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)

Male Asian citrus psyllids are attracted to female ACP extract

Proposal Title

Identification of psyllid attractants and development of highly effective trapping and attract-and-kill methods for improved psyllid control

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
7/8/11	Citrus Research and Development Foundation	Vector Monitoring, Behavior, Cultivation

REPORT UPDATE (500 words; summarize your accomplishments)

For this project, we have been investigating whether female Asian citrus psyllid (ACP) attract males with a pheromone. Laboratory olfactometer and field studies were conducted to examine the behavioral responses of male and female ACP to their cuticular extracts with a goal of identifying a female-produced sex pheromone. In laboratory experiments, more male ACP were attracted to the odor of 1, 5, or 10 ACP female cuticular extract equivalent units than clean air suggesting that female ACP produce pheromone to attract males. The results were confirmed in field studies in which clear or yellow traps baited with 10 female cuticular extract equivalent units attracted more males than the clear traps baited with male cuticular extract or unbaited traps. Furthermore, clear traps baited with 5 or 10 male or female cuticular extract equivalent units attracted more ACP than unbaited (control) traps. However, catch of psyllids on yellow sticky traps was not increased by baiting them with the psyllid cuticular extract. Collectively these investigations indicate that the extract from female ACP adult cuticle attracted male ACP in laboratory and field bioassays suggesting that female ACP produces a pheromone to attract males. Field bioassays with whole body male and female ACP cuticular extracts suggested that a constituent of the ACP cuticular hydrocarbons serves an attractant.

In order to determine the specific chemicals responsible for the behavioral effects observed with psyllid cuticular extracts, chemicals analyses of these extracts were performed to determine whether differences in profiles exist between male and female extracts. Males and females were analyzed separately. There were unique chemicals associated with male and female cuticular hydrocarbon extracts. A greater amount of Dodecanoic acid was specifically identified from the female cuticular extract. In laboratory experiments, synthetic dodecanoic acid attracted significantly more male ACP than clean air. However, field experiments with dodecanoic acid have not yet generated conclusive results for its attractiveness to ACP males. In collaboration with chemists, we have modified our chemical analysis techniques for more precise identification of chemicals of male and female cuticular extracts using 10X traps. Preliminary results with modified techniques yielded more precise differences in chemical profiles between male and female psyllids. More bioassays and field experiments are in progress with newly identified chemicals.

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Organization University of Florida

Contract Number 215

Project Duration (years) 2 *Year of Project* 3

Total Funds (current year) $137,573.00

SUBMIT REPORT

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.