A Step Closer To Abscission

Research is demonstrating that efficacy is promoted by uniform coverage of the agent throughout the canopy.

The 2009-2010 citrus-harvesting season will be an anticipating time for the research and development of the abscission compound, CMNP. Having shown to be the best candidate for loosening sweet oranges, it will gain much attention from the Florida citrus industry, as its registration progresses through EPA testing protocols.

Early Efforts

Early abscission efficacy studies to identify compounds that would aid mechanical harvesting were first conducted with funding from USDA in the late 1960s. That support was lost in the 1970s due to lack of funding for the development of “labor-saving” technology in agriculture. Additionally, severe freezes in the 1980s significantly reduced Florida citrus production and bearing acreage, and interest in mechanical harvesting research and development waned. In the late 1990s, however, interest in abscission compounds for mechanical harvesting emerged again due to the shortage and expense of field labor.

Improving Harvesting

The Florida Department of Citrus’ Citrus Harvesting Research Advisory Council initiated long-term funding for research on abscission compounds and mechanical harvest-
ing. This research has demonstrated that an effective abscission agent will enhance the economic potential of citrus mechanical harvesting in four ways:

1. By allowing mechanical harvesters to operate faster, thus increasing their harvesting capacity,

2. By reducing the mechanical force required to remove mature fruit, thereby reducing tree damage and machine wear-and-tear,

3. By improving overall recovery percentages, and

4. By extending the harvest window of mechanical harvesting into late-season Valencia orange acreage.

CMNP, a compound that was recognized in the early 1970s has emerged as the best candidate to be registered for use in citrus mechanical harvesting. Studies have been conducted ever since to identify factors that affect efficacy, as well as to determine optimum delivery rates. Because of the promising results, steps have been taken in the last few years to move commercial availability of CMNP closer to reality for the Florida grower.

Registration And Research

An Experimental Use Permit (EUP) application is expected to be submitted to EPA in mid to late 2009 for a requested 25,000 acres. The EPA can take up to 18 months to review the application before registration is granted.

In anticipation of a successful review, UF/IFAS’ efforts are focused on developing guidelines for use of CMNP with mechanical harvesters for processing oranges. Research is underway to further refine CMNP rates and machine harvester ground speed and shaker head frequency. Additional research is being conducted to determine the impact of environmental conditions (i.e., temperature or rain) on abscission agent efficacy.

These current studies, along with those conducted over the last 10 years, will allow development of an interactive grower tool for predicting fruit loosening under various conditions. Such efforts will provide guidance to growers as they make the transition to mechanized harvesting. The availability of abscission agents for loosening sweet oranges will promote expansion of acreage that is machine harvested, which will relieve pressures associated with availability and costs of labor for hand harvesting.

This article was written by Barbara Hyman, Jacqueline Burns, and Robert Ebel. All are researchers with the Institute of Food and Agricultural Sciences (IFAS). For more information, check out the Citrus Research and Education Center’s (CREC) website at www.ifas.ufl.edu.