Evaluating The Use of Abscission Agents With Mechanical Harvesting Systems

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The cost of harvesting now exceeds the total cost of production. This fact has focused industry attention on mechanical harvesting technologies that can reduce costs associated with harvesting. Since 1994, a vigorous harvesting research and development program was initiated and administered by the Florida Department of Citrus to facilitate the development of mechanical harvesting technologies for the purpose of reducing grower costs. Many factors affect performance of these mechanical harvesters, however fruit removal can be improved with abscession compounds.

Abscession and Mechanical Harvesting for Florida

Late Season Mechanical Harvesting a Reality

With abscession, low-force mechanical harvesting (MH) can achieve high fruit removal percentages. Next year’s crop is not impacted because low-force harvesting removes low amounts of green fruit.

Mechanical Harvesting Capacity Increases

Abscession will allow mechanical harvesters to achieve high fruit removal percentages in less time because mature fruit are easier to remove. Increased capacity means more fruit can be harvested in a day, a month or in a season.

Projected Benefits of Abscession to the Citrus Industry

Prepared by Fritz Roka, University of Florida - IFAS, Revised September 2005

Potential benefits of Abscession in Mechanical Harvesting

Ownership and operational rates

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<tr>
<th>Seasonal Revenue Goal</th>
<th>Current situation NO Abscession</th>
<th>5% increase</th>
<th>10% increase</th>
<th>4 wk season extension</th>
<th>2 hr daily extension</th>
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Grove conditions

- in-row spacing (ft): 12
- cross-row spacing (ft): 24
- Trees/ac: 151
- Bx/tree: 3
- Harvest Price (NO gleaning): $/bx $1.11
- Harvested acreage: 100,000
- Yield per acre: 454
- Anticipated cost of abscession: $50-70/Acre (including materials and application)

Trees treated with abscession

- Have the same yield as non-treated trees
- Do not have unwanted leaf, flower or green fruit drop
- Have fruit with the same juice quality as those from non-treated trees
- Are harvested in 3 to 5 days after application
- Can be harvested less aggressively with less physical damage

Abscession-treated fruit

- Peel injury is only cosmetic
- Stems easily removed from fruit

Steps Leading to Registration of Our Abscession Compound

- Chemistry
- Toxicology
- Environmental fate
- Wildlife, Aquatics
- Plant protection
- Non-targets

Estimated Registration Timeline (Years)