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	1/15/10

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

Grafted plants characterized and challenged with HLB

TITLE and CONTACT INFORMATION

Proposal Title Evaluate Differences in Response to HLB by Scions on Different Rootstocks

Principal Investigator Gloria A Moore	*PI Last Name* Moore
Email gamoore@ufl.edu	*FDACS Contract Number* NAS143
Phone 352.392.4711x221	*Project Duration (years)* 3 *Year of Project* 2
Organization University of Florida	*Total Direct Funds (current year)* $55,000

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

Objective: Determine if Carrizo rootstocks, either wild type or over-expressing the Arabidopsis NPR1 gene and with an enhanced, inducible defense response have any effect on gene expression and/or the defense response of wild type (non transgenic) grapefruit scions to HLB. Transgenic 'Carrizo' citrange plants (lines: 854, 857, 859 and 884) transformed with the AtNPR1 gene were propagated by cuttings. Previous tests showed that lines 854 and 857 overexpressed the endogenous marker gene PR1 (considered a marker of SAR). On the other hand lines 859 and 884 did not express the AtNPR1 transgenic gene and did not show overexpression of the endogenous PR1 gene, hence were considered as negative controls. Subsequently we grafted a number of these plants with wild type (WT) 'Duncan' grapefruit. We also grafted WT 'Carrizo' plants with 'Duncan' grapefruit as controls. We also treated these plants with either salicylic acid (SA) or water (as negative control) and compared their response using TaqMan Real Time PCR. In preparation for the real time experiments we sequenced a number of genes of interest (NPR1, NPR3 and PR1) from both 'Carrizo' and 'Duncan' to guarantee that the target probe/primer sequences within the genes were identical and that any observed differences in expression were not due to differential efficiency in annealing of the probes and/or amplification. We also standardized the real time reaction for the marker PR1 gene and AtNPR1 and continue to do so for the rest of the genes. This will allow us to analyze the response of the plants as proposed in objective one. Using Real time PCR we confirmed the expression of AtNPR1 in lines 854 and 857. The expression was about twice as high in the SA-treated plants compared to the water treated plants. Plants from these two lines also exhibited levels of PR1 expression up to 200 times higher than those of transgenic controls or wild types, confirming our previous results. We will repeat the SA treatment experiment to confirm the results and analyze the expression of more genes as stated in our objectives. In addition the same group of plants will subsequently be analyzed as proposed in objectives 2 and 3 for their response to HLB infection. For this purpose we propagated HLB-infected material and standardized the real time PCR detection of the pathogen so we are confident we can conduct the proposed experiments.