

# To Shake or Not to Shake

By Fritz Roka

**T**echnology to mechanically harvest citrus has been making significant progress. During the 2001-02 season, more than 15,000 acres of processed oranges were mechanically harvested. Under typical grove conditions in southwest Florida, trunk-shake-catch and canopy-shake-catch systems increased harvest labor productivity by more than nine-fold over manual harvest methods, while at the same time delivering at least 90 percent of the available fruit to the bulk trailer.

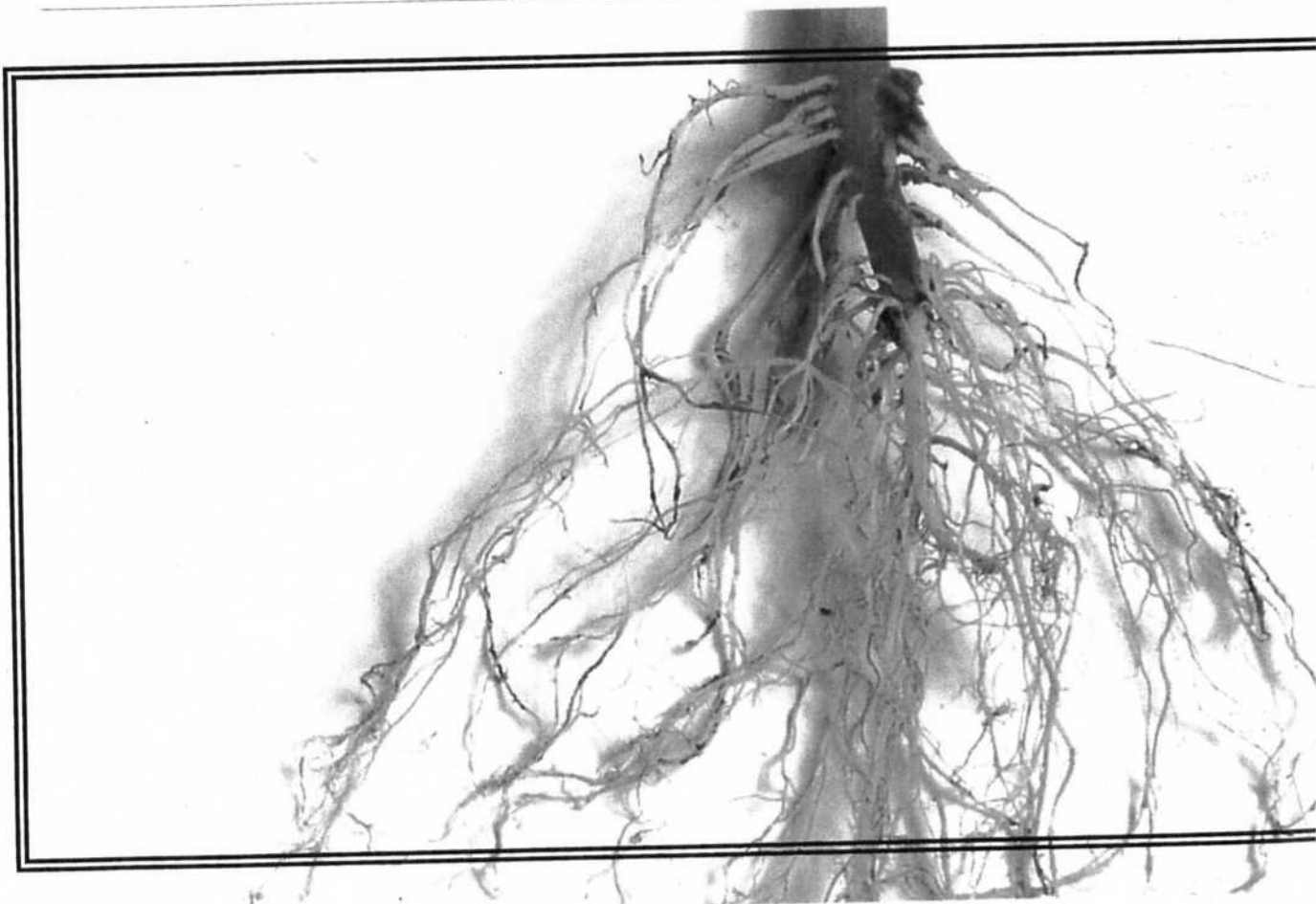
Increasing harvest labor productivity provides the economic basis by which harvesting costs can be decreased. Given that fruit prices are determined by global supply and demand conditions, every

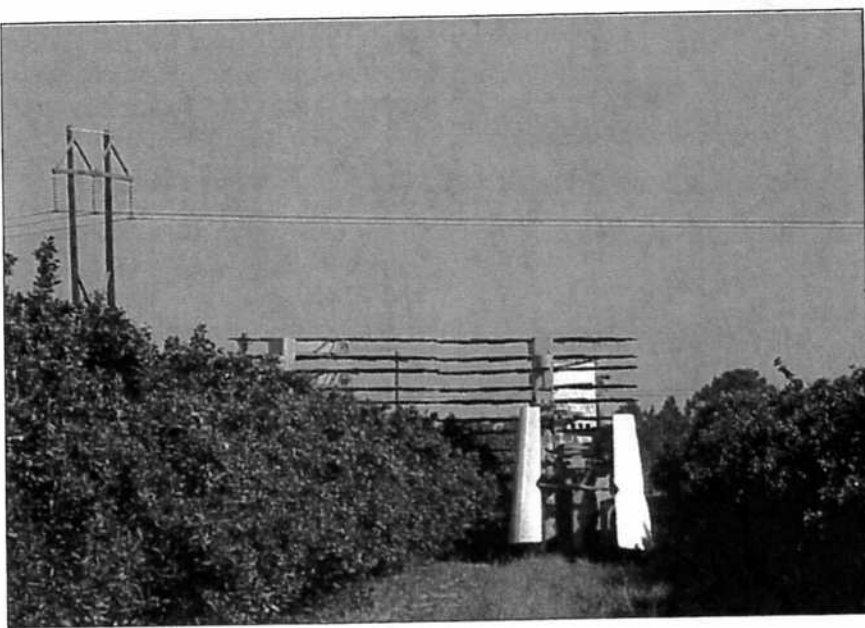


◀ The trunk-shake-catch, demonstrated by the Coe-Collier machine.

▶ The canopy-shake-catch, demonstrated by the OXBO machine.

In 2001-02, both mechanical harvesting systems showed an increase in harvest labor productivity nine-fold over manual harvesting methods.





nickel saved during harvest translates to a nickel increase in on-tree price.

The magnitude of saving from a mechanical harvesting system will depend on individual grove conditions and the total costs that have to be covered by the owner of the mechanical harvesting system. Those factors that relate to grove condi-

tions include deliver-in prices, yields, uniformity of tree shape, age and planting density, as well as the prevailing costs to manually harvest the block. Regardless of whether a grower buys harvesting equipment or contracts through a third party, harvesting costs for a mechanical system will include equipment ownership costs,

fuel, repairs and operator wages.

An Excel spreadsheet has been developed to help a citrus grower organize the necessary information to estimate the net benefits (or losses) from utilizing a mechanical harvesting system. The spreadsheet is available online through the Southwest Florida REC Web site ([www.imok.ufl.edu/economics/](http://www.imok.ufl.edu/economics/)) or by directly contacting its author, Fritz Roka (see page 12).

The spreadsheet assumes that an independent contractor owns the mechanical harvesting system. The contractor provides the grower with two interrelated numbers: 1) the price to pick and roadside fruit, and 2) the percentage of the available crop that will be harvested. If the grower demands 100 percent of the crop harvested, gleaning crews will be necessary. If a grower can accept something less than 100 percent harvest, the need for gleaning labor will be lower, and consequently, a grower should enjoy a lower harvest price.

One can think of the "revenue" from mechanical harvesting as the difference between the price charged by a hand crew

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