CITRUS ADVANCED TECHNOLOGY PROGRAM

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

SELECT PERIOD March 2016

(●) *Quarterly Report* ( ) *Final*

Proposal Title

Insecticide resistance monitoring and managment in Florida citrus to maintain sustainable control of Asian citrus psyllid within Citrus Health Managment Areas

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
3/15/2016	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.)

The objective of this study was to determine the contact toxicity data for flupyradifurone to Asian citrus psyllid Diaphorina citri using a vial bioassay. The insect population of D. citri used was reared in a greenhouse at the Citrus Research and Education Center, University of Florida, Lake Alfred, FL. The strain has been reared without exposure to insecticide. The tested insecticide was analytical grade flupyradifurone (99.5%) obtained from Chem Service Inc. For contact toxicity, female and male D. citri adults were placed in 20ml scintillation vials that had been treated with six concentration and replicated five times of flupyradifurone. The 24 hour contact toxicity LC10, LC25, LC50, LC75 and LC90 were 0.001, 0.02, 0.38, 8.25, 130.13 ng/µl, respectively.

We also investigated the effect of lethal and sublethal doses of flupyradifurone on the feeding behavior of D. citri adults. Five adult psyllids were placed in petri dishes with citrus leaf discs treated with the LC10, LC25, LC50, LC75 and LC90 concentrations of flupyradifurone. Each concentration was replicated five times. The amount of feeding was evaluated by the amount of honeydew produced as visualized by exposure to nynhydrin at 48 hours post treatment. D. citri that fed on citrus leaves treated with lethal and sublethal concentrations of flupyradifurone excreted significantly less honeydew (8%-83%) comparted with control in a concentration dependent manner suggesting an antifeedant effect of flupyradifurone.

Finally we conducted settling bioassay to determine if citrus treated with flupyradifurone effects host choice. Citrus flush was sprayed with a solution of flupyradifurone at concentrations equivalent to the LC10, LC25, LC50, LC75 and LC90 and placed in cages. One hundred psyllid adults were then introduced into the cage and number of psyllid on treated and untreated flush were counted at 24, 48 and 72 hours post-treatment. There was no significant difference in the number of psyllid on treated flush compared to untreated flush at 24 and 48 hours. However, there were significantly fewer adults on treated flush at 72 hours compared to untreated flush. The results of these experiment suggest that Asian citrus psyllid have reduced feeding on plants treated with sublethal concentrations of flupyradifurone and this may potentially decrease the capacity of D. citri to successfully acquire and transmit the HLB causal pathogen. Flupyradifurone could be an effective tool for rotation in insecticide resistant management programs.

PI First Name Lukasz

PI Last Name Stelinski

Email stelinski@ufl.edu

Phone 863-956-1151

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

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