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*	HLB Pathology	7/15/10

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

Sexual transmission of the HLB pathogen

TITLE and CONTACT INFORMATION

Proposal Title Is Candidatus Liberibacter asiaticus, the pathogen responsible for Huanglongbing in Florida, sexually transmitted between adult psyllids?

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Organization University of Florida-CREC	*Total Direct Funds (current year)* 50080

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

The goal of this proposal is to investigate whether Ca. Las is transmitted between infected and uninfected ACP adults in a sex-related manner to better understand the mechanisms by which disease is spread in field. We carried out a series of experiments to evaluate if Ca. Las is transmitted from male to female psyllids during routine mating. Our preliminary investigations indicated that Ca. Las may be transmitted from male to female psyllids but not from females to males or among psyllids of the same sex. Pairs of Ca. Las infected male and healthy female, Ca. Las infected female and healthy male, Ca. Las infected female and healthy female, Ca. Las infected male and healthy male, Ca. Las infected female and Ca. Las infected male (positive control) healthy female and healthy male (negative control) adult psyllids were introduced separately in Petri dishes filled with agar medium. The insects were allowed to mate for 72 hrs. After 72 hrs, the insects were transferred to Ca. Las resistant Murraya koenigii plants for 12-14 days for multiplication of bacteria in recipient psyllids. DNA was prepared from each of the female and male psyllids separately and analyzed for Ca. Las presence utilizing a real time PCR assays.

Our results indicated that Ca. Las was transmitted from Ca. Las infected male psyllids to roughly 15% of healthy females. Ca. Las was transmitted from Ca. Las infected males to healthy females but not from Ca. Las infected females to healthy males or among insects of the same sex. The females that acquired Ca. Las from males during mating were also able to transmit the bacteria transovarially. We were unable to detect transmission of Ca. Las when the recipient insects were analyzed for Ca. Las DNA after 72 hrs of mating. Similarly, no Ca. Las was detected in recipient insects when the recipient insects were maintained on M. koenigii plants for longer than 4 weeks. Currently, we are investigating for the presence of bacteria in genital organs of male and female psyllids with scanning and transmission electron microscopy to characterize the pathway of Ca. Las transmission from male to female psyllids. We also continue to evaluate if the Ca. Las recipient females are capable of infecting new citrus plants and to quantify the HLB transmission rate through sexual transmission.