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*	Other	4/15/10

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

Recovering of Citrus germplasm from Florida

TITLE and CONTACT INFORMATION

Proposal Title
Recovery of Citrus Germplasm from Florida

Principal Investigator Richard Lee	*PI Last Name* LEE
Email Richard.Lee@ars.usda.gov	*FDACS Contract Number* Lee-119
Phone 951-827-4399	*Project Duration (years)* 3 *Year of Project* 1
Organization USDA ARS NCGRCD, Riverside	*Total Direct Funds (current year)* $36,970.00

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

The purpose of this project is to preserve citrus germplasm in Florida that is threatened by loss due to huanglongbing (HLB) and citrus canker. Accomplishments thus far and areas of work:

• Using input from stakeholders and scientists from a meeting in June 2009, a priority list has been made of citrus germplasm in Florida which needs to be recovered, and new accessions are being added as time goes on.

• Fifty unique accessions from around the world, believed only to be at the USHRL Farm in Ft. Pierce, and exposed there to HLB, have been propagated in a secure greenhouse for conservation.

• Eleven accessions collected from Florida are currently nearing the final stages of therapy and indexing in the Riverside facility and another five accessions are about mid-way through therapy for release from quarantine. Once released from quarantine, they can be returned to Florida using the "Citrus Passport" protocol.

• Antibiotic treatments are under investigation for rescue of breeding material threatened from HLB. Buds from HLB+ trees have been tested with three levels of an antibiotic cocktail for 2 time periods and were grafted onto clean rootstock liners. Treatment with the highest antibiotic level for the longest duration reduced take and growth of scion shoots, but lower levels were not different from controls. Las evaluations via qPCR will be conducted in the next quarter. Experiments will be extended to include vacuum-infiltration of antibiotic into buds prior to propagation. In Riverside, similar experiments have been conducted using Spiroplasma citri (causal agent of stubborn) and Candidatus L. psyllaurous in tomato as model systems. In addition to antibiotics, treatments include prolonged heat treatment of budwood stocks under different temperature regimes, different antibiotics, and prolonged chilling of budwood.

• An additional series of propagations were made using 22 plant genotypes which were Las infected; 32% of the resulting propagated plants were Las- using the Wenbin Li primers/APHIS diagnostic protocol.

• Additional priority hybrids from the breeding program, found only at the USHRL Farm in Ft. Pierce, and exposed there to HLB, were identified and budwood with or without antibiotic treatment used to propagate in the greenhouse for conservation and further evaluation.

• In a project led by Yongping Duan on which we collaborated, a system was developed for testing antibiotics for elimination of Las using an infected periwinkle rooting model system. A method was verified to root HLB-infected citron cuttings, and the strategy previously used with periwinkle is being extended to Citrus using easily these easily-rooted citron. Effects of antibiotic treatments on Las titer will be determined using this in-vitro system in the next quarter.

• Several antibiotics and other anti-microbial compounds were tested in-vitro for their ability to suppress growth of two close relatives of Liberibacter (Sinorhizobium and Agrobacterium). In vitro results differed markedly from results using the periwinkle bioassay, suggesting that antibiotics may also differ in their ability to move systemically, or their ability to remain active in the living plant tissue.

• Shoots from priority accessions held in a secure greenhouse at Ft. Pierce will be taken to Gainesville for shoot tip grafting (STG). Experiments are providing data on the optimal age/conditions to ship recently STG material from Gainesville to Riverside for indexing.