, and August is approximately equal, but decreases in September. In June, the number of psyllids leaving the interior and exterior portions of unmanaged groves is equal and the majority of these psyllids infest the border areas of managed groves. In July, the majority of invading psyllids from unmanaged groves originate from the interior portions of unmanaged groves. Also, in July, the number of psyllids invading the border and interior portions of managed groves is equal. In August, once again, the majority of invading psyllids from unmanaged groves originate from the interior portions of unmanaged groves and mainly infest the border areas of managed groves. As mentioned above, in September this movement appears to decrease drastically. We will continue to monitor psyllid movement monthly until we understand the annual seasonality. This initial portion of the study does indicate that movement patterns of psyllids differ over the course of the season, suggesting that there may be specific times of the year when movement is greatest and thus psyllid control should be intensified. In separate investigations, we have been studying the short-range dispersal capabilities of psyllids. We have found that psyllids are able to move up to 300 yards within the span of 6 days. This movement can occur between groves seperated by a fallow field and directly within continuous grove space. These results are further evidence of the good dispersal capabilities of this insect. Although the psyllid is considered by many to be a weak flyer, it apparently disperses large distances very quickly. It is possible that this movement is aided by wind. Finally, we have also initiated an investigation of the presence of HLB in abandoned groves. Since we know that abandoned groves serve as a source of psyllid infestation into managed groves, we need to determine if these abandoned groves also harbor the HLB pathogen. If so, they would represent a potential source of greening infection into managed citrus. We have surveyed 7 pairs of abandoned and managed groves throughout Florida that are 50-100 yards apart. With respect to tree infection, so far we have found that there is 2.3 fold more infection in abandoned groves than adjacent managed groves. With respect to psyllid infection in June, July, and August, we have found an equal number of HLB-infected psyllids in adjacent managed and unmanaged groves. Our initial results indicate that abandoned citrus groves are a source of HLB infection, harboring inoculum in the form of HLB-infected trees and are a source of infected psyllids.