Almond Harvesting

mechanization promising in reducing harvesting costs

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Harvesting accounts for more than 40% of the total costs of almond production as found in a 5-year study in Stanislaus County. Over one-half of the harvesting cost is in getting the nuts from the trees to the huller.

It is in this phase of harvesting that mechanization gives the most promise of reducing costs.

A study of mechanical harvesting methods, equipment and costs was conducted during the 1952 harvest season.

Records show that knocking costs per acre vary widely between orchards. Such variations are caused more by differences in size of trees, varieties, maturity of nuts when knocked, time of day, efficiency of crew and method used than by differences in yields.

The cost of knocking, picking and hauling to the huller averaged about $47 per acre in the 5-year study covering an average of 23 almond orchards in Stanislaus County. About 90% of this cost was for man labor. That study showed the number of man hours for this operation to range from about 30 to 60 per acre in orchards with yields of between 1,300 and 3,000 pounds per acre.

The almond nut is light for its size and tends to hold fast to the tree. It requires a rather sharp jar to cause the nut to drop. Experimentally, various types of mechanical shakers are being tried but as yet none has been proven to be practical. During the 1952 season, one almond grower in Stanislaus County used a pneumatic shaker over part of his acreage. However, a saving in cost by the use of this equipment was not established.

Knocking almonds for machine picking ranged from about $12 to $30 per acre, for orchards from which data was obtained in the 1952 harvest season. This did not include raking costs. A number of operators indicated that the man labor in knocking for machine picking was about one-half of what it had been by the old method.

Savings in knocking labor by shifting to mechanical picking ranged from approximately $13 to $25 per acre.

Mechanical Pickers

Modern commercial pickers use mechanical fingers or brushes to sweep the nuts up from the ground so they can be elevated through the machine to be sacked, or dumped into a bulk trailer.

The use of a mechanical picker usually requires extra land preparation. The land must be as level as practicable for the most efficient operation.

Extra annual ground preparation costs for mechanical picking generally range from $2.00 to $6.00 per acre. Some ran higher, particularly the first year. Soil type is an important factor affecting this cost. Most farmers try to level the ground with scrapers and then roll and pack the soil to get away from clods that can be picked up by the picker. Special types of leveling machines have been developed.

In some cases, sprinklers are used, or light irrigation is applied, after the land has been leveled, to create a crust on the top of the soil and leave a hard smooth rolled surface in the orchard.

Sticks and leaves falling to the ground during shaking or knocking operation may cause difficulties to the mechanical picker. If the sticks are large, they are apt to catch in the metal belts or other mechanisms of the picker—or later, the huller—and cause trouble. Excessive leaves on the ground may clog the picker and materially slow down the operation. Clods or rocks—if not removed—may cause damage to the huller. Therefore, a so-called de-rocker machine must usually be installed ahead of the huller in handling mechanically picked nuts.

For most almond orchards mechanical picking involves an additional capital outlay for new equipment of from about $3,000 to over $6,000. This covers only the picker, additional land leveling and smoothing equipment, and trailers. Other equipment usually required at the huller —pre-cleaner, de-rocker—ranges from about $1,800 to $2,200.

Because of the lower labor requirements bulk handling of the nuts has become general practice with mechanical pickers.

Where bulk handling is used, additional equipment—bins, elevators, conveyors—which may cost from $1,200 to $3,600, usually must be installed at the huller. Thus the changing over to mechanical picking could involve a total capital outlay of from around $6,000 to more than $12,000—exclusive of any changes in hulling practices.

Costs of Picking

Costs of mechanical picking in the 1952 study ranged from about $6.70 to $13.30 per hour of operation, when the number of hours used during the season was between 50 and 200. This included the use of one trailer as well as operator's wages at $1.50.

Custom rates charged for mechanical picking in 1952—including the operator —generally ranged from $10 to $12 per hour of operation.

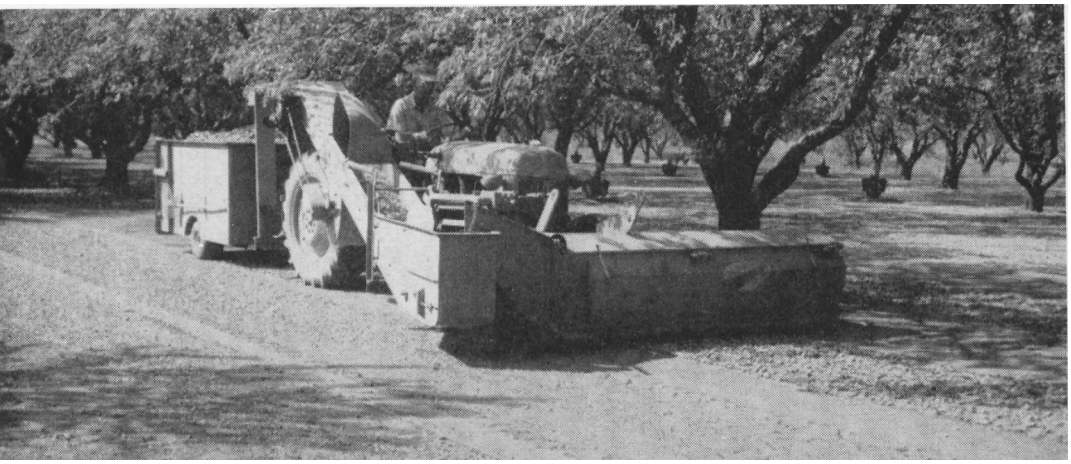
Rates of machine picking, in general, ran from one to two hours per acre. Factors which influenced rates of picking were yield, ground condition, number of swaths per row, variety planting arrangement, amount of leaves and other foreign material and time required between loads.

Raking costs—mechanical or by hand —to get nuts into position for machine picking ranged from $2.00 to $5.00 per acre in most cases.

The above costs do not allow for any additional costs for extra equipment at the huller to handle machine picked nuts.

From the data obtained it appears that under favorable conditions, mechanical picking of almonds can reduce harvesting costs. Such savings in costs, however, are generally limited to an amount up to $20.00 per acre.

Modern mechanical harvester with trailer for bulk handling of almonds. Note the land preparation.



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