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	4/15/10

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

HLB Tolerant Rootstock and Scion Germplasm Being Studied in the Greenhouse and Field

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)

In this quarter, seed from last spring's new crosses to develop rootstocks and scions was planted in the greenhouse. New crosses were completed this spring with more than forty different genetic combinations. Fruit quality, yield, and tree size data were collected from four rootstock field trials. Propagations from supersour rootstock hybrids were prepared for budding to produce trees for disease testing and field trials. Rootstock liners were budded with scions to prepare trees for rootstock and scion field trials. Two new rootstock field trials were planted into the field. Studies continue to assess citrus germplasm tolerance to HLB, CTV, and Phytophthora/Diaprepes in the greenhouse and under field conditions. More than fifty citrus genotypes and citrus relatives have been challenged by natural inoculation with Liberibacter in the field, and data are being collected on HLB symptoms and Liberibacter titer by PCR. Detailed information is being collected on HLB tolerance and tree performance in four rootstock field trials. Some hybrids with mandarin or trifoliate orange ancestry appear to be resistant or tolerant to HLB and/or the psyllid vector. All citrus germplasm and cultivars become infected with HLB when inoculated, but different germplasm responds to HLB infection at different rates and with different symptom severity. Some hybrid selections resembling mandarin, grapefruit, and sweet orange appear to exhibit some tolerance to HLB. Greenhouse and field studies are continuing to determine the most efficient methods to evaluate new citrus germplasm from crosses and transformation for resistance or tolerance to HLB. Transformed trees containing three new anti-bacterial genes were prepared for greenhouse testing with HLB. Genetic transformation was used to introduce the citrus FT gene for induction of early flowering into citrus scion and rootstock germplasm. Manipulation of this gene with inducible promoters will drastically accelerate the pace of cultivar development (shortening the generation time from 6-15 years to 1 year) and can also be used to increase early cropping of commercial trees. To date, the early flowering gene has been introduced into Hamlin, Ray Ruby, US-812, and US-942. A field day was held at the Ft. Pierce USDA farm to highlight progress in development of new cultivars, and performance information from several rootstock trials was highlighted. Summaries were prepared from ten different rootstock field trials and distributed to citrus growers. The release notice for US-942 rootstock was prepared.