Florida Citrus Advanced Technology Program

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

Instructions Complete the fields based on your project specs. When finished, save the form to your local disk using a unique name. Then, go to **http://research.fcprac.com**, and log in with your user name and password using Researcher Login in the lower left. Find this project title and click on **Submit a Report**. Update your profile information if needed, then upload this report as directed.

2009-2010 REPORT	CATEGORY (drop-down)	TODAY'S DATE (m/d/yr)
● *Quarterly Report* ○ *Annual Report* ○ *Final*	Psyllid	1/14/10

WHAT IS THE "HEADLINE" FOR THIS REPORT (e.g. a one-sentence "newspaper headline" describing what you accomplished)

Psyllid tolerant plant and nutritional field trials scheduled for spring 2010

TITLE and CONTACT INFORMATION

Proposal Title Effects of nutrition and host plant on biology and behavior of the Asian citrus psyllid and implications for managing psyllid populations

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Phone 863-956-1151	*Project Duration (years)* 3 *Year of Project* 1
Organization UF/IFAS/CREC	*Total Direct Funds (current year)* 89,586

REPORT UPDATE (650 words; provide details about your headline)

As of our last report on October 15, 2009, work has continued on the objectives of this proposal as outlined. However, during the winter months, psyllid populations decline to low levels in the field and also are unreliable for completion of under greenhouse conditions. Thus no new significant results on this project have been produced since the last report. Based on the results of our previous studies, multiple field trials are planned for spring of 2010 to apply the results of greenhouse studies to typical commercial citrus growing conditions.

Effects of host plant nutrition on psyllid fitness: In previous experiments we demonstrated that the two most important essentials, Nitrogen and Potassium, have a significant effect on psyllid fitness. Varying levels of high and low Nitrogen and Potassium rates were applied to 'Valencia' orange plants grown under greenhouse conditions. Results of these experiments demonstrated that high nitrogen levels resulted in an increase in psyllid weight, an increased level of egg production and a shorter developmental time. Thus, higher nitrogen fertilization above what is needed by citrus plants may lead to an unnecessary increase in psyllid populations due to excessive use of nitrogen fertilizers. Conversely, addition of increased levels of Potassium fertilizer resulted in decreased fitness of psyllid populations. In field trials scheduled for spring of 2010, we will test varying combinations of Nitrogen and Potassium fertilizers under conventional growing conditions to determine the optimal rates of fertilizers to maintain tree health while minimizing psyllid reproduction rates. We will also be comparing these fertilization regimes to those being used by growers as part of an HLB/nutritional management approach to disease management.

In our previous work we have also demonstrated that boron (0.25% Borax) applications have a significant negative effect on psyllid populations in the greenhouse as a result of increased adult mortality. Thus, we will also be examining the effects of 0.25% Borax applications on psyllid populations alone and in combination with varying levels of Nitrogen and Potassium fertilizers during filed trials in spring 2010.

Effect of host plant species on psyllid fitness: Of the various citrus species tested thus far for effects on psyllid fitness, we have previously reported that Cleopatra mandarin is the most promising prospect for true resistance to Asian citrus psyllid of all the commercially available citrus varieties used today in citrus production. To convince ourselves that our results are real and not due to some unforeseen experimental error, we have conducted multiple trials using new Cleo plants to prove without a doubt that these results are indeed real...its real! Thus, during 2010, two trials are planned to further examine the resistance of Cleo to ACP. First, a series of 40+ genetically distinct Cleo hybrids planted at the UF/CREC will be challenged by caging psyllids on flushing terminals to determine whether any differences in susceptibility to ACP exists. If differences are found, then further investigations will be continued by the plant improvement team to determine whether these traits can be bred into currently available citrus varieties. In our second series of experiments conducted in the CREC teaching/demo grove with varying combinations of scion and rootstock combinations, we will investigate whether scion grown on Cleo has any advantage with regards to psyllid tolerance when compared to the same scion material grown on different rootstocks.