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# LOOSE FRUIT COLLECTOR

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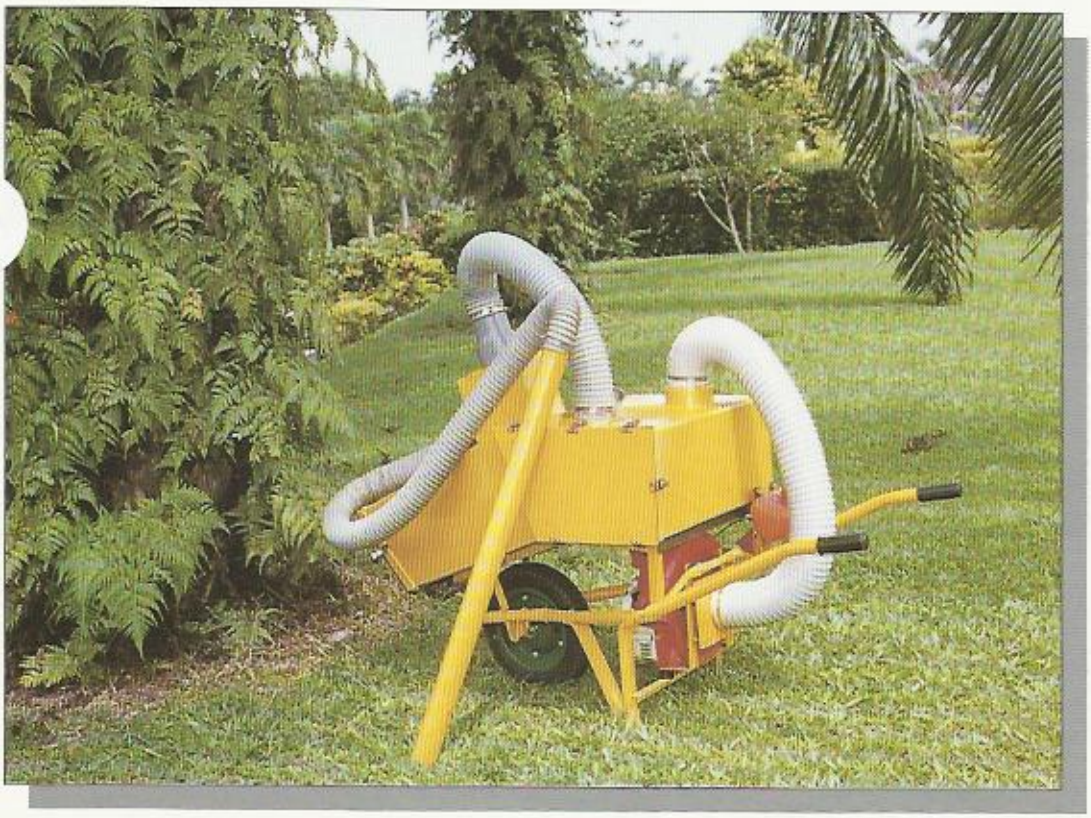
## INTRODUCTION

Loose fruit collection has been a perpetual problem contributing to a decline in the extraction rate. This is as a consequence of the labour shortage and unavailability of proper mechanical implement to assist in the operation.

On the average, the loose fruits found at the base of the palm constitute about 3–5% of the bunch weight. Higher percentages of loose fruits are found in areas with tall palm having ripe bunches. These loose fruits have to be collected. The current loose fruit collections are done manually by hand picking or raking. These techniques are not only time consuming but also inefficient. The percentage of debris, in the case of raking, can reach as high as 60% by weight.

## THE MACHINE

PORIM and Universiti Pertanian Malaysia have jointly developed a mechanical loose fruit collector. The concept utilizes a direct suction method with a separator in the pressure line. The suction is generated from an impeller fixed to an air-cooled petrol engine. The engine is fixed to a push cart fitted with a two-compartment container, one for the fruits and the other for the debris. This machine separates the fruit from the debris. The debris collected with the fruit consist of particles of nearly the same weight to that of the fruits or where the length exceeded 50 mm.



This mechanical loose fruit collector is fully fabricated with locally available parts. The only moving parts are the engine components.

## FIELD TRIAL

A field trial was carried out on a commercial oil palm estate to compare the productivity of this machine against

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manual collection under similar palm heights and harvesting rounds. Manual collection was done by raking and scooping the fruit into a container.

This trial revealed that the machine was capable of collecting an average of 1.0 to 1.2 kg/min with less than 10% debris. Fruits were not damaged or bruised during the operation. In the case of manual collection 0.7 to 1.4 kg/min of fruits could be collected, depending on the amount of fruits per palm and whether they are scattered or heaped in one place. Manual collection became more difficult if the fruits were scattered.

## THE BENEFIT

This machine makes the collection of loose fruits more efficient. Loose fruits can now be sent to the mill with minimal contamination hence ensuring better quality and helping to reduce milling problems associated with the current method of collection.

On the average this machine is capable of collecting 300 to 400kg of clean loose fruits in a day. The use of this machine is very effective in cases where the fruits are scattered

This machine is designed to collect loose fruits at the palm base only as the number of fruits there is comparatively small. Bigger machine would be required to collect the loose fruits at the collecting point where the number of loose fruits is very much higher.

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