CITRUS ADVANCED TECHNOLOGY PROGRAM

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

▶ INSTRUCTIONS

(●) *Quarterly Report* ( ) *Annual Report* ( ) *Final*

Required: What is the "headline" for this report (e.g. a one-sentence "newspaper headline" describing what you accomplished)

Plant growth regulators affect psyllid fitness

Proposal Title

Strategies to minimize growth flushes of mature citrus trees with pruning practices and plant growth regulators to reduce psyllid feeding

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
5/13/11	Citrus Research and Development Foundation	Vector Management

REPORT UPDATE (500 words; summarize your accomplishments)

A series of greenhouse research experiments have been completed that show that a number of commercial formulations of plant growth regulators (PGRs) (GA biosynthesis inhibitors) reduce Asian citrus psyllid fitness. Specifically, we found that two of the PGRs tested (prohexadione calcium and mefluidide) reduced ACP fecundity and survivorship while two others, uniconazole and paclobutrazol, reduced fecundity or survivorship, respectively. These results have been summarized in a manuscript that has been submitted to the Entomological Society of America for publication in a peer reviewed journal. A follow-up study to determine the duration of efficacy of these treatments has recently been completed using one of the PGRs (prohexadione calcium). Unfortunately, we had very poor egg laying in all treatments, including untreated control trees, and the experiment was unsuccessful. We are trying to determine why this happened and repeat the experiment.

An experiment has been completed to begin to determine what changes are occurring within plants that elicit the observed changes in psyllid fitness. Large container grown trees were treated with prohexadione calcium and tissue samples were harvested at 3 day intervals. The samples have been analyzed for nutrients and free amino acid content. We are still working on analyzing phenolic and flavonoid contents as well. Data analysis of the amino acids has not progressed as quickly as we had anticipated, but we will have them complete by the end of the project year. Results of this study will be used to develop further studies to determine the basis for the observed effects to be conducted in both field and greenhouse studies this summer.

New work is being developed to determine whether the effects of PGRs on psyllid fitness correspond with changes in either acquisition or transmission of Candidatus Liberibacter asiaticus (Las). The first step in preparing for that line of research is to develop a population of Las-infected trees that can be used in acquisition studies. Greenhouse grown Las-infected trees used as infected budwood source material has been confirmed Las+ by PCR . Budwood from these trees has been harvested and used to graft inoculate a population of citrus trees. We are sampling these trees periodically for confirmation of Las transmission by PCR. Psyllid acquisition studies will proceed as soon as the new plant material has been successfully infected. We anticipate that occurring during the next quarter. In the interim, a population of ACP is being maintained and increased for use as soon as the plant material is ready.

Field trials are planned for 2011 to test the efficacy of the PGRs against field populations of ACP. This trial was attempted in 2010, but we were unable to develop a sufficient ACP population in our field plots due to area wide ACP management. If this is the situation again this season, we will cage psyllids on treated trees to make the assessments. This trial will begin in mid-June or at the onset of the rainy season and summer flush development.

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Organization University of Florida CREC

Contract Number 00078835

Project Duration (years) 3 *Year of Project* 2

Total Funds (current year) $127,999.00

SUBMIT REPORT

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.