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*	Genetics	5/3/10

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

HLB-free Trees and Orchards Found in China

TITLE and CONTACT INFORMATION

Proposal Title Identification and Characterization of HLB Survivors

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Phone 8639561151	*Project Duration (years)* 3 *Year of Project* 1
Organization UF-CREC	*Total Direct Funds (current year)* 76,312

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

Two trees have been found growing in HLB-ravaged orchards in Guangdong and one other in Guangxi province, that appeared to be free of HLB symptoms, while all other trees planted at the same time were either dead or declining, and replants likewise were afflicted. The trees from Guangdong were propagated at the Guangdong Institute of Fruit Tree Research facilities, and are being grown to conduct new tests of their reaction to HLB following deliberate inoculations. These original source trees have been tested twice after propagation using standard RT-PCR protocols, and they remain PCR negative for HLB; recent RT-PCR tests on the propagated trees have likewise proven to be HLB-negative. These greenhouse grown trees have now been inoculated with HLB-infected budwood, but no symptoms have yet been observed. Several propagations of one of the selections have been replanted in an infected orchard location. The tree in Guangxi has been transplanted to a protected location in Guilin, at the Guangxi Citrus Research Institute. Several propagations have been made from this tree and these were inoculated with HLB-infected budwood; these are being closely monitored for symptoms and by RT-PCR. Recently propagations from Guangxi were shared with our colleagues in Guangdong and planted in a field challenge to assess the tolerance/resistance under natural and high-disease pressure. To expand further our search for survivors, and to continue to learn about Chinese citrus industry adjustments in response to HLB, we have established contact and good communication with a citrus extension specialist in the Fujian Provincial Academy of Agricultural Sciences, Mr. Li, Jian. This contact will provide us access to Fujian, another very seriously HLB-affected region of China. Mr. Li is very familiar with the local industry, and production areas and practices. He is aware of the goals of our collaborative project with scientists in Guangdong and Guangxi, and he is enthusiastically interested to join us in the project. We are currently planning another visit to China in October-November 2010, to assess the progress of the work underway, to visit the original trees, to expand our explorations for HLB survivors through the new contacts in Fujian, and to continue to work with our collaborators in Guangdong and Guangxi in search of additional survivors. We will also plan new experiments together at that time, to begin to address the causes and underlying mechanisms of these apparently tolerant selections, using various molecular techniques including gene expression studies, confirmation of genetic identity of the materials, and repeat inoculations in the field. This return visit is central to encouraging the continuation of the collaboration, to participate in planning experiments for a more in-depth analysis of the nature and underlying mechanisms of this phenomenon, and most importantly to confirm that the resistance persists following further propagation and inoculation with HLB.

A valuable side benefit of this project has been the opportunity in our search for "survivors" to survey regions where HLB devastation is severe and quite widespread, and in doing so we have also visited orchards that appear to be nearly completely unaffected by HLB though surrounded by severely declining orchards. These surprising locations have been visited both in Guangxi and Guangdong. We have been investigating the nature of their management programs that has enabled them to survive to eight years of age or more in apparently good health. We interviewed growers, pathologists, horticulturists, and entomologists associated with these healthy orchards. We have reported on our experiences and the answers to our questions in recent editions of "Citrus Industry". Although located in different provinces several hundred miles apart, the key elements outlined to us were the same. These include critically timed pesticide applications, use of pathogen-free planting materials, and maintenance of tree health through good nutrition. Our observations have been presented likewise through talks given at various grower meetings in Florida and California.