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	10/15/10

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

Transgenic plants overexpressing the Arabidopsis MKK7 gene have been generated and the genetic screen is ongoing

TITLE and CONTACT INFORMATION

Proposal Title Transferring disease resistance technology from a model system to citrus

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Phone 352-392-0285, 863-956-1151 ext. 1361	*Project Duration (years)* 3 *Year of Project* 3rd
Organization University of Florida	*Total Direct Funds (current year)* $100,000

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

This is a 3-year project with 2 specific aims:

(1) Over-express the Arabidopsis MAP kinase kinase 7 (AtMKK7) gene in citrus to increase disease resistance (Transgenic approach).
(2) Select for citrus mutants with increased disease resistance (Non-transgenic approach).

For objective 1, the pBI1.4T-AtMKK7 construct has been mobilized into the Agrobacterium strain EHA105. The culture of the Agrobacterium was used for co-incubation with 'Duncan' grapefruit explants. About 1700 explants were incubated and 17 shoots were tested with PCR. Nine of these shoots were positive in the initial screen and all of them were grafted onto Carrizo. The transgenic plants are growing. Further confirmation of the presence of the AtMKK7 gene in the transgenic plants by PCR and analysis of the expression levels of AtMKK7 in each transgenic line will be performed. Resistance of the transgenic lines to citrus canker and greening (HLB) will be characterized when the transgenic plants are available.

For objective 2, we previously did irradiation for the first batch of 'Duncan' grapefruit hypocotyl cuttings with a irradiation dosage of 40G. The irradiated cuttings generated significantly fewer shoots than the control, suggesting that the irradiation caused severe damage to the hypocotyl cuttings. Calli were formed on both irradiated cuttings and the control. The shoots and calli generated on both the irradiated cuttings and the control have been transferred onto selective medium containing 0.2 mM of sodium iodoacetate. We prepared another batch of explants (90 tubes of 'Duncan' grapefruit seedlings) for irradiation. A total of 90 plates of hypocotyl cuttings (each plate with 40-50 stem pieces) was irradiated with a dosage of 30G on 06/28/10. The irradiated stem pieces were placed on non-selective shooting medium. Ten plates of hypocotyl cuttings were kept as non-irradiated controls, for future comparison. The plates are kept under 14 hour photoperiod. Shoots generated from the irradiated hypocotyls were transferred onto selective medium with 0.2 mM of sodium iodoacetate. We are also preparing the third batch of hypocotyls for irradiation.