

# Mechanical harvesting update

Nearly 25,000 acres harvested mechanically

By Robin Bryant

Looking back over the past season, we once again understand why there is no such thing as a "normal" season for Florida citrus. While there were many challenges for the industry, the use of mechanical harvesting saw considerable growth over the previous season. Nearly 25,000 acres of processed oranges were harvested by seven different harvesting groups in each region of the citrus industry. Nearly 30 growers are using mechanical harvesting in their groves, with 10 of these using it for the first time this season.

## SAVING MONEY

Each of these growers was able to save money on every box harvested mechanically versus hand harvesting.

Was your grove mechanically harvested this past season? Excellent!

Did you share your experiences with your fellow growers? Even better!

If your grove wasn't harvested mechanically, do you know a grower whose was? Did you ask about his/her experience? Good for you. We know there are similarities in groves, but each one has elements that make it unique. Because of this individualism, it is important for each grower to experience mechanical harvesting in his or her grove, with a skilled operator.

Improvements to each harvesting system take place every season. The more groves we harvest mechanically, the more we learn about the process. Many growers are successfully harvesting their groves mechanically and are looking for ways to increase acreage harvested.

## GETTING READY

What does it take to get ready for mechanical harvesting? The biggest decision is deciding which mechanical harvesting system will work best in your grove. If your grove is fairly uniform, you may want to consider the trunk shake and catch system or the continuous canopy shake and catch system. These two methods of mechanical harvesting are very efficient in blocks with tree and spacing uniformity.

On average, a set of machines (two canopy shakers or four trunk shakers) can harvest 18-plus loads a day. These harvesters work proactively with the processors to pool allocations and accommodate customers. Because these systems require uniformity to maintain efficiencies, some grove preparation is necessary.

The most important step is to clean trunks, followed by skirting, hedging and topping. If you are planting a new grove, it is important that you consider high-headed trees and proper tree spacing to accommodate mechanical harvesters. By considering these items at planting, fewer preparations are necessary in the future.

If your grove has more variability, you may be better served with a tractor-drawn continuous canopy shaker. While this machine does not catch the fruit, it has greater flexibility to handle blocks with various size trees and spacing. The tractor-drawn unit is not as efficient as the trunk shake and catch or the continuous canopy shake and catch, but it is three times more efficient than a hand crew. This system does benefit

from skirting the trees, but this step is not necessary.

## ABSCISSION

As an industry, we are actively pursuing the registration of an abscission compound to further improve and refine the harvesting system. An abscission compound is applied to the fruit three to five days prior to harvest in order to loosen mature fruit without impacting immature fruit or leaves. Once young fruit reaches the size of a quarter, an impact on next season's crop can be experienced. An abscission compound will allow harvesters to harvest the mature fruit by exerting less force on the trees, thus leaving the immature fruit on the tree and eliminating the impact on next season's production.

The registration process was started in January 2005 and is being lead by the Florida Department of Citrus. It will take approximately five years to achieve registration with the Environmental Protection Agency (EPA). During this time, researchers at the University of Florida continue to work with growers and harvesters to refine a new system of mechanical harvester and abscission agent.

## PICK-UP DEVICES

An area of much needed development is devices that can cleanly and efficiently pick fruit up after it has been harvested by equipment that drops fruit on the ground. OXBO International is currently developing a pick-up device to be used in conjunction with their tractor-drawn canopy shaker. This equipment will follow behind the shaker to retrieve fruit from the grove floor and convey it into a bulk handler. While this equipment was originally conceived to work alongside the tractor-drawn shaker, it will also aid in the additional recovery of fruit behind the continuous canopy shake and catch system and the trunk shake and catch system, as well as other harvesters.



Oxbo canopy shakers at work.

## ROBOTICS

Efforts continue in support of a national effort for robotics. The mechanical harvesting systems work very well on fruit for the process market, but can cause bruising which is unacceptable to the fresh market. Robotic harvesting continues to be seen as the answer to this segment of the industry. Beyond Florida, there are other citrus industries and other tree fruit industries that will greatly benefit from a robotic harvesting system. Since the passage of the Specialty Crops Competitiveness Bill in December of 2004, there has been renewed interest across the country in robotic and automation research and development.

## MANY OPTIONS

There are many options available to the Florida grower for mechanical harvesting to fit the needs of individual groves. Take the time to talk with other growers about their experiences with mechanical harvesting in their groves and understand how it can work for you. It is also important that growers share their experiences and ideas for improvement with their harvesters. We are continuing to refine and improve the process of mechanical harvesting; input from all is welcome. For answers to most questions, please contact the Florida Department of Citrus, Harvesting Program, for videos, brochures and additional contact information.

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