CITRUS ADVANCED TECHNOLOGY PROGRAM

QUARTERLY & FINAL PROGRESS REPORT FORM: Control of Citrus Greening, Canker & Emerging Diseases of Citrus

PROJECT QUARTER END September 2021 ● *Quarterly Report* ○ *Final*

Proposal Title

Sustainable Management of Asian citrus psyllid (ACP) and Citrus Production

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
10/17/2021	Citrus Research and Development Foundation	ACP Vector

ABSTRACT (Executive Summary-public report-do not disclose proprietary information or intellectual property)

This project is focused on conducting research in four Integrated Pest Management (IPM) programs and biological control only program for ACP. The programs are listed below:

1. conventional and organic insecticides plus biological control,
2. organic insecticides, and Horticultural Mineral Oil (HMO) plus biological control,
3. conventional insecticides plus biological control
4. HMO plus biological control.
5. biological control only.

This report describes the activities from July to September 2021, which include monitoring the populations of ACP and beneficial insects in all programs as well as releases and evaluation of the parasitoid Tamarixia radiata and two commercially available predators (Ladybeetle Rhyzobius lophanthae and Brown lacewing Sympherobius barberi) against ACP.

ACP populations remained well below our spray treatment threshold of 0.1 adults per tap sample and therefore no spray applications were required this quarter. Tamarixia radiata were released in all programs biweekly at the rate of 200 adults per plot for a total of 800 per program. At least three shoots infested with ACP nymphs (4th and 5th instar) were checked per plot for a total of 12 samples per treatment to recover parasitoids. However, the nymphal populations were very low, and it was only in August when limited samples were available and the parasitism rates observed were between 2-3%.

Rhyzobius lophanthae were released at the rate of 200 individuals per replicate (800/treatment) in July and 500 individuals per replicate (2,000/treatment) in September. Sympherobius barberi releases included 200 individuals per replicate (800/treatment) in July, 500 individuals per replicate (2,000/treatment) in August, and 300 individuals per replicate (1,200/treatment) in September. The potential of each predator to control ACP was also evaluated. In the laboratory conditions, ACP nymphs at six densities (1, 5, 10, 15, 20, and 40 nymphs) were offered to each predator (R. lophanthae or S. barberi) and the prey consumption was evaluated after 24 hours. The experimental unit was a citrus shoot infested with ACP nymphs with one predator inside a sleeve cage. Prey consumption by each predator increased with the increasing density of the prey, however, there was no significant difference in the consumption rate between the two highest densities (20 and 40 nymphs per shoots) for either species. The consumption rate averaged 12.70 ± 0.63 nymphs per R. lophanthae and 11.80 ± 0.95 nymphs per S. barberi. We also tested three release rates of both predators.

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

% Completion of Objectives (FDACS requirement) 85.00%

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.