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	10/19/09

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

Towards faster flowering and fruiting of genetically engineered processing oranges and specialty fruits

TITLE and CONTACT INFORMATION

Proposal Title Accelerating the Commercialization of Transformed Juvenile Citrus

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Phone 863-956-1151	*Project Duration (years)* 3 *Year of Project* 1
Organization University of Florida	*Total Direct Funds (current year)* $178,000

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

Juvenile sweet oranges grafted to several rootstocks with potential to induce scion precosity were grown for entry into our RES (rapid evaluation system) to encourage precocious flowering and fruit set. Seedlings of selected sweet oranges, including high juice quality precocious selections, were grown for entry into the RES, as needed to determine differences in minimum time to flowering/fruiting.

• Several key components of the Agro-transformation system have been investigated in order to improve transformation and regeneration efficiency. We have optimized the following components for efficient transformation and data has been published.
o media formulations
o hormonal combinations
o pre transformation incubation conditions
o bacterial growth conditions
o co-cultivation conditions and
o plantlet regeneration conditions

• Produced the first transgenic plants (containing the LIMA lytic peptide construct) of 5 new high quality sweet orange selections, including 3 precocious somaclones and two Rhode Red Valencia somaclones.

• New transformation methods are being developed in order to improve the transformation efficiency for sweet oranges and to allow for transformation of important citrus cultivars that are recalcitrant to standard Agro-transformation. A system for embryogenic callus transformation has been developed and numerous transgenic plants of OLL8 sweet orange, and specialty fruits W Murcott tangor and Ponkan tangerine have been produced.

Overexpression of a FLOWERING LOCUS T (FT) gene in transgenic plants leads to accelerated flowering: Experiments with the citrus FT genes (there are three of them) continue. Many putatively transformed citrus (Carrizo) plants have been produced and are being analyzed. Shoots from one construct continue to flower in culture. The three construct.

Publications:
1. Dutt, M. and J.W. Grosser. Evaluation of parameters affecting Agrobacterium-mediated transformation of Citrus. 2009. Plant Cell, Tissue and Organ Culture 98: 331-340.
2. Dutt, M., V. Orbovic, and J.W. Grosser. Cultivar dependent gene transfer into citrus using Agrobacterium. Proceedings of the Florida State Horticultural Society (accepted).