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	7/9/09

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

New Sources of Resistance to HLB Identified in USDA Breeding Material

TITLE and CONTACT INFORMATION

Proposal Title Development of Promising New Rootstocks and Scions for Florida Citrus

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Phone 772-462-5920	*Project Duration (years)* 12 *Year of Project* 6
Organization USDA, ARS	*Total Direct Funds (current year)* $200,953.00

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

New hybrids between citrus relatives and citrus cultivars were studied for tolerance to HLB disease in greenhouse testing. Some new hybrids that were studied remain healthy and vigorous despite HLB infection and have been selected for further field and greenhouse testing. These hybrids will be used as parental material for breeding high quality rootstock and scion cultivars with tolerance. In this quarter, yield, fruit quality, tree size, and other performance information were collected from existing USDA/cooperative rootstock and scion field trials. Trees were propagated to establish new field trials for new rootstock and scion cultivars. Studies continue to assess rootstock tolerance of Huanglongbing (HLB) under field conditions using existing trials that have become infected with HLB through natural spread. Some differences among rootstocks for HLB response were noted and are being examined more carefully. A field experiment continued to identify rootstocks with resistance to the Phytophthora-Diaprepes Complex. Crosses were completed for development of improved citrus rootstocks focused on developing an improved sour orange (Supersour) rootstock and introgressing HLB resistance from exotic citrus relatives. In a coordinated effort between this grant and the FCATP transgenic citrus grant to USDA, selected anti-microbial and insect resistance genes were inserted into outstanding rootstock and scion cultivars to develop new cultivars with resistance to HLB and Citrus Bacterial Canker (CBC). An early flowering gene, FT, was transformed into outstanding citrus breeding material to facilitate rapid introgression of favorable traits, such as disease resistance, into new cultivars and increase early productivity of scion cultivars. Research is continuing to follow leads generated by the HLB gene expression study completed last year, including cloning of selected genes and promoters strongly expressed in response to HLB infection. These sequences are being used as targets for novel exotic genes, to help identify endogenous resistance genes, and to selectively express transgenes when and where the tree is infected by HLB. Work was continued to study the inheritance of fruit quality factors in sweet orange-type material using more than 1000 trees from populations of hybrids between high quality pummelo and mandarin parents. Work was initiated to study gene expression in seedless cultivars and identify genes that may be specifically associated with seedlessness. One promising new seedless scion cultivar, 'Early Pride', was released for commercial use. One highly productive dwarfing rootstock, US-942, is in the final stages of official release.