THE GRABBER Mark 2: AN AUTOMATIC MECHANICAL LOADER

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INTRODUCTION

The Grabber is an infield mechanical loader of fresh fruit bunches. The first version was introduced in 1992 and has been well received by the industry. This implement is operated by hydraulic and is usually attached to an infield transporter. It is commonly fixed to a mini tractor with a trailer. The Grabber consists of a two-section crane and a three-webbed finger-gripper. Both the crane and the gripper are fitted with four hydraulic cylinders. The crane has a reach of about 3.5 meters and can lift a maximum weight of 100 kg (approximately, 3 bunches at one lift).

The Grabber is an implement that could also be installed on other types of mechanical infield transporters of reasonable size as long as they are equipped with hydraulic power. Minimal modification to the main frame is required to secure the implement to the vehicle.

AUTOMATIC MODEL

It was observed that some improvements could be made to the earlier model to simplify the handling operation. This could be done by integrating some electronics and limit switches into the system so that the Grabber could perform the repetitive movements

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by itself. These repetitive movements include picking of the FFB from the ground and placing them into the trailer. This automatic version is made simpler by having only two operation buttons; one button each for the crane to slew to the right or left. Picking and placing of the FFB is done automatically.

A series of field trials were carried out in commercial plantations to assess the performance of the Grabber Mk2.

From these trials it was found that:

- the operation of this Grabber is much simpler than that of the manual model and the operators can easily be trained;
- productivity could reach 25 to 35 tonnes per day which is a slight increase compared to that of the manual type;
- human fatigue is reduced as the button switches are situated in front of the driving seat;
- the machine could still be operated manually should the automatic switches malfunction.

Generally, the Grabber provides the following benefits:

- single operator to operate the prime mover and the loading implement;
- the operator is able to operate the implement from his driving seat;
- able to load bunches from both sides of the machine;
- minimum damage to FFB during handling;
- easy handling of the implement;
- improves workers productivity; and
- economically efficient.

When compared to manual loading, the use of the Grabber clearly shows an additional 30% increase in productivity. The manpower requirement is also reduced from three to one. The increase in the operating cost is minimal as no extra power is required to operate the Grabber Mk2. An additional cost of between RM4000 to RM5000 for the electronic and limit switches assemblies is required to upgrade the earlier model to automatic loading (Mk2).

CONCLUSION

The introduction of the Grabber to the oil palm industry contributes to a saving in manpower requirement for FFB collection. Compared to the manual harvesting system, a reduction of 30% can be expected in labour requirement with the use of the grabber. Further increase in labour productivity can be obtained by using the automatic Grabber.

An approximate saving of RM 30 000 per 1 000 ha per year for three machines enables the full payback period to be within three years. With proper maintenance, the economic life of each machine is five years; hence giving two years for the machine to earn full profit.

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