

# Benefits of an abscission agent for mechanically harvested citrus

By Fritz Roka  
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**M**echanical harvesting systems harvested more than 30,000 acres of Florida processing oranges during the 2005-06 season. Although this is less than 5 percent of the total acreage, current thinking is that use of a selective abscission agent

with mechanical harvesters has the potential to markedly reduce harvesting costs and increase on-tree returns for growers.

A selective abscission agent can boost the operational efficiency of a citrus mechanical harvesting system in three ways.

First, and most important, an abscission agent will extend the

window for use of mechanical harvesting systems. Second, an abscission agent will allow a mechanical system to operate faster within a grove, thereby allowing more boxes per hour for harvesting. Third, an abscission agent may improve overall recovery percentages, that is, the amount of fruit that is moved from the grove to the processing plant.

*An abscission agent that selectively loosens only the current year's mature fruit would result in less aggressive shaking to remove mature fruit, thus minimizing removal of the immature fruit.*

Presently, mechanical systems cannot harvest Valencias beyond mid-May. In normal growing years around mid-May, immature green fruit reach quarter-sized (2-3 cm) diameters and aggressive shaking of the trees by either trunk or canopy shakers will remove a substantial number of young fruitlets. Previous IFAS research has shown yield reductions of between 25 percent and 50 percent if mechanical systems harvest fruit into late May and June.

An abscission agent that selectively loosens only the current year's mature fruit would result in less aggressive shaking to remove mature fruit, thus minimizing removal of the immature fruit. Consequently, a mechanical harvesting system could have an additional four to six weeks of operation during the harvest season, thus increasing efficiency.

With trees and groves that have been skirted and pruned, continuous canopy shakers without abscission agents can travel between 3/4 and 1 1/4 miles per hour down a row and remove up to 95 percent of the mature crop. Trunk shakers require between 5 and 10 seconds per tree to achieve a 95 percent removal rate.

An abscission agent loosens fruit by reducing the fruit's "pull-force," thereby allowing mature fruit to come

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