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*	Management	4/15/10

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

Postharvest peel breakdown of fresh citrus reduced using a preharvest foliar application of K/Mg or an antitranspirant

TITLE and CONTACT INFORMATION

Proposal Title Grove Practices that Increase Fresh Fruit Quality and Reduce the Development of Peel Disorders

Principal Investigator Mark A Ritenour	*PI Last Name* Ritenour
Email ritenour@ufl.edu	*FDACS Contract Number* 00070554
Phone 772-468-3922, ext. 167	*Project Duration (years)* 2 *Year of Project* 2
Organization UF/IFAS	*Total Direct Funds (current year)* $52,918.00

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

Research results from the first (2007-08) season were successfully completed, the results reported at the Florida State Horticultural Society (FSHS) meetings and at Packinghouse Day and the Indian River Postharvest Workshop in Sept. 2008, a manuscript published in the FSHS proceedings (http://www.fshs.org/; Proc. Fla. State Hort. Soc. 2008. 121:322–325), and subsequent results reported in FCPRAC progress reports.

To summarize all experiments and results, preharvest treatments included 1) foliar K (8lb K2O), 2) foliar Mg (6% solution), 3) foliar K + Mg, 4) foliar Vapor Gard® (1% or 2%), and 5) induced tree water stress by discontinuing irrigation and covering the ground with large plastic sheets. Treatments were conducted in commercial groves on White grapefruit three times, Flame red grapefruit twice, and Valencia oranges once. Fruit were harvested at various times after foliar applications (sometimes weekly), held for 3 to 4 days at ~70F with ~60% RH, washed & sometimes waxed (carnauba), and stored under ambient conditions. Fruit were evaluated at regular intervals for peel breakdown and decay. While foliar treatments did not always significantly reduce peel breakdown, even when the differences were not significant, such applications tended to reduce peel breakdown. In general, foliar K or Mg treatments significantly reduced peel breakdown once each. In one experiment, foliar K actually increased peel breakdown, but the reason for this is unclear. However, a combination of foliar K + Mg or use of an antitranspirant (Vapor Gard®) significantly reduced postharvest peel breakdown more than the control or K or Mg alone.

Blocking irrigation and rainfall for 49 days before harvest increased peel breakdown in the first year. In the second year, while differences in peel breakdown were not significantly different, trees under water stress tended to develop twice as much peel breakdown compared to the control.

In postharvest experiments, fruit were harvested, held for 3 to 4 days, washed and waxed (carnauba) on a research packingline at the IRREC, and then stored at ambient conditions. Postharvest treatments including 1) holding the fruit for 3 or 4 days after harvest at 30%, 60%, or 100% RH at ~70F, 2) including a fungicide (TBZ or Imazalil) in the wax, 3) not waxing the fruit, or 4) washing, but not rinsing the detergent from the fruit before storage. Exposing fruit to low (30%) RH after harvest dramatically increased peel breakdown and often significantly increased postharvest decay as well. Exposure to intermediate RH occasionally increased peel breakdown compared to the control (100% RH), but results were not consistent and sometimes were not significantly different from the control. Not waxing fruit or rinsing detergent from the fruit usually had no effect on peel breakdown. Interestingly, postharvest treatments with Imazalil occasionally reduced peel breakdown. The reason for this is unclear but worth further investigation.