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	4/1/10

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

Searching for Natural Resistance or Tolerance to HLB in Citrus

TITLE and CONTACT INFORMATION

Proposal Title Assessment of HLB Resistance and Tolerance in Citrus and Its Relatives

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Phone 863-956-1151	*Project Duration (years)* 3 *Year of Project* 1
Organization UF-CREC	*Total Direct Funds (current year)* $50,000

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

This project aims to assess a wide range of citrus germplasm, including some relatives, for tolerance or resistance to HLB, through both greenhouse assays and field tests; these germplasm resources wherein tolerance/resistance might actually be found were selected on the basis of research and observations in Asia and Florida. Funding for the project was made available later than anticipated, however we did perform some of the preliminary tasks of collecting germplasm resources in advance of the decision to support the project; once funded, we expanded the effort substantially. We have produced seedlings from 7 pummelo accessions (10-15 each), Citrus latipes (13 seedlings) and some derived hybrids with trifoliate orange, 4 natural pummelo-mandarin introgression hybrids (9-16 each), 6 other miscellaneous wild citrus types (4-12 each), and various sweet orange lines for which there is anecdotal evidence of differential sensitivity to HLB. These were grown in a DPI-certified structure as budwood sources for propagations (just underway), some of which will be tested in protected structures at the CREC by graft inoculation, and for direct planting to the field for HLB challenge. Further, we have explored planting out the Core Citrus Mapping Population, a genetically well-characterized collection of more than 250 citranges that we proposed to test, but as these were maintained previously in non-certified structures we are waiting on resolution of the matter with DPI, to be granted conditions and permission to plant these at the Picos Road Farm with USDA-ARS, near Ft. Pierce. This population is of significant interest as it appears that the trifoliate orange and some of its hybrids are very tolerant (though not truly resistant) to HLB. This family provides an opportunity to map the genetic components responsible for the tolerance, if in fact tolerance is found to be segregating in the population. Numerous somatic hybrids of citrus with related genera are also being prepared for inclusion in the plantings. We are in the process of acquiring additional germplasm resources, to expand the breadth and depth of the material categories we described in our proposal. Finally, we are making a number of crosses in spring 2010 to produce segregating families of several purported tolerant and susceptible types to begin searching for evidence of genetic control of HLB tolerance/resistance within the citrus gene pool. Our collaborators in China have sought domestic funding support but have not yet been successful, so no materials have been sent there at this time; we remain in communication with them, to explore other options. One company in Florida that initially offered land for the project has since withdrawn its offer, a consequence of an upper level management decision. We have a tentative agreement with another grower on the east coast of Florida to plant out the range of genetic diversity we hoped to test, both as seedlings and as top-worked trees, including some apparently tolerant types we have identified in an HLB-devastated grove in Florida. We are currently exploring other options within Florida, to be followed up with agreements to move ahead; these represent locations where growers have decided not to remove HLB-infected trees, so we expect there to be opportunities to challenge our replicated materials. To conclude, a wide range of genetic materials have been produced and prepared for greenhouse and field testing for their tolerance or susceptibility to HLB. We have expanded, and are continuing to expand, the number of types we wish to challenge. We will be developing new information about potentially tolerant/resistant germplasm that can lead to expanded efforts to capture and exploit the genetic basis for this phenomenon.