Harvest and Evaluation of Strain Trials at Lindcove Research and Extension Center

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Our progress on the two portions of this study is outlined below.

Navel Strain Trial: We had several early season samplings to examine the differences between the strains with respect to rind color, SSC, TA and SSC/TA. The dates of collection were September 26, October 10, October 24, November 7, November 21, and December 4, 2006. The early strains (Atwood, Beck Earli, Fukomoto and T.I. Zimm.) were harvested on December 11, 2006 from all replicates, the mid-season strains (Cara Cara, cluster, Gillette, Palmer 1, and Parent) were harvested on March 26, 2007, and the late strains (Autumn Gold, Chislett, Lane late, Navelate, Palmer 2, Powell, Rhode, and Summer Gold) on May 7, 2007.

At the time of harvest, all fruit were run over the packline at UC Lindcove REC for size and grade. We collected fruit quality data for each strain at the time of harvest. Fruit were additionally cut to evaluate for freeze damage (mid-season and late season strains).

We are currently in the process of finalizing data analysis and inclusion in a summary report for all years of testing. Part of the testing this year was to evaluate for differences in freeze damage (using a transverse cut). Very little fruit showed damage and no apparent differences were detected due to strain.

Delta, Midknight and Olinda Valencia Orange Trial: One tree of the 2-tree plot was harvested on April 24, 2007. The remaining tree in each plot were harvested on July 17, 2007. Fruit from both harvests are run over the packline at UC Lindcove REC. A 10-fruit subsample of the peak size fruit is pulled from each replication at the time of the both harvests. This fruit is used to evaluate a number of quantitative fruit traits. As with the navel orange trial, fruit were evaluated for the presence of freeze damage using a transverse cut. There was relatively little fruit damage with more damage noted in fruit harvested in April.

We have been working on the data summary for this project. This funding cycle is the final year of collecting data on fruit quality based on a split harvest. (We lost the data in July 2005 due to a mixing of the fruit by the harvest crew.) We will have 3 pairs of yield data (2001/02, 2003/04 and 2006/07 in order to evaluate the consistency of any trends due to selection, rootstock and seasonality. We will also be able to assess the impact of split harvesting on yield and alternate bearing.

When there is renewed interest in Valencia orange production in the San Joaquin Valley, this project will be able to provide growers with information pertaining to rootstock and selection. This project is the only such project evaluating the Delta and Midknight variety in California. Figure 1 illustrates a preliminary summary of the yield data since the time of the split harvesting in 2000. A preliminary statistical analysis of the data indicates that thus far that there are significant yield differences due to strain [Olinda, 278 lb/tree (a); Delta, 245 lb/tree (a); and Midknight 181 lb/tree (b)] and the time of harvest (April, 269 lb/tree; July, 201 lb/tree) but not rootstock. There were no significant interactions between strain, rootstock or sampling time.

A preliminary analysis of the juice quality data collected shows that, not surprisingly, there is a significant effect of sampling date on all juice quality parameters with fruit harvested in July having higher SSC, lower TA and consequently higher SSC/TA ratio (Figure 2). Fruit harvested in July also had slightly lower % juice content and less firm peel. Rootstock had a significant impact on TA, SSC/TA and peel thickness. Fruit on trees grafted on Carrizo tended to have lower SSC and TA but actually higher SSC/TA ratios.

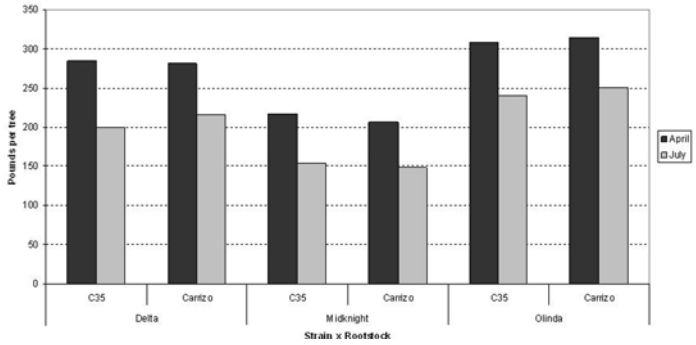

Figure 1. *Yield (lb/tree) of Delta, Midknight or Olinda Valencia orange as a function of rootstock (C35 vs. Carrizo) and harvest time (April vs. July). Mean of harvest data of 5 years.*

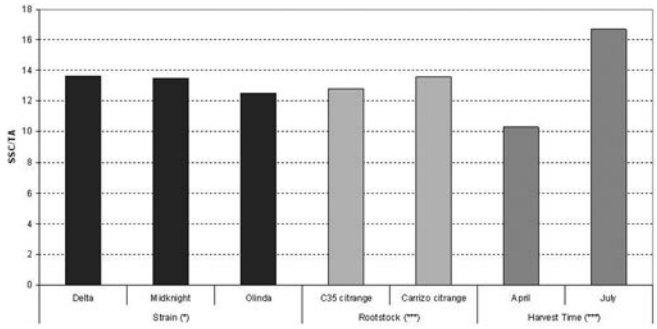

Figure 2. *SSC/TA ratio of Delta, Midknight or Olinda Valencia orange as a function of rootstock (C35 vs. Carrizo) and harvest time (April vs. July). Mean of harvest data of 6 years.*