CITRUS ADVANCED TECHNOLOGY PROGRAM

QUARTERLY & FINAL REPORTS: Control of Citrus Greening, Canker & Emerging Diseases of Citrus

▶ INSTRUCTIONS

(●) *Quarterly Report* ( ) *Annual Report* ( ) *Final*

Required: What is the "headline" for this report (e.g. a one-sentence "newspaper headline" describing what you accomplished)

Low sexual transmission of Candidatus Liberisbacter in ACP

Proposal Title

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

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
3/11/10	Citrus Research and Development Foundation	Infection Consequences

REPORT UPDATE (500 words; summarize your accomplishments)

The goal of this proposal is to investigate whether Candidatus Liberibacter asiaticus (Ca. Las) is transmitted between infected and uninfected ACP adults in a sex-related manner to understand the potential role of this mechanism in disease spread in the field. Our investigations to date indicate that Ca. Las is sexually transmitted from Ca. Las-infected male psyllids to healthy females but not from infected females to healthy males or among psyllids of the same sex. Ca. Las was transmitted from Ca. Las-infected male psyllids to roughly 3% of healthy females. Ca. Las was not detected in the recipient sex immediately after mating but required a minimum incubation period of 2 weeks in psyllid bodies for PCR detection. These results also suggested multiplication of bacteria within psyllid bodies. No Ca. Las was detected in recipient psyllids when the recipient psyllids were maintained on HLB-resistant (Murraya koenigii) plants for longer than 4 weeks suggesting that psyllids may lose infectivity if they continuously live on HLB-resistant plants. We were able to detect Ca. Las bacteria in ACP ovaries of recipient females with PCR. However, we were unable to detect the presence of bacteria in genital parts of male and female psyllids with scanning and transmission electron microscopy perhaps due to washing of bacteria during sample preparation procedures. Ca. Las was also not detected in psyllid salivary glands using electron microscopy. More precise and accurate procedures such as in situ hybridization may be required to detect the presence of bacteria in psyllids. Also, we were able to detect Ca. Las in eggs of recipient females with PCR but not with electron microscopy. PCR detection of Ca. Las in psyllid ovaries suggested transovarial transmission of bacteria. Transovarial transmission was also confirmed in F2 generations of Ca. Las-recipient females which were produced on M. koenigii plants. We continue to evaluate if the Ca. Las-recipient females are capable of infecting new citrus plants. The experimental procedures for this have been completed; however, we are awaiting to collect the results because a minimum 10 week period is required for detection of HLB in newly infected plants.

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Organization University of Florida

Contract Number 332

Project Duration (years) 1 *Year of Project* 1

Total Funds (current year) $50,080.00

SUBMIT REPORT

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.