

Harvesting of Oil Palm Bunches Using Aluminium Pole

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Summary

Harvesting of oil palm bunches is one of the most challenging, laborious and expensive operations in oil palm cultivation. There has been practicing few harvesting methods for oil palm bunches using different tools and machinery. Most commonly using methods are rope climbing and pole harvesting. Pole harvesting method is smooth and easy in operation and reduces the drudgery involved in harvesting of oil palm compared to other traditional harvesting methods. However, oil palm harvesting still defies the best attempts at mechanization.

Introduction

Oil palm (*Elaeis guineensis* Jacq.) originated in tropical rain forest of western Africa, is now being cultivated in more than 45 countries around the world especially tropical regions i.e., Malaysia, Indonesia, Thailand, Nigeria, Columbia and Ghana. Oil palm was introduced in India during early 1990's, to meet the demand and to attain sustainable vegetable oil production in India due to its unparallel oil productivity compared to other oil seed crops. Therefore, oil palm made its introduction to India towards attaining the sustainability in oil production and reduces the import of vegetable oils. In India this crop is being widely cultivated in Andhra Pradesh, Karnataka, Mizoram, Tamil Nadu, Odisha, Kerala, Gujarat, Anadaman and Nicobar Islands, Maharashtra, Goa, Chhattisgarh and Tripura.

In oil palm cultivation many practices have been involved among them harvesting is considered as most challenging, laborious (43-45% of total annual man days in productive life span of 9 to 25 years) and expensive (16-18% of total production cost). For short height oil palm trees, harvesting oil palm bunches can be done using sickle by standing on the ground but in case of long height oil palm trees harvesting has to be done by climbing trees. Harvesting oil palm bunches with sickle by climbing (traditional harvesting) for long height trees is the regular



practice in vogue and which is associated with physical work stress. The climbing harvesters are facing several problems *viz.* skill frequency, working hour's frequency, insect bites, time consumption, season complications and physical strain etc. Use of traditional tools for long hours with inappropriate working posture in field leads to drudgery. Timeliness of harvesting is very crucial to the quality and quantity of oil yield from the fruits. The under-ripe fruit will yield lower quantity of oil while the over-ripe one will yield oil with higher free fatty acid (FFA) content *i.e.*, lower-quality oil. Therefore, harvesting schedule will depend on the ripening of fruits as observed on plantations. Timeliness harvesting oil palm bunches is not possible in traditional harvesting due to non-availability of labour and drudgery involvement. So, an alternative harvesting method is needed to overcome these problems while harvesting oil palm bunches.

Harvesting of Oil Palm Bunches

Harvesting oil palm bunches at right stage of ripeness is critical to ensuring optimum quality and quantity of oil production and thus profitability of the industry. The goal of harvesting is to be able to cut and collect all ripe fruit bunches in the field, also able to harvest fresh fruit bunches without damaging the fruit and the palm. Ultimately to be able obtaining fresh fruit bunches with excellent oil content and quality and can get maximum profit from the good practice. It is a common understanding for oil palm bunches to be harvested at every harvesting round also known as harvesting interval at least once every 10 or 12 days. Bunches are harvested at the right time and ripeness, without causing damage to the bunch and the stalks are cut must less than 5 cm to avoid the stalk absorb the oil. There has been practicing few harvesting methods for oil palm bunches using different tools and machinery. Most commonly using methods are rope climbing and pole harvesting.

Good harvesting practices

Good harvesting practices are practices that result in large quantities of fresh fruit bunches harvested, high oil extraction rates, and good quality oil. Good harvesting practices include:

- Bunch takes 4-5 months for ripening, depending on the climatic conditions. At least 20% oil accumulates in the bunch during last 7-10 days of bunch ripening. Hence, harvesting at right stage is paramount important.
- Harvesting using correct procedures (frond cutting, bunch cutting).
- Harvesting only ripe bunches.
- Good and fast transport of the bunches to the mill.

Cautions: Dos & Don'ts

- Don't harvest bunches from palms having less than 3 years age.
- Harvest bunches in every 7-10 days intervals.
- Wear all safety items viz., helmet, shoe, goggles, gloves, etc.
- Don't harvest un-ripened bunches
- Avoid climbing – Use alternative methods (Pole).
- If age of palm is <6 years, then don't cut frond.
- Don't keep more stalk length (should be < 5 cm).
- Chop the leaf-Mulching.
- Avoid contamination and injury as much as possible.
- Collect loose fruits.
- Transport bunches to the collection center/ Processing unit as early as possible.

Harvesting of Oil Palm FFB by using Aluminium pole

The importance of skill in handling pole harvesting in taller plantations to reduce the time and burden of FFB harvesting. Harvesting fruits from tall palms on the other hand requires different technique which is carried out by sickle attached to lightweight aluminium pole. The sharpness, shape and profile of the sickle will greatly contribute to the effectiveness in the cutting operation. Cutting is done by the method of slicing through pulling the sickle downwards. The pulling force given by the harvester, with the added advantage of the flexibility of the pole, allow the sharp edge to cut through the material.

The harvester basically is involved in two main operations viz., first to lift the pole upright and second to cut the fronds and fruit bunches which require high skill and energy. Skill is in handling of tool and energy for lifting and cutting. Most harvesters cannot perform longer in a day's work as they get tired as they work along. At the most they can work for four hours and they would call-off in the afternoon. One person can harvest 0.4-1 tonne of FFB per day depending on the age of palms, season of harvesting, skill of the harvester and topography of the field.



Fig. 1. Harvesting of oil palm FFB by using aluminium pole harvester



Table 1. Weight of aluminium harvesting poles with suitable sickle.

Aluminium Harvesting Pole Height	Sickle Size	Sickle Weight (Grams)	Pole Weight (kg)	Total Weight (Sickle & Pole) (kg)
12 ft. (6+6)	S	720	2.520	3.240
20 ft. (10+10)	S	720	3.240	3.960
33 ft. (16.5+16.5)	S	720	5.680	6.400
40 ft. (20+20)	L or X	800	6.100	6.900
50 ft. (25+25)	XL, XX or LL	900	7.200	8.100

Comparison of Traditional and Pole Harvesting method

Harvesting by climbing is the regular practice in vogue. Climbing harvesting is in practice in coconut and toddy palm. The climbing harvesters are facing several problems *viz.*, skill frequency, working hour's frequency, insect bites, time consumption, season complications, physical strain etc. The Pole Harvesting method is introduced to overcome these climbing harvesting problems. The pole harvesters are using single pole or telescopic pole with sickle for harvesting of oil palm fresh fruit bunches (FFB) while harvesting oil palm bunches from tall palms of more than 8 ft height.

Harvesting by climbing on palm tree involves frequent upward, downward movement and walk in the field, hence harvesters will have discomfort, hence working for 4 hours per day. Pole harvesters will have less discomfort (since they stand and walk on ground), hence they could do harvesting up to 5 hours per day. Skilled pole harvesters require less slashing time to harvest oil palm FFB and underlying leaves, hence they could harvest a greater number of bunches in a day. Cent percent of pole harvesters and climbing harvesters perceived satisfaction of wage payment on per day basis. This trend could be due to wage payment received on the same day of work completion. Pole harvesters expressed problems *viz.*, Neck Pain in initial Stage of Harvesting. While climbing harvesters expressed the following problems *viz.*, No Safety, Lot of energy will be lost while climbing up and down and Leg injury. In oil palm, harvesting by climbing is the regular practice method and these climbing harvesters are facing several problems. The Pole Harvesting method was recommended by ICAR-IIOPR to overcome these climbing harvesting problems.



References

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