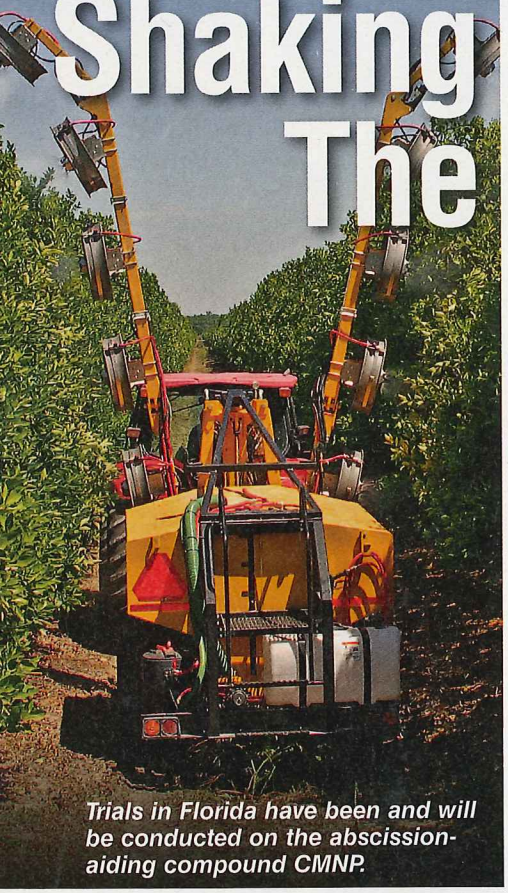
Shaking The Trees



Trials in Florida have been and will be conducted on the abscission-aiding compound CMNP.

Researchers make headway in picking proper mechanical harvesting solutions for citrus.

By Fritz Roka
fmroka@ufl.edu

CMNP is a chemical that is currently under review by the EPA for registration as an abscission-aiding compound. By loosening mature fruit, CMNP is expected to allow mechanical harvesting of Valencia oranges to continue well into May and June without significant losses of next year's crop. Late season trials were conducted on a Lake Placid grove from early May through mid-June. Preliminary results showed significant treatment effects from spraying CMNP. Immature fruit losses were shown to be a result of higher canopy shaker frequencies and not from the CMNP treatments. Effects on next season's yields will be assessed this fall and measured when the trials are repeated May and June of 2012.

Tree Health

An analysis of yield data from commercial blocks in Southwest Florida over a 10-year period (1999–2008) showed no significant effect from mechanical harvesting on yields the following season or yields from trees which have been mechanically harvested for several years. Growers, however, remain concerned about cumulative stress. A study was initiated in 2009 to examine the cumulative effects of drought and mechanical harvesting on tree health. Preliminary

results from the 2010–2011 season indicate equally negative effects from drought regardless of whether the trees were mechanically or hand harvested. These results confirm previous research results that showed harvesting citrus by hand is just as stressful as mechanical harvesting.

Machine Enhancement

During the 2010–2011 season, two over-the-row harvesting machines were demonstrated in the University of Florida Southwest Florida Research and Education Center model grove on a high-density planting of four-year-old Hamlin and Valencia trees. These machines, a blueberry harvester (BEI International LLC) and an olive harvester (Oxbo International Corp.), both showed promising results for harvesting small dwarf trees. Our objective during the 2011–2012 season is to locate more acreage over which these machines can harvest and allow their respective manufacturers to improve their overall harvesting performance. Work also has continued on ways to reduce leaf and twig trash from the self-propelled canopy harvesting equipment currently being used in Florida groves. Ideas have included installing new cleaning units on existing machines, as well as improving the efficiency of the de-stemmer, and installation of a system of sensors to determine fruit quality and detect fruit that doesn't meet the required standards.

Food Safety

Trials were conducted on oranges treated with CMNP to determine whether the abscission compound significantly changed the microorganism in loads of fruit being delivered to a processor. Results showed there was no significant increase in microorganisms on the surface of treated fruit as compared with non-sprayed fruit. Additional testing was done to evaluate the juice quality of the CMNP treated trees. These results indicated ratios from treated fruit tended to be higher than those of the untreated fruit. Postharvest quality also was evaluated showing there was little effect of the application of CMNP on fruit quality — less than the influence of storage temperature. FTG

Fritz Roka is an associate professor at the UF/IFAS SWFREC in Immokalee. In addition to the author, other IFAS faculty including Barbara Hyman, Jim Syvertsen, Bob Ebel, Michelle Danyluk, Tim Spann, Kelly Morgan, and Reza Ehsani contributed to the article.

Upcoming Event

The Florida citrus industry has an opportunity to learn from those industries that have successfully adopted mechanical harvesting systems. The International Symposium on Mechanical Harvesting & Handling Systems, hosted by the UF/IFAS Citrus Mechanical Harvesting and the Abscission Team, will be held April 1-4, 2012. The Symposium will be held at the Citrus Research and Education Center in Lake Alfred. All scientists, growers, harvesters, handlers, and processors are encouraged to attend and participate in this symposium. To learn more about the Symposium and other activities about citrus mechanical harvesting, visit **www.citrusmh.ifas.ufl.edu**.