

CRDF Support For Research on Asian Citrus Psyllid

By Harold Browning



Without populations of the Asian Citrus Psyllid (ACP), there would be no field spread of HLB, and thus ACP management is by far the most important component of response to HLB in Florida. Since psyllid management will remain a challenge into the future, we need to look beyond currently available strategies. CRDF is making significant investments in ACP research, spending more than \$4 million in the current fiscal year. In this article, we provide an overview of 5 major areas of ACP research, each with the goal to contribute to ACP population reduction in both managed groves and residential or abandoned citrus.

- **Understanding the Dynamics of HLB Transmission:** Projects in this section look at how the insect and pathogen interact and how ACP acquires the bacterium from infected trees and then inoculates healthy trees. Results here will assist growers in managing disease spread and will clarify critical timing for ACP control and inoculation reduction actions (4 projects).

- **ACP Biology and Ecology:** While pesticides currently are our main tools to reduce ACP populations, research is focusing on aspects of ACP biology and ecology which can be exploited, providing windows into novel approaches for management. Exploring the behaviors of ACP, researchers are looking at chemicals which ACP uses to communicate, such as mating signals and attraction/repellency related to host plants. Results of this area of research can lead to improved understanding of how psyllids are infecting citrus, with outcomes of better monitoring tools. Information derived from these studies also will contribute to development of management strategies for the ACP/HLB system (6 projects).

- **ACP Suppression with Pesticides:** A major emphasis in the short term is optimizing the use of existing and emerging new insecticidal materials to suppress ACP populations. Included in this research are means to alter timing of applications and application methods, ranging from application to young trees to aerial application within Citrus Health Management Areas (CHMAs) (9 projects).

- **Non-Pesticidal Suppression.** This area of research focuses on exploiting ACP behaviors for improved population suppression. Examples are: 1) developing application methods for chemicals applied to disrupt ACP behavior; 2) targeting ACP feeding mechanisms to disrupt feeding on citrus; 3) use of guava-based and other repellents; and 4) use of biological control organisms, particularly parasitoids, which attack and kill ACP (9 projects).

- **RNAi Strategies to Disrupt ACP Populations.** Projects are focused on a novel approach to introduce small RNAi molecules which affect critical psyllid functions such as feeding or reproduction. Progress in other fields has made this approach a possibility, as has the recent successful completion of ACP genome sequencing. In addition to the regularly funded projects in this area, CRDF also is conducting a contest to attract broad participation in identifying specific RNAi molecules which have potential to fit into an ACP control strategy (4 projects).

Results of research on ACP are being readily delivered to growers through Florida Citrus Health Management Areas, another activity supported by CRDF. These results have directly informed the improved management practices that have already been successfully adopted by many growers within local CHMAs. Progress reports on this work can be found at www.citrusrdf.org

Harold Browning is Chief Operations Officer of CRDF. The foundation is charged with funding citrus research and getting the results of that research to use in the grove.



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