CITRUS ADVANCED TECHNOLOGY PROGRAM

QUARTERLY & FINAL REPORTS: Control of Citrus Greening, Canker & Emerging Diseases of Citrus

▶ SELECT PERIOD December 2015

(●) *Quarterly Report* ( ) *Final*

Proposal Title

Application of new technologies to expedite cleaning of new accessions for use in Florida

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
2/3/16	Citrus Research and Development Foundation	Infection Consequences

REPORT UPDATE (500 words-It is not necessary in this public report to disclose your institution's proprietary information or intellectual property.)

The objective of this is to use "new technologies" to accelerate the elimination of graft transmissible pathogens in germplasm accessions for use in citrus breeding in Florida. These "new technologies" include the application of cryotherapy (freezing the buds in liquid nitrogen followed by recovery of the treated buds by grafting onto seedling rootstocks) and the use of "mini-plant-indexing" which allows the biological indexing for graft transmissible pathogens using young seedling indicator plants, 60-75 days old seedlings.

During the current reporting period, budwood from seven promising scion selections from the USDA citrus improvement project were sent to the germplasm preservation laboratory in Ft. Collins. Each of those selections have been passed through cryo treatment and are being held in cryo storage at the Ft. Collins facility. This brings the total number of USDA advanced scion selections in cryo storage to 16. Of all selections that are in cryo storage there has been and average success rate (based on number of successfully recovered buddlings / total buddlings) has been ca. 50%, although results do vary between selections with the least successful being 10% and the most successful 80%. Based on the percent success and the total number of shoot tips stored it is estimated that at least 10 viable shoot tips will remain viable for each selection.

Some of the selections from previous cryo treatment have been returned to Ft. Pierce and are being grown in the greenhouse to evaluate trueness to type. Our permit to receive material in Florida from the germplasm preservation laboratory in Ft. Collins has expired so we are renewing the permit to allow movement of the cryo treated material back into Florida for evaluation.

Additional selections have been rescued from the field since the last reporting period and these will be cryo treated and preserved.

The cryo therapy and preservation approach has proven to be a viable method for storage of citrus germplasm. Although we have yet to determine if cryo therapy will eliminate graft transmissible pathogens, the treatment is effective for germplasm preservation. The advantages of cryo treatment include security of the material, the small footprint required for storage and elimination of the need to store selections as whole plants.

Comparison of results with the mini-plant index protocol with the results of indexing using the traditional, 10-14 month old indicator plants on a total of 48 accessions has been conducted. The results have been the same except in one instance when symptoms of Vein enation virus was found in the mini-plant index but not in the traditional index.

We will continue to evaluate plant material recovered from cryo treatment for the presence of CLas as well as other graft transmissible pathogens.

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Organization USDA

Project Number 873

Project Duration (years) 3 *Year of Project* 2

Total Funds (current year)

Form PR-12 Quarterly Reports **SUBMIT REPORT**

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