CITRUS ADVANCED TECHNOLOGY PROGRAM

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

SELECT PERIOD December 2015

(●) *Quarterly Report* ( ) *Final*

Proposal Title

Predicting When, Why, and Where Asian citrus psyllids move to increase effectiveness of insecticide sprays.

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
1/25/16	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.)

The goals of this project are to:

1: Determine the fight initiation thresholds of ACP depending on temperature and humidity.
2: Determine the effect of wind speed on flight and the direction of psyllid flight with respect to wind.
3: Determine the effects of barometric pressure changes on psyllid dispersal.
4: Measure how psyllid dispersal is affected by abiotic factors in the field.
5: Establish a model to predict the risk of ACP dispersal/invasion based on prevailing abiotic conditions. Deliver this model as an online tool for growers.

We are continuing experiments to study the effect of ambient temperature and relative humidity on the dispersal behavior of the Asian citrus psyllid (ACP). The experiments are set up in a climatic chamber where temperature and relative humidity are controlled precisely. Humidity and temperature are varied in a range that is in accordance with the conditions observed in Florida during spring and summer. The temperature treatments tested in the chamber were 15, 18, 21, 25, 30, 35 ºC and the humidity treatments 35%, and 75% and 95% RH. We obtained the highest percentage of dispersing individuals (67.80% after 3 days) at 30°C and observed slightly decreased dispersal between 33°C (63.00% after 3 days) indicating that the optimal temperature for short range movement in ACP is comprised between 30 and 33°C. Humidity did not affect the dispersal behavior of ACP except at low temperatures. Whereas 5.8% of ACP dispersed after 3 days at 18°C with 70% RH, 17.00% dispersed after 3 days at 18°C with 35% RH. The dispersion of ACP was the same at any humidity level after 21°C. In summary, our experiments indicate that the minimal threshold for psyllid movement is comprise between 15 and 18°C at 35% RH and is close to 18°C at 70% RH.

We finished our automatized flight mill and are now capable to record the flight of four psyllids at the same time and for a longer time than previously. We will use this flight mill to investigate the effect of temperature and relative humidity on long-range flights. We also built a new wind tunnel adapted for Asian citrus psyllid; this wind tunnel has been controlled for regular air flow and absence of air disturbance. We will use this wind tunnel in the next weeks to determine how psyllids move depending of wind direction, and the maximum and minimal thresholds for wind speed regarding flight initiation. Finally we have developed a pressure chamber for psyllid behavior where we will be able to measure psyllid dispersion depending of controlled barometric pressure changes.

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Organization UF-IFAS

Project Number 15-024

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

Total Funds (current year) $49,819.00

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

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.