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	1/14/10

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)

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, 85 oF, 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 (~70-75 F).

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, and HPW producing fruit with intermediate gradability. However, even minimally washed fruit were sufficient for adequate grading. These experiments need to be repeated next 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 relative 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. Preparations are currently underway to repeat the wash treatments of mid-season fruit to evaluate washing treatments that result in enough cleaning to allow adequate grading. The goal is to identify the minimum amount of cleaning that allows adequate grading of fresh citrus before dumping fruit on the main packingline during different times of the season. The earlier unmarketable fruit can be removed from the market chain, the less money is spent on these fruit. Furthermore, grading fruit earlier in the process could allows sales departments earlier knowledge of the amount, size, and quality of packable fruit that will be available to sell. For fruit going to export markets that tightly restrict shipment of fruit with canker symptoms, removing fruit before dumping on the main packingline offers another layer of protection against fruit with canker making it into these restrictive markets.