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	7/15/10

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

Early season citrus fruit may require very little washing for adequate grading.

TITLE and CONTACT INFORMATION

Proposal Title Pre-Grading Fresh Citrus for Canker Prior to Dumping on the Main Packingline

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Organization UF/IFAS	*Total Direct Funds (current year)* $34,709.00

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

This is the first progress report for the second year of this study. No experiments have been conducted yet for the second season as this work is on fresh citrus and those experiments will begin with the fresh season in the fall (Sept. and Oct.).

To summarize results from the first season: Between Oct. 5th and 30th, five experiments were conducted that included Fallglo (1 time), sunburst (2 times), red grapefruit (4 times), and navel oranges (1 time). Fruit were treated on a commercial packingline (3 experiments) or on the Indian River Research and Education Center research line (2 experiments). Treatments included 1) full wash (brush bed + high-pressure wash) + waxing (carnauba), 2) full wash, 3) brush bed only, 4) brush bed with brushes rotating half normal speed, 5) high-pressure wash (HPW) only, 6) HPW for 10 seconds, 7) HPW for 5 seconds, 8) running fruit only over PVC rollers, and 9) a control (not washed or waxed). On the commercial line, fruit remained on the brush bed for ~ 1 min. 10 seconds, and on the full HPW for ~35 seconds. Normal brush rotation speed was ~100 rpm. Fruit were also evaluated for how surface dirt obscured the ability to grade the fruit for canker and other grade defects. Fruit from all treatments were degreened under simulated commercial conditions (5 ppm ethylene, 85F, 95% RH) and color development and weight loss measured almost daily. Fruit were subsequently stored and evaluated for the development of decay and disorders during storage under ambient conditions (~70-75F).

In general, all very early season Fallglo fruit were relatively clean and did not need washing for adequate grading. This changed somewhat by the end of October when grapefruit that received more extensive washing (i.e., full washing) was significantly easier to grade compared to unwashed fruit. HPW produced fruit with intermediate gradeability. However, even minimally washed fruit were sufficient for adequate grading. These experiments will be repeated this season to determine variability in initial fruit cleanliness from year to year. Washing and waxing the fruit gave the greatest inhibition of degreening, almost stopping color development completely. Compared to preliminary results in 2008, results again showed that full washing of fruit on both the brush washer and HPW, or washing on the brush bed along inhibited degreening significantly more than did washing fruit only as they passed over the HPW. Fruit that were not brushed at all, but only passed over rollers experience a slight, but significant delay in color development compared to the control, but the delay was relatively minor compared to the other washing treatments.

As the season progresses, fruit exterior surfaces become more soiled with dirt and sooty mold that makes grading more difficult without washing. Experiments were conducted in July 2010 using late-season red grapefruit, harvested from a block with citrus canker to test how well the different washing methods allowed graders to detect canker and other peel blemishes. Unwashed fruit were run past commercial graders and the number of fruit with any canker or surface defects that would justify elimination based on export grade standards were counted. These fruit were then taken to a commercial packinghouse and either left un-washed (control), or washed over 1) the entire line (brush + HPW), 2) the brush line only, or 3) HPW only. Fruit were then evaluated by commercial graders again. Data is still being fully analyzed from these experiments, but it appears that commercial graders were able to detect canker lesions and other surface defects from even unwashed fruit.