

Mechanical Harvesters

By Jina Martin

With 31 commercial mechanical harvesting systems available from six manufacturers and five manufacturers working on additional systems, growers have a lot to learn. And, the Florida Department of Citrus (FDOC) is here to help.

Recently, about 90 members of the citrus industry met at South Florida Community College in Avon Park to learn the latest in mechanical harvesting from the FDOC's Citrus Harvesting Research Advisory Council and the Citrus Abscission Registration Committee, as well as researchers and commercial mechanical harvesters.

"It's up to the FDOC and other parts

of the industry to educate growers regarding mechanical harvesting," said Paul Meador, chairman of the Citrus Harvesting Research Advisory Council. "Mechanical harvesting is very important to Florida citrus growers."

Meador, who is also vice president and general manager of Everglades Harvesting and Hauling Inc., said mechanical harvesting can save growers money, which is important for Florida growers to stay competitive with Brazil, whose harvesting costs are a fraction of Florida's. The pick and roadsiding costs for a grower in Sao Paulo, Brazil, average \$0.38/box, while Florida's average \$1.60/box.

Mechanical harvesting also allows

Mechanical harvesting will help reduce the need for seasonal workers and harvesting costs.

growers to have more control of their operation, Meador said.

Making Harvesting Efficient

Florida citrus groves aren't alike. They have variable tree sizes, spacing and trunk heights, and that's why there are so many different mechanical harvesting systems available, said Galen Brown, FDOC Harvesting Program



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administrator. For the most efficient mechanical harvesting systems, groves need to be hedged, topped and skirted.

"The biggest challenge for Florida growers concerning mechanical harvesting is overcoming the tradition that you can plant groves anyway you want to," Brown said. "Growers have to face the reality that they have to convert groves."

Newer groves are being planted with smaller trees that are closer together and more uniform. These groves will allow for the use of efficient systems that move down the tree row and catch the fruit, such as the continuous canopy shake and catch system or the trunk shake and catch system.

In older groves that are not uniform, growers can use the monoboom trunk shaker, area canopy shaker or towed continuous canopy shaker, which can work in a variety of grove conditions. But, Brown said growers should transition these groves so more efficient shake-and-catch machines can be used.

"If growers are dealing with a really old, highly variable, difficult grove, it

will have to be replaced to be an efficient player in the future industry," Brown said. "If a grower still wants to be in business in 20 years, they must convert to mechanical harvesting."

Making Harvesting More Efficient

Abscission agents are another tool for mechanical harvesting.

"The primary reason abscission agents are important is because they make mechanical harvesting more efficient, and more efficient mechanical harvesting saves money," said Jackie Burns, professor of horticulture at the UF/IFAS Citrus Research and Education Center.

Burns heads a team of researchers whose goal is to find a safe and efficient abscission agent for use on citrus. Abscission agents affect abscission zones in the fruit stem which help to loosen the fruit from the tree. Spraying trees with an abscission agent a few days before harvest can increase fruit removal and make harvesting easier and faster.

Burns said an abscission agent must

be selective, non-phytotoxic, manageable, environmentally and toxicologically safe and cost-effective to apply. The abscission research team has been looking at a number of abscission agents, but three have risen to the top as promising – CMNP, Ethephon and Coronatine. These agents are at least five to seven years from being made available, Burns said.

Besides making harvesting more efficient, abscission agents also have another benefit.

"Abscission agents make harvesting more selective by only loosening the mature fruit," Burns said.

Brown said at the end of the first week of May, shaker-type mechanical harvesting systems become non-selective.

At this time, Valencias have both young, developing fruit and mature fruit on the tree. The shakers take too much of the developing fruit off the tree, decreasing the next season's yield.

"Abscission agents will allow harvesting deeper into the Valencia season," Burns said. *CVM*

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