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	1/15/10

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. Using input from stakeholders and scientists, a priority list has been made of citrus germplasm in Florida which needs to be recovered. At Ft. Pierce, 50 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 the greenhouse for conservation. An additional series of propagations were made on 22 Las+ genotypes and likely due to differential Las populations, 32% of the resulting plants were Las- using the Wenbin Li primers/APHIS diagnostic protocol. At the Repository, eleven accessions from Florida have completed the cool temperature and warm temperature indexing and need only to complete the laboratory viroids testing for release from quarantine. Five additional accessions from Florida are currently included in the cool temperature biological index. Twelve varieties have just completed various stages of therapy for cleanup and are ready for biological indexing.

Antibiotic treatments are under investigation for rescue of threatened breeding material from HLB. At Ft. Pierce, buds from HLB positive trees have been tested with three levels of an antibiotic cocktail for two time periods and were grafted onto clean rootstock liners. The highest antibiotic concentrations for the longest duration reduced take and growth of scion shoots, but lower concentrations were not different from controls. Las evaluations via PCR will be conducted in the next quarter. Experiments will be extended to include vacuum-infiltration of antibiotic(s) into buds prior to propagation. 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 these easily-rooted citron. Effect of antibiotics on Las 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). Results in-vitro 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. At the Repository, temperature treatments of budwood and different antibiotic cocktails have been tested for recovery of germplasm using citrus stubborn (Spiroplasma citri) in citrus and using Candidatus Liberibacter psyllaurous in tomato as model systems. Using information developed by the testing, additional priority hybrids from the breeding program, found only at the USHRL Farm in Ft. Pierce, and exposed there to HLB, are being identified, and budwood will be both treated and left non-treated with the antibiotic cocktail to propagate in the greenhouse for conservation and further evaluation.