

Design and Development of an Oil Palm Loose Fruits Machine

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Introduction

Oil palm loose fruits are frequently left in the fields uncollected during the harvest. If only 1% of the loose fruits are not collected in a hectare, losses are estimated to be more than 80,000 tones of crude palm oil. Manual collecting of the loose fruits is found to be time consuming and backbreaking operation. About 30% of the harvest time is spent for the loose fruits collection. At present, most of the loose fruits are collected manually using wooden scrappers, rakes and other handy devices. It has been estimated that the capacity for manual collecting of loose fruits is about 1.2 kg/min. The fruits are then transferred to a wheelbarrow and carried to the roadside for collection by trailer or lorry. They are then transported to oil palm processing mill.

Materials and Methods

Various techniques of oil palm loose fruits collection were tried and tested. These include the indirect suction and the blowing technique for collecting the loose fruits. A 2.25 kW petrol en-

gine was used and various collecting devices were designed for the different techniques.

Results and Discussion

The loose fruits collecting machine was tested in the fields. For the indirect suction technique, the machine was able to collect 0.96 kg/min of the loose fruits with no foreign materials collected in the fruit container and the fruits were free from any injury. The collecting capacity for the blowing technique was about 0.75 kg/min without any fruits injury, although few foreign materials were trapped in the collecting box (2.6%). The mobility of the machine, design of the air hose, size and features of the collecting box influenced the overall performance of the machine. The machine operator skills also contributed quite significantly to the machine performance.

Conclusions

The oil palm loose fruits machine need to be further improved so as to obtain the collecting capacity of at least 1.5

kg/min with no fruit injury and less than 1% of foreign materials trapped in the collecting box.

Benefits of the study

The development of the oil palm loose fruits machine may help the oil palm industry recover most of the crude palm oil that might be lost due to the uncollected loose fruits in the oil palm plantations. .

Literature cited in the text

None.

Project Publications in Refereed Journals

None.

Project Publications in Conference Proceedings

None.

Graduate Research

Yammy Bayang. 1999. Plantation Management [M.S. (Agric)]. Universiti Putra Malaysia.