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	7/15/09

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

Generation of transgenic citrus plants for resistance to canker and greening diseases

TITLE and CONTACT INFORMATION

Proposal Title Engineering Resistance Against Citrus Canker and Greening Using Candidate Genes

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Phone 352-392-3631x344	*Project Duration (years)* 3 *Year of Project*
Organization UF-Department of Plant Pathology	*Total Direct Funds (current year)* 84,313.00

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

The goal of this project is to transform the Arabidopsis and citrus NPR1 genes (AtNPR1 and CtNPR1), and the rice XIN31 gene into citrus, and to evaluate their resistance to both citrus canker (caused by Xanthomonas axonopodis pv. citri (Xac)) and greening diseases. The first year objectives include: (1) Molecular characterization of the transgenic plants; (2) Inoculation of the transgenic plants with Xac. (3) Inoculation of the transgenic plants with the HLB pathogen and monitoring of the bacterium in planta with quantitative PCR; (4) Transformation of SUC2::NPR1 into citrus. (5) Plant maintenance. Overall the project is doing very well. To date, we have transformed AtNPR1, CtNPR1, XIN31, and XIN31K into the susceptible citrus cultivar 'Duncan' grapefruit. A total of seven lines for AtNPR1, 15 lines for CtNPR1, 12 lines for XIN31, and eight lines for XIN31K have been produced. All of these lines are maintained in green houses located at the Citrus Research and Education Center in Lake Alfred, Florida. More transgenic lines for each gene are to be available. A PCR system for identifying the presence of the transgenes has been established. A preliminary screening of part of the transgenic population has led to the identification of three, three, eight positive lines for the AtNPR1, CtNPR1, and XIN31 genes, respectively. Among them, the six PCR-positive lines for the NPR1 genes have been multiplied by grafting. Additionally, we have obtained the promoter construct of the Arabidopsis SUC2 gene from Dr. Jude Grosser's lab. Construction of SUC2::NPR1 is in progress.