CITRUS ADVANCED TECHNOLOGY PROGRAM

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

SELECT PERIOD December 2012

(●) *Quarterly Report* ( ) *Final*

Proposal Title

Acoustic trap for Asian citrus psyllids

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
1/7/13	Citrus Research and Development Foundation	Vector Management

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

Progress on development of an acoustic trap to capture male Asian citrus psyllids (ACP) that are searching for females on citrus tree branches continued on two fronts in the last quarter of 2012. In the third quarter, we had recorded male and female communicatory duets and found that both sexes responded readily to playbacks of recorded signals and to synthetic mimics that had the same temporal and spectral patterns as the recorded calls. The playbacks were produced by a computer that output signals to a commercially available (Bruel and Kjaer) vibration exciter attached to the plant. Both the recorded calls and synthetic mimics attracted males to the signal source, which is a necessary first step in the trapping process. This work was prepared and submitted for publication.

Based on the successful results of these studies, we began efforts to develop a less expensive system for detecting and producing the ACP communicatory signals. We purchased an inexpensive Arduino Uno microcomputer system and programmed it to output synthetic mimics of ACP communicatory signals to a piezoelectric buzzer. In addition, we have begun the process of programming the microcomputer to recognize and reply to calls made by males searching for females on a tree. We found that it is possible to use one single buzzer that both produces a female signal and detects the male signal on the plant, which reduces the total cost of the Arduino-buzzer system to less than $50. In comparison, the cost of the signal analysis/vibration exciter system that was used to conduct the initial studies is about $3000. We expect to complete the programming tasks and begin testing the new instrument in the laboratory during the next quarter.

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Organization USDA-ARS-CMAVE

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Total Funds (current year) $116,200.00

Form PR-12 Quarterly Reports **SUBMIT REPORT**

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.