

A/1 S/00K Up

200 get first-hand look at mechanical harvesters

By Ernie Neff

Many had seen mechanical harvesting machines shaking oranges off of trees in photos and video presentations. Few had seen the machines first-hand.

All that changed on April 18, when approximately 200 people from Florida's citrus industry got an up-close-and-personal look at seven mechanical harvesters. They were members of an all-day, four-bus tour organized by the Florida Department of Citrus. They saw various types of trunk and canopy shakers operate in groves near Clewiston, Immokalee and LaBelle. Some even climbed up onto the machines – after they'd shut down, of course – for a closer look at the mechanisms.

"They got a good appreciation of what's involved in mechanical harvesting," said Galen Brown, the Department of Citrus' harvesting program administrator and tour organizer. "People were surprised that we could use the machines to work as well as they do in existing groves with little or no grove conversion."

At the Barron Collier Company's Silver Strand grove near Immokalee, Barron Collier Agribusiness Manager Everett Loukonen said his company is happy with its mechanical harvesting experience. He said trunk shake and catch systems will harvest about 750,000

boxes of Silver Strand fruit this year. The trunk shake and catch systems are getting fruit off the tree and into the trailer at a cost of 97 cents a box, he reported. Manual harvesting costs for the same operations are often cited at approximately \$1.70 per box.

"We hope eventually to go 100 percent to mechanical harvesting," Loukonen said. "We feel it's the wave of the future."

Trunk shake and catch systems shown on the tour were Coe-Collier Leasing system originated by Coe Orchard Equipment, Coe-Collier Citrus Harvesting system originated by Fruit Harvesters International, and a Compton Enterprises system. A trunk/scaffold shaker without a catch system was demonstrated by Stackhouse Bros.

Self-propelled, continuous-travel canopy shake and catch systems were demonstrated by Korvan Industries and OXBO/AMI.

Those on the tour also saw an area canopy shaker developed by

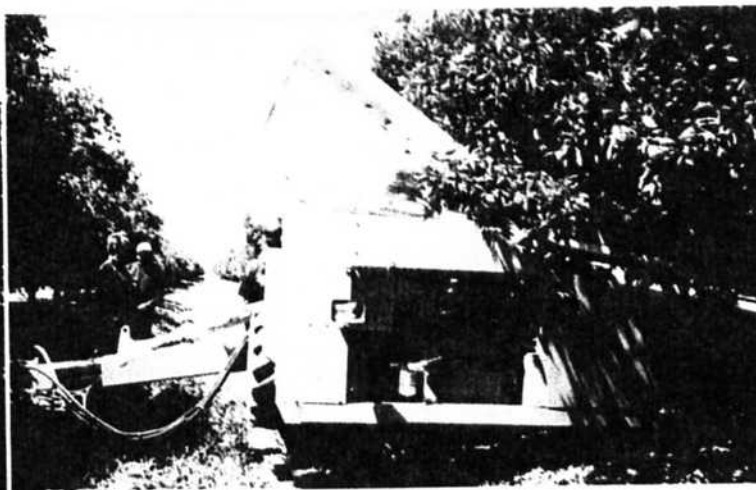


The Korvan Industries continuous-travel canopy shake and catch system.

Mongoose, Inc.

A Crunkelton Enterprises selective harvester wasn't ready for operation when the tour was conducted. The machine operates by inserting 900 picking arms into the tree

Below: Coe-Collier Harvesting trunk shake and catch system.



Coe-Collier Leasing trunk shake and catch system.

canopy and then removing them.

HARVESTING TALK

Many who took the tour showed up the next day for a harvesting workshop at the Southwest Florida Research and Education Center at Immokalee. The workshop gave economists, growers, harvesting managers and some machine developers a chance to share their views about mechanical harvesting.

University of Florida agricultural economist Fritz Roka opened the workshop by describing evaluations

Mechanical harvester developers

Here are the addresses and phone numbers of companies that were scheduled to demonstrate harvesting machines on the April 18 tour. All had machines in operation for the tour except Crunkelton Enterprises.

Coe-Collier Leasing
1320 N. 15th St.
Immokalee, FL 33934
Phone: 941-657-3602

Coe-Collier Citrus Harvesting Inc.
6475 State Road 80 East
Alva, FL 33920
Phone 941-370-7043

Compton Enterprises
2434 Dayton Rd.
Chico, CA 95928
Phone: 530-895-1942

Crunkelton Enterprises
306 N. Ruth Road
Avon Park, FL 33825
Phone: 863-453-4743

Korvan Industries, Inc.
270 Birch Bay Lynden Rd.
Lynden, WA 98264
Phone: 360-354-1500

Mongoose Inc.
4348 SW Hull Avenue
Arcadia, FL 34266
Phone: 863-494-1222

OXBO Int'l Corp.
7275 Batavia-Byron Rd.
Byron, NY 14422
Phone: 716-548-2665

Stackhouse Bros. Harvesting
13501 Cogswell Rd.
Hickman, CA 95326
Phone: 209-883-2663

he and other researchers are conducting into mechanical harvester productivity.

Roka described the 1999-2000 season as "a breakout year for citrus harvesting." For the previous six seasons, he said, only Fruit Harvesters International was commercially harvesting citrus mechanically. This season, he said, six commercial enterprises "are trying to harvest citrus and trying to make a decent rate of return."

Although Roka's evaluation of labor productivity, fruit recovery, harvesting speed and tree damage won't be completed until this summer, he shared early observations about some of the systems:

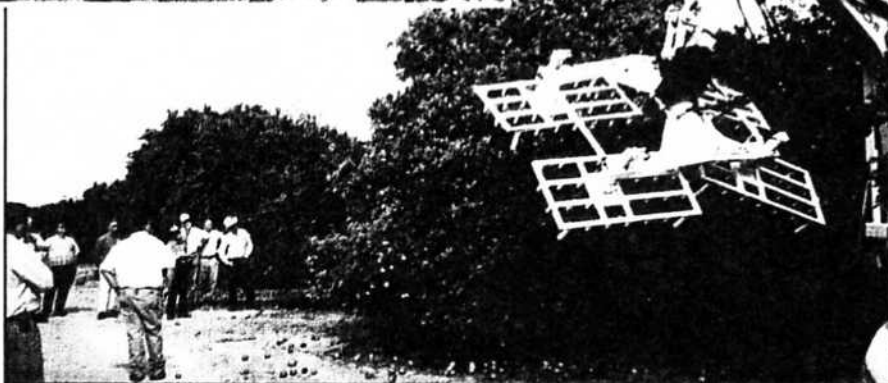
- Trunk shake and catch systems are

harvesting an average of 26 boxes per laborer per hour, with glean-ing and breakdown/waiting time each day, compared to 10 boxes an hour for a hand picker.

- Trunk shake and catch systems on average removed 97 percent of the fruit from trees and got 93 percent into the truck without glean-ing. (Some of the fruit removed from the tree wound up on the ground because it missed the catch system or escaped from it.)
- In two recent tests, the OXBO continuous travel canopy shake and catch system removed from 95-97 percent of fruit from the tree, with 87-88 percent getting into the truck without glean-ing.



Lunch in LaBelle at the tour's halfway point, left, and the Mongoose canopy shaker, below.



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Roka said the average harvesting and hauling cost in Florida is \$1.90 per box – more than three times higher than Brazil's average cost of 54 cents a box.

In Florida, Roka said, labor counts for 70 percent of the total harvesting and hauling cost. "So the way out of the box is to make labor more productive."

GROWER OBSERVATIONS

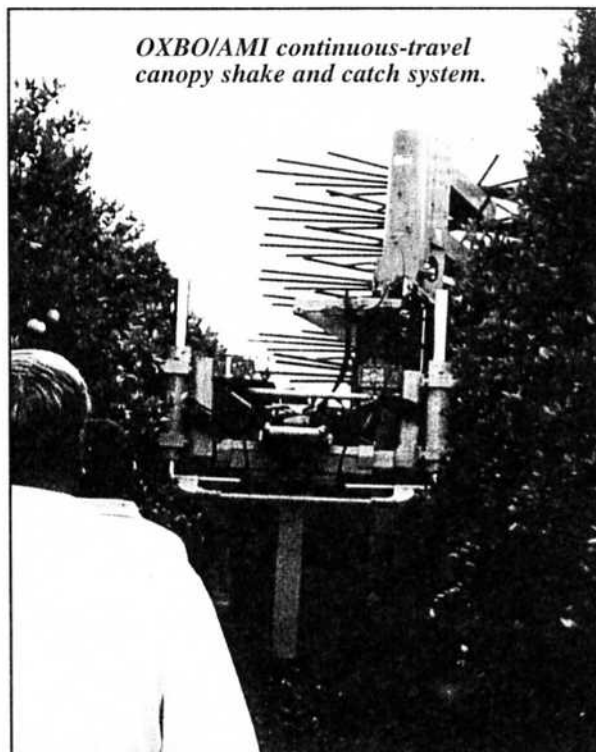
Several grower representatives discussed their experiences with mechanical harvesting. Here are a few of their observations:

- Chris Soud of Southern Gardens

Groves said skirting of nine-year-old trees, required for many mechanical harvesting systems, caused production losses ranging from zero to eight percent since 1995. Topping was maintained at 16 feet.

- Forrest Taylor said Barron Collier Co., where he works, has been harvesting fruit with a trunk shake and catch system for six years. "The trees tend to take longer to recover" when

A/I SHOOK Up

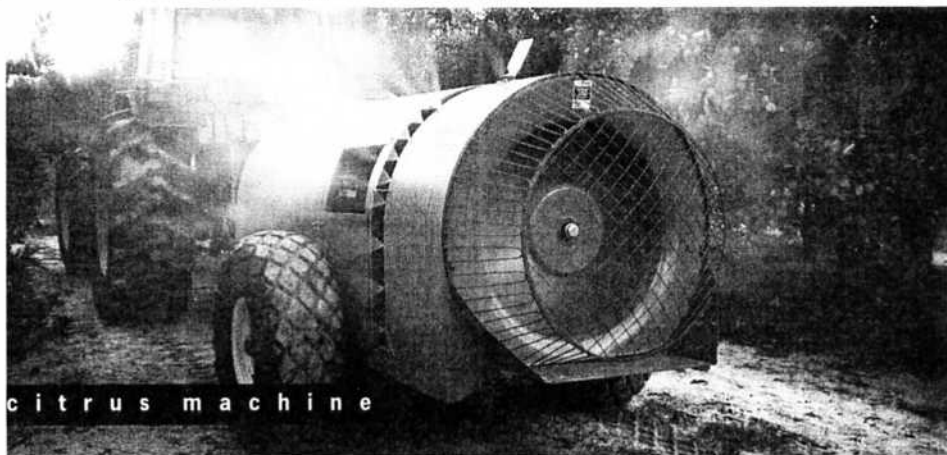


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Compton Enterprises trunk shake and catch system.

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they're harvested mechanically rather than manually, he said. Like several other speakers, he said irrigating after harvesting helps trees recover.

- Cesar Martinez of Lykes said his company spent about \$75-85 an acre to skirt 10-15-year-old trees in the first year, and considerably less than that in subsequent years.
- "Grove preparation is critical" for those using mechanical harvesters, according to Barron Collier Co.'s Will Elliott. "If you're going to go mechanical, you must prepare your trees properly." Skirting trees probably costs \$25-40 in the first year, and \$14 an acre in subsequent years, he estimated. He said skirting caused a loss of about one-third of a box of fruit per tree in the first year on nine-year-old

trees not previously skirted. He added that the lost production can probably be made up by increasing the tree's topping height.

- "We may not be here in 10 years" if we don't drastically reduce harvesting costs, said Joe L. Davis Jr. of Joe L. Davis Groves. He said skirting of 13-year-old trees caused a production loss of one-third box per tree in most varieties, and a loss of about half-a-box in pineapple oranges. The trees had not been



Stackhouse Bros. trunk/scaffold shaker.

skirted before.

Some workshop speakers said mechanical harvesting systems damage microsprinklers. Others said microsprinklers can be placed where they won't suffer damage, or that damage can be avoided if harvester operators are careful.

SFCC developing grove as lab

South Florida Community College at Avon Park is developing an on-campus field laboratory consisting of five acres of citrus groves for its agricultural production technology program. The citrus grove project, scheduled for student and public access this October, will serve as a hands-on learning lab for students.

"Hands-on learning is especially important in an agricultural program," said Laurie Hurner, South Florida's program manager for agriculture and special projects.

The majority of the five-acre block of groves will be dedicated to Valencia oranges, which are particularly marketable and lend themselves to studies in agricultural production and economics. A two-row arboretum of oranges, grapefruit and limes will provide students with exposure to a wide range of varieties.

"Every class we teach can use this field laboratory," Hurner said. The integrated pest management class can study pests and diseases that affect Florida citrus, and the agricultural machinery class can learn about harvesting in an actual grove situation. Classes in citrus production and citrus culture can study different varieties of citrus, rootstocks and the process of site selection for harvesting.

The grove will be on a microsprinkler irrigation system. "Students in the irrigation and drainage class can learn, for instance, why we choose a particular size of water emitter," Hurner said.

"The agricultural community is 110 percent behind the agricultural production technology program,"

Hurner said. "The support behind the citrus grove project is an indication of that. It's caught on like wildfire."

An advisory committee of 15 area businesspersons was developed, including Bob Barben, Tom Barber, Brian Belcher, Elton Crews, Tom Crutchfield, Wayne Douberley, Steve

Farr, George Mason, Smokey Padgett, Gillie Russell, Charles Schumacher, John Smoak, Jr., Steve Sorrells, Rhonda Strole and Wendell "Winkie" Williams.

"Although a capital campaign is not part of the development plan, the committee will put out word that we need in-kind donations and services," Hurner said.

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