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)

Psyllids infected with Las exhibit enhanced fitness

Proposal Title

Huanglongbing: Understanding the vector-pathogen interaction for disease management

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
1/15/11	Citrus Research and Development Foundation	Vector Management

REPORT UPDATE (500 words; summarize your accomplishments)

We completed experiments evaluating the effect of temperature on Las acquisition. Peak acquisition (approximately 50%) occurred at 25oC. Significantly fewer ACP (< 10%) acquired Las below 22.5oC and above 30oC. Experiments to determine the effect of temperature on Las inoculation were also completed and we will begin assessing plants used in these experiments for Las infection later this month.

Analysis of endosymbionts from different psyllid populations is underway. Thus far we have amassed a 16S library containing 1000 sequences from psyllid populations collected from seven counties in Florida as well as India, Argentina, Mexico, Texas, and Hawaii. PCR results from these samples indicated that Wolbachia infection differs considerably among psyllid populations within and outside of Florida. In addition, laboratory experiments indicated that there is no apparent effect of temperature on ACP endosymbiont populations. Further experiments are underway to evaluate the role of endosymbionts in Las infection differences observed in Florida psyllids.

In experiments to determine the effect of Las on psyllid fitness, we have assessed the fecundity, fertility, development time and adult survival of Las-infected ACP. Results from these experiments suggest that nymphs reared on Las-infected plants develop faster than nymphs reared on healthy plants and that there are no differences in fertility among infected and healthy psyllids. Additional investigations revealed an increase in the fecundity of infected psyllids. Infected psyllids produced nearly 200 eggs per female over a 25 day period, compared to only 100 eggs per healthy female. Vertical transmission of Las by ACP, determined in our previous experiments (Pelz-Stelinski et al. 2010), and increased fecundity of infected psyllids suggest that Las is well-adapted to psyllids. The practical implication of this result is that greater egg production in Las-infected ACP may increase disease spread. Finally, infected adult psyllids exhibited reduced longevity compared to Las-free ACP, suggesting a possible fitness trade-off between reproduction and longevity when infected with Las.

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Organization UF/IFAS/CREC

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Total Funds (current year) $466,583.00

SUBMIT REPORT

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.