The development of an ACP biological control program for California

Ted Batkin

The Citrus Research Board has been supporting the development of biological control tools for use in California against the Asian cit rus psyllid for the past five years.

The results thus far have been reported in several issues of *Citrograph* with information on the work of Dr. Mark Hoddle and his team in bringing in promising strains of parasitoids for release in California climates. This explorative activity led to additional studies and developmental efforts by Dr. Richard Stouthamer and others at the University of California Riverside to rear the parasites and release them for evaluation.

The success of this early work has now led the industry to draw up a formal action plan for the development of the process to raise and release large volumes of parasites in parts of California where ACP populations have continued to spread.

This is the first of a series of reports to the industry on the plan and the procedures that will take place over the next two years to establish both public and private rearing programs for wide-scale releases of biocontrol agents.

Background

ACP populations in certain urban areas of Southern California currently exceed the levels for chemical control. The California Department of Food and Agriculture, with funding support from the citrus industry through the Citrus Pest and Disease Prevention Committee (CPDPC), carried out a valiant effort to chemically treat the find sites and a 400-meter radius around the sites. But the populations have overrun the treatment areas and threaten to find and distribute the causal agent for huanglongbing (HLB).

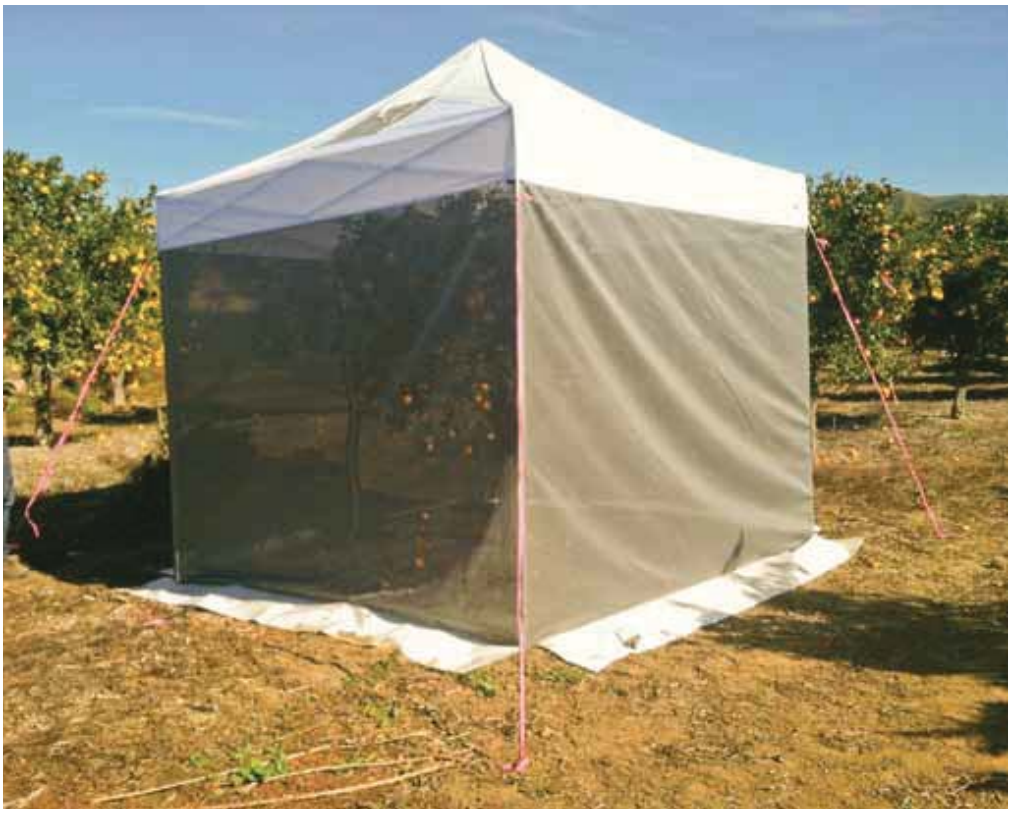
This HLB-associated bacteria has been detected in Hacienda Heights, a community in Los Angeles County. It is suspected that other areas of the county also have the bacteria, and most likely the ACP populations will soon find these other sites and begin to spread HLB throughout L.A. county and adjacent counties with citrus producing areas. This has been the typical pattern of dispersal in other parts of the world including Florida and now Texas.

The California Citrus Research Board, CDFA, and the CPDPC have funded various stages of research through the University of California to search for parasites in parts of the world with climates similar to California. Currently UCR is rearing 17 strains of *Tamarixia radiata* for release in the Los Angeles Basin.

So far, over 25,000 wasps have been released at 120 sites, and now the team is beginning to recover populations from the initial efforts, sometimes as far as 8 miles from the release sites. DNA tests indicate that the recoveries are from the original releases and not from natural populations. The test colonies are now being increased to provide base populations for mass rearing facilities.

The basic plan

Field insectary rearing of *Tamarixia radiata* will be one of the first efforts of the plan. Currently the University of California members of the team lead by Dr. Stouthamer have placed field



Prototype of field insectary for the mass rearing of *Tamarixia radiata.* *Photo by Anna Soper. Used courtesy of Center for Invasive Species Research, UC Riverside.*

***Tamarixia radiata* stalking ACP.** *Photo by Mark Hoddle, courtesy of the Center for Invasive Species Research, UC Riverside.*

This photo taken at one of the release sites in the L.A. Basin shows ACP mummies from which *Tamarixia* has emerged. *Photo by Mark Hoddle used courtesy of the Center for Invasive Species Research, UC Riverside.*

cages in a location in Southern California to start the testing of cage types and methods of rearing and collection. This program will then feed additional information to the APHIS-funded program being started now.

The APHIS program will provide staffing and resources to conduct "Methods Development" activities for large-scale field insectary programs that will be expanded throughout the Southern California area over the next 2 years. As the ACP expands and moves to new areas of the state, the field rearing can be increased in any geographic area as appropriate. The beauty of field cages is their rapid deployment capabilities and their efficiency during certain times of the year.

Insectary rearing of *Tamarixia radiata* will commence as soon as possible with the construction of a facility on the Cal Poly Pomona campus. This will include the construction of greenhouses and mobile lab facilities that can be used for insectary cage rearing on a year-round basis.

The Cal Poly facility will also be used as a "Methods Development" location for the study and development of rearing systems that can be duplicated in other areas as necessary and feasible. Several sites have been identified as possible rearing locations throughout the Southern California area. Also, the systems developed will be available for use by private insectaries as the ACP populations expand into other geographical areas of the state. Cal Poly will also use the facility as a teaching unit for students inter-

ested in biological control programs as part of their studies at the University.

The goal for the first phase of the Biocontrol Program is to produce 4,800,000 wasps for release in the Southern California urban areas to reduce the populations of ACP. The use of chemical control in urban areas has been discontinued as strategy by the Citrus Pest and Disease Prevention Program in order to concentrate their efforts on protecting commercial groves where ACP populations have started to increase. For the urban areas,biological control now becomes the best and the only strategy that will reduce the populations of ACP and lower the threat of the movement of HLB, which is the primary focus of the whole CPDPC program.

This report is the first of several reports that we will bring to you over the next year. This is an evolving program that will add more elements as the technology moves forward. The research efforts of the University of California Riverside along with the collaborations with Cal Poly Pomona and the two government agencies will provide the citrus industry with many new options for ACP management and control. As we are seeing the ACP populations continually increase in wider areas of the state, new techniques will be required to keep the industry free from the bacterial agent that causes HLB disease.

Ted Batkin is President of the California Citrus Research Board.

THE ANSWER

Why would someone want to put oranges on display as part of their home décor? (Do You Know, page 5.)

Toronto-based interior designer Laura Miller, who gives clients advice on color theory and placement for Feng Shui (pronounced *Fung Shway*), promotes the idea of placing a bowl of oranges or a dwarf orange tree in living areas of the home to increase "yang". She says Feng Shui practitioners use oranges, peel, and orange oil in a variety of ways to boost vitality and positive energy.

***Citrograph* issues back to January/February 2010 are on the Citrus Research Board website at www.citrusresearch.org.**