

MECHANIZED PICKING FOR AVOCADOS

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Mechanized picking for avocados means a machine which will place a man in the tree and enable him to pick the fruit without the aid of a ladder. Also, the fruit handling will be mechanized so he will not need to carry the fruit. He will, however, clip off the fruit. It is believed, moreover, that he will be able to single cup almost all the fruit, thus handling it only once. A small portion, it is thought, will have to be reached for with a pole and for such fruit, double clipping probably will be necessary.

This idea, in a basic sense, is not new. A great many people have given thought to the matter. Not until almost the last year, however, has there been any real attention given to it. Now there is a real surge of interest in the subject. Problems of labor supply and labor cost have served to focus attention on labor productivity. Each man must be given an opportunity to maximize his output. In the case of picking fruit it is felt that a machine can be built which will so increase the productivity of the picker that his wages can be increased significantly without an undue burden on the industry. In fact, costs may be lowered. Also, it is thought that women may be able to pick fruit with the machine. They could actually be faster and, being lighter in weight, could be moved around in the tree with less power. These relationships are important in understanding the machine. Unless costs are kept within bounds, the competitive position of the industry can be seriously jeopardized.

The principal crop to which thought is being given is citrus. That industry is a very large one and its fruit can be handled mechanically. At first the avocado orchards looked very different. The trees were shaped differently, the ground often sloped steeply down the rows, and the fruit could not be handled as could citrus.

More serious study, however, has led to a quite different view of the avocado problem. Like citrus, the trees are always in rows. Slopes are often steeper but that is simply a matter of providing more power.

The citrus picking is very likely to be achieved by a machine which will move the man over the outer surface of the tree. At first I thought that in avocados the machine would have to work from under the tree. More careful analysis indicates, however, that many avocado orchards can be picked as citrus will be, that is from a machine moving the man over its outer surface. From this surface he can reach almost all the fruit by hand. A few fruit far in the interior will be reached by a pole. The pole, however, being used at a level below or at least not above the man's level, will be easily handled.

With such a machine, some trees will be reshaped to an important extent. It has been

brought to my attention that this reshaping is often being done anyway for other reasons. The ultimate economics that are involved are much too difficult to analyze at this stage. It could be that these big trees, whose fruit cannot be reached from outside, will have to be picked with the aid of a special machine.

The advantage of being able to use a machine designed specifically for citrus is very great. Overhead costs of design, manufacture, sales and service can be distributed much more widely. The actual cost of manufacture can be modified materially by a mass manufacturing process. Attempting to use a citrus machine seems very desirable, at least as a first step.

The problem of how to move a picker around on a tree is much too complicated to discuss here. The evidence available, however, is that a one-man machine will be the least expensive per man or per quantity of fruit picked. This one man will drive his own machine. The gain in speed will arise in part from the fact that he will have little to do with the handling of fruit. Mainly, however, the gain in picking will be from the ease and rapidity with which he can move over the tree. Much of today's fatigue-creating effort will be eliminated or at least reduced. My estimate is that a man will be able to increase his rate of pick several times.

Avocado handling, it is thought, will be quite different from that used in citrus. In citrus the idea is to have the man drop his fruits into a pouch set in his lap. From this pouch the fruit will travel, single file, by gravity and by conveyor, to a bulk bin. Avocados, it is thought, will have to be placed in a container, in volume similar to the present-day field box. This container, when filled, will be lowered mechanically to the chassis frame where it will be stacked.

The changes envisioned here are extreme and far reaching. Engineering and management of the most capable sort will be required. Capital investment is involved. Cultural practices will be changed. The objective, however, of making a difficult task easier and of lowering costs makes the attempt very worthwhile.