CITRUS ADVANCED TECHNOLOGY PROGRAM

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

▶ INSTRUCTIONS

(●) *Quarterly Report* ( ) *Annual Report* ( ) *Final*

Required: What is the "headline" for this report (e.g. a one-sentence "newspaper headline" describing what you accomplished)

Speeding up the delivery of transgenic solutions to HLB

Proposal Title

Accelerating the Commercialization of Transformed Juvenile Citrus

Today's Date	Sponsoring Organization (drop-down)	Category (drop down)
1/2/11	Citrus Research and Development Foundation	Transgenic/Metagenomic Mediation of Resistance

REPORT UPDATE (500 words; summarize your accomplishments)

Continued efforts to improve transformation efficiency:
• Experiments to test or validate the enhancing effects of various chemicals for improvement of transformation efficiency in juvenile tissues continued. A journal manuscript was submitted on research showing that use of the antioxidant lipoic acid significantly improves transformation efficiency in Mexican lime; experiments to test this with commercial sweet oranges are underway. We continued with experiments to test the effects of various antibiotics / metabolites / herbicide on the transformation efficiency, including: kanamycin, hygromycin, mannose and phosphinothricin.

•New publications supported by this grant:1. Dutt, M., D.H. Lee and J.W. Grosser. 2010. Bifunctional selection-reporter systems for genetic transformation of citrus: mannose and kanamycin based systems. In Vitro Cellular & Developmental Biology-Plant 46:467-476; 2.Orbovic, V., M. Dutt and J.W. Grosser. 2010. Seasonal effects of seed age on regeneration potential and transformation success rate in three citrus cultivars. Scientia Horticulturae 127: 262-266

Horticultural manipulations to reduce juvenility in commercial citrus:
• Working with Mr. Orie Lee and a commercial harvesting company (w/ Frank Rogers), a plan to collect meaningful yield and fruit quality from the St. Helena project was developed - with harvest expected later this month. Approximately 10 acres of trees planted 2.8 years ago include a juvenile Valencia budline (Valquarius) and precocious Vernia on more than 70 rootstocks. The majority of trees have a significant yield and the trial is showing significant rootstock affects on precocious bearing and early fruit quality - the best selections from this trial will be ideal candidates for testing with juvenile transgenics. Also of interest is the cultural program being used at the St. Helena project that mimics OHS principals but with reduced input. The trees have been grown with a UF research slow-release fertilizer mix (in cooperation with Harrell's Fertilizer) and daily irrigation. Two trees were confirmed with HLB the first year; but even with bad neighbors, there has been no detected additional spread of HLB during the past year.

Transformation of precocious but commercially important sweet orange clones:
• Transgenic plants of precocious OLL sweet oranges (a group of clones with Rhode Red quality that show high solids in young trees) were regenerated and successfully micrografted for further study of early flowering and transgene expression. Approximately 25 transgenic sweet orange trees from OLL selections were produced containing four different gene constructs. Progress was also made transforming OLL clones with the alternative embryogenic culture transformation system, as numerous transformed somatic embryos have been recovered. Progress was also made in the regeneration and characterization of plants containing the FDT transgenes for early flowering.

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Organization Citrus REC

Contract Number 00077976

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

Total Funds (current year) $178,000.00

SUBMIT REPORT

CITRUS RESEARCH AND DEVELOPMENT FOUNDATION, INC.