CITRUS ADVANCED TECHNOLOGY PROGRAM

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

SELECT PERIOD June 2014

Quarterly Report Final

Proposal Title

Using a novel psyllid trap that captures and preserves psyllids and Candidatus bacteria for DNA analyses: understand vector-greening population dynamics and entomopathogens and the enhancement grant

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
9/24/14	Citrus Research and Development Foundation	Vector Monitoring, Behavior, Cultivation

REPORT UPDATE (500 words-It is not necessary in this public report to disclose your institution's proprietary information or intellectual property.)

This proposal aims to continue improvement to a novel psyllid trap and to use the trap to gather new information on the behavior, biology, population dynamics and biological control of ACP/Candidatus Liberibacter asiaticus. Lab and field testing was and continues to be conducted to increase trap efficiency by exploiting unique vector behaviors in response to traps and behaviorally active components.

570 - Grant

Obj. 1: We continued to conduct field and laboratory studies toward obtaining an understanding of ACP trap response behavior by manipulations of visual cues as well as trap physical components and component orientation.

This within Florida research component is continuing and we now added several new locations in Puerto Rico to exploit the significantly higher ACP populations there that make the research easier. Doing this quarter we have successfully tested, winnowed out inferior traps and retested trap prototype configurations in Puerto Rico and Florida in cooperation with Dr. David Jenkins and have now eliminated a number of configurations that are inferior as well as identified the most successful trap under field conditions. We have had no success with trap additions related to odor cues used as reported to be potential attractants in the literature. We are continuing this research with new ideas but now have a trap identified a "standard trap" that can be used to capture and preserve the DNA of the psyllids and their associates in situ. We also initiated a sampling regime to try to delineate the northern most established populations of ACP. Our sample locations toward this end have been Gainesville, Live Oak, Quincy and Marianna, FL. To date we have not detected ACP at any sampling location except in Gainesville. Captured ACP (n=100) from the Gainesville captured monthly were analyzed for the causal CLas bacteria of greening. Interestingly, to date none of the psyllids analyzed have been infected with CLas.

Obj. 2: We have initiated the areawide psyllid sampling objective to detect and develop new biological controls for use against ACP. We are continuing the sampling in the northern most citrus populations in Alachua County and around Ft. Pierce within Florida and in Puerto Rico. The standard trap is being used for this work and performs well enough to complete this effort, i.e., where ACP occur, the trap captures and preserves them in proportion to their populations. We also begun to supplement the trapping effort by also collecting psyllids in "out-of-the -way" places that may hold relic citrus trees and relatively isolated ACP populations. So far several new pathogens have been identified. We have obtained cooperation with other USDA-ARS research personnel with expertise in the identification and rearing of entomopathogenic fungi and they have evaluated samples toward this end from Florida and Puerto Rico. This effort will be continued.

Project Enhancement Grant: given the investment by CRDF and the shortened period of time to execute the objectives of the enhancement grant with the objective of developing and testing sentinel plants, this research was also continued in conjunction with other trapping improvement efforts. As a result of these studies we have found that sentinel citrus plants that are flushing are just as attractive as established flushing plants and highly attractive to ACP when nearby established citrus plants are not flushing. This work will be continued.

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Project Number 570

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

Total Funds (current year) $183,383.00

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