CITRUS ADVANCED TECHNOLOGY PROGRAM

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

SELECT PERIOD June 2016

(●) *Quarterly Report* ( ) *Final*

Proposal Title

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

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
7/15/2016	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.)

We finished the experiment in the climatic chamber where we tested Asian citrus psyllid (ACP) flight capability depending of ambient temperature and relative humidity. We determined that temperature was the major driver of ACP dispersal, with a minimum temperature for flight comprised between 16 and 18 °C, whereas relative humidity did not have a significant effect on ACP dispersion.

We changed the fan of our new wind tunnel in order to increase the speed of the air flow. We are now studying potential thresholds for for flight initiation. Psyllids will be tested at increasing wind speed and we will determine the proportion of ACP attempting to fly. Our objectives are to determine the optimal wind speed at which ACP prefer flying and the maximum wind speed threshold beyond which psyllids avoid flying.

We also developed a pressure chamber to measure psyllid dispersion depending of controlled pressure changes. We found that psyllids responded to barometric changes rather than to different stable pressures. Psyllids were not more active at 1009 mbar as compared with 1022 mbar. However, if the barometric pressure was decreased during the experiment, ACP did not attempt flying. We are currently conducting an experiment where we investigate ACP response to citrus odor in olfactometer depending on pressure changes. Due to the fact that ACP were less prone to fly when pressure was dropping, we hypothesized that psyllid may be less responsive to citrus odor during pressure changes. We found that similarly to flight behavior, psyllid response to citrus odor was similar when pressure was stable. However, when pressure changed (either increasing, or decreasing) psyllids were less responsive to citrus odor in the olfactometer.

Finally, we are preparing a field experiment, where we will look at psyllid dispersion depending on abiotic factors under field conditions. We first checked in the lab that the immunomarking method with albumin was still working. We will soon spray a block of citrus trees with egg protein. Five concentric circles of yellow sticky trap will be deployed up to 250 m from the sprayed area. Psyllids will be collected on a daily basis and, at the end of the week an ELISA will be conducted to determine if captured ACP will be positive for albumin. If they are positive, it will indicate that ACP departed from the sprayed area and moved to the sticky trap. We will correlate number of psyllids captured on sticky traps with temperature, relative humidity, barometric pressure, wind speed and wind direction.

PI First Name Lukasz

PI Last Name Stelinski

Email stelinski@ufl.edu

Phone 863-956-8851

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

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