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FOUR MOBILE PICKING AND PRUNING PLATFORMS FOR ORCHARDS

Shifting ladders around the orchard takes a great deal of time and effort at picking and pruning time. This article describes four home made labour savers which take most of the ladder work out of these operations.

By J. C. ROWBOTHAM, Horticultural Instructor, Bunbury

FACED with increasing labour and other production costs, and with keen competition for markets, orchardists are eager to test new ways of reducing their costs of production. The use of inexpensive labour saving devices is one of the most acceptable ways of doing this.

Harvesting and pruning trees can be costly operations, especially if the trees are tall and spreading, as in many apple orchards.

Every fruit grower is aware of the added cost where much ladder work is involved. The time spent in moving ladders and in climbing up and down is high in proportion to the time spent in actual work.

Also, full picking bags are hard to handle on tall ladders, and much fruit is bruised by being bumped. Pruning from tall ladders is never as well done as pruning from the ground, neither is it as fast.

The most logical way to overcome the problems involved in using ladders is to grow the fruit crop on smaller trees, and some work is already being done in this direction. But many apple growers in Western Australia are faced with the problem of having to cope with tall trees, especially where vigorous rootstocks, good soils and facilities for irrigation are available.

Trailer platform

An inexpensive aid to picking and pruning has been developed by Mr. Ralph Mcst of the upper branches of a tree can be reached in one stop by using the "outriggers" on the pruning and picking platform. The platform was built on an old bulk bin trailer at a total cost of about $200
The "outriggers" on the platform have a simple pivot which allows them to be swung in and out by a foot movement.

Grist of Donnybrook, a fruit grower who has many "firsts" to his credit in the field of labour-saving devices in the orchard.

His latest contribution is a wheeled platform towed by a tractor and capable of providing working space for two men for picking, pruning or hand thinning. For picking, two full-sized bins are carried on the platform so that the pickers don't have to climb down each time their bags are full. However, a tractor-mounted fork-lift is needed to place the empty bins into position on the platform and remove them when filled, either to be carried out of the orchard on the forks or stacked on a truck for transport to a packing shed.

The platform was built onto a bulk bin trailer.* Its construction allows extra bins to be carried on the "lower deck," and either filled by pickers on the ground or transferred to the raised position for filling. The raised platform is bolted to the lower frame, and is constructed of 2 in. by 2 in. angle iron. The floor on which the workers stand is made of 6 in. by 1 in. jarrah or karri, and is about 12 ft. long by 2 ft. 2 in. wide.

An important feature of the platform is the provision of two swivelling arms or "outriggers," stout planks 12 in. by 1½ in. and 9 ft. long, one at each end of the working floor. These can be swung out at right angles to the platform, allowing the operators to work not only on the part of the tree nearest the platform, but also on the other two sides.

In operation the outfit need only be driven up and down each row of trees, not in four directions as would be necessary with a platform without outriggers.

To save time when two men are using the platform, each man starts picking or pruning from the outrigger, and works back to the centre of the main platform.

* Construction of trailers of this type is described in Department of Agriculture Bulletin 3268 (reprinted from the Journal of Agriculture, November, 1964).
After folding back both outriggers, the platform is towed to the next tree, and the procedure is repeated. On reaching the end of the row, the platform is taken back along the other side of the row, and the same routine is followed, although less work from the outriggers is needed than in the first run. If only one man is working, he starts on the front outrigger, works down the platform and out along the rear outrigger, moving down the row as he finishes each tree.

The mobile platform can be built to suit the height of trees in a particular orchard. Mr. Grist's platform is fixed at about 5 ft. from ground level, and suits the average size of his trees. A grower with taller or shorter trees can "tailor" his platform to suit his conditions. Also, judicious pruning of trees can ease the operation of the platform. Arms that will be damaged by the platform should be shortened or removed. A grower with very bulky trees may have to build the platform a little longer than the man with more upright trees.

Mr. Grist's picking platform has been built with the bins carried squarely over the lower frame, and the platform offset. To suit sloping orchards this design can be varied to counterbalance the effect of the slope. A sophisticated version could be equipped with hydraulic rams to vary the height of the platform to suit different trees.

The cost of the outfit as shown is about $200, including about $60 for the wheels and axle.

**Tractor-mounted platform**

Mr. Rodney Grist, nephew of Ralph, has built a different version of the platform. Designed for operation by one or two men, this platform is bolted directly over the tractor. When picking the crop, one bin is carried on the fork-lift mounted at the rear of the tractor. The fork-lift is locked at a convenient height for the bin to be filled from the platform. The platform is roughly 'L'-shaped, with the base of the 'L' to the rear of the tractor, to allow the picker to put fruit in the bin evenly.

The advantage of this platform is that only one tractor is needed for picking. It is therefore most suited to the grower who wants to keep his capital outlay on machinery as small as possible. The platform can be built for about $50, or even less if the orchardist can weld and drill holes in metal.

The frame of the platform is mainly 1 in. and 1\(\frac{1}{2}\) in. tubing, braced with flat iron. The wooden floor is of 3 in. by \(\frac{3}{4}\) in. jarrah. The platform has two main advantages. Firstly the height from the ground can be varied to suit different trees. The model pictured has two settings, 5 ft. and 6 ft. Secondly the floor can be tilted so that it stays close to true horizontal, even a steeply-sloping orchard.

"Wheelbarrow" picking steps, cheaply constructed from scrap materials. Light and manoeuvrable, these steps are best suited to picking and pruning medium sized trees.
The height and angle of the platform are set by means of a series of slots and holes drilled in the telescoped tubing, with moveable pins to lock them into position. The outer edge of the platform is made of 1 in. piping. The forward end is curved to enable any parts of the fruit tree to brush past without becoming entangled in the structure. The rear end is level with the edge of the raised bin on the fork-lift. Like the trailer platform, this platform can be fitted with swivelling outriggers for pruning and picking wide trees. However, being more manoeuverable than the towed platform, it can be driven around the very bulky trees, and the outriggers not used at all.

In picking trees with a light crop, it has been found economical to leave the tractor motor running to prevent stress on the battery, but on large trees with a full crop, the motor is stopped. The tractor works almost in the centre of each row, so there is plenty of room to turn.

To make best use of either type of platform, the lower half of the tree should be pruned or picked first, finishing about 1 ft. to 1 ft. 6 in. above the platform height.

This cuts out high stretching when working from the ground and saves working at an uncomfortably low level on the platform.

Last season's picking rates should give an idea of how these platforms can save time. The rates apply equally to both outfits. Four 30-bushel bins were picked by two workers between 1 p.m. and 5 p.m. with a break for afternoon tea, all fruit being picked from the platform. Three similar sized bins of Golden Delicious, a notoriously slow handling variety, were picked in the same time.

"Wheel-barrow" steps

On Fry Bros. property at Donnybrook, two useful pieces of equipment are in use which serve similar purposes to the platforms described above.

The simplest of these is a small wheeled platform developed by Mr. Philip Fry, which is particularly suited to picking and pruning on medium-sized trees. It consists of a platform about 4 ft. high, fitted with two steps on one side and two wheels on the other. Two handles are provided so that it can be wheeled about like a wheelbarrow.

The frame is constructed of light tubular steel of 3/4 in. and 1 in. diameter. Old motor cycle wheels have been found most suitable for the "wheel-barrow," although light-weight iron wheels may be used. The platform costs up to $20.

"Squirrel"

Mr. Mick Fry has developed a rather sophisticated orchard aid, based on an illustration of machines used overseas.

This "squirrel" type machine moves about freely under the power of a 6 h.p. motor, and is controlled entirely by foot pedals, leaving the operator's hands free for picking and pruning. All movement about the orchard, including steering, raising and lowering, is accomplished by foot movements on plates which can be pressed up and down, and moved from side to side. The device can be used to work on trees up to 16 ft. in height.

The machine illustrated was built from scrap materials, and cost about $200. A high class version, with all-new materials, and operated entirely by hydraulic rams would, Mr. Fry estimates, cost in the
vicinity of $2,000. While it is a rather versatile and novel means of reaching inaccessible parts of medium to very large trees, the cost would make it unattractive to the average fruit grower.

This type of machine would be at its best when used in conjunction with bulk bins to which are attached some means of conveying the picked fruit from the working platform into the bulk bin without bruising. American equipment which does this consists essentially of a flexible tube with inner baffles to stop fruit colliding and bruising as it travels downward, and to let it drop gently into the bin. The high cost of such specialised equipment would rule it out for the average grower.

All controls on the squirrel are worked by foot pedals. One pedal gives forward and reverse movement, the other controls turning and up and down movement of the platform.

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