

IMPLICATION OF IMPROVED OIL PALM (*Elaeis guineensis*) FRUIT PROCESSING TECHNOLOGIES FOR LABOUR AND INCOME AMONG RURAL HOUSEHOLDS IN IMO STATE, NIGERIA

Chinedum Nwajiuba¹ and Adeola Akinsanmi²

¹ Department of Agricultural Economics, Imo State University, Owerri, Nigeria

² University of Hohenheim, Institute of Agricultural Economics and Sciences Economics in the Tropics and Sub-tropics (490C) 70593 Stuttgart, Germany

ABSTRACT

*Oil palm (*Elaeis guineensis*) is the most important tree crop in the rural economy of the humid rainforest of eastern Nigeria. The oil is consumed as household food, used domestically for industrial purposes, and was an important foreign exchange earning export. However, the processing of palm fruits to extract the oil is labour intensive. Although, in colonial times, some machines were introduced and were widely adopted, these excluded machines for crushing the fruits. This was the case until recently when locally fabricated crushers became available. The aim of the study was to examine the implications of these machines for labour use and income among rural households in Imo State, Nigeria.*

Data from selected palm fruit processing mills indicate enthusiastic patronage of oil mills that have introduced these machines. The machines have eliminated labour for fruit crushing, an activity which required about 10 adults working for about 15 minutes. Presently, the machine crushes 60kg of parboiled palm fruits in 6 minutes. Also on the average 60 kg of range fruits yielded about 20 litres of palm oil against 14 litres previously, an increase of about 50%. This arose from the shorter processing time, and higher average temperature of crushed fruits, which aided extraction of oil.

Operators of oil pressing mills charged 4 litres of oil per 20 litres extracted, as this was preferred over cash payment. Most mill operators stored this oil to sell in seasons of deficit supply and higher prices, thereby creating time utility. Average market price of palm oil fluctuated between N70/litre in surplus seasons (February - May), while highest prices are recorded between August to November (at about N120/litre).

Consequently, labour for palm processing has reduced from 150 minutes to 6 minutes for 60kg raw fruit with machines, while output has increased by 50%. Some problems encountered include firewood and water scarcity.

INTRODUCTION

If Nigeria until 1966 was the largest producer and exporter of palm oil and kernel accounting for 30% of World's palm oil and 50% of world's palm kernel (Onwubuya, 1997). However, its contributions as an export and foreign exchange earner started declining since the 1970's as Nigeria's petroleum earnings escalated, drawing labour away from the rural farm sector to the urban non-farm sectors. In effect, low returns to labour was a disincentive to palm fruit processing.

The oil palm fruit is harvested manually using a cutlass, after which it is shredded, picked, parboiled, pounded and pressed. This is the common processing method practiced since in the colonial era in small village centres often owned by a rural entrepreneur. Drudgery was a problem to palm fruit processing.

Efforts to raise agricultural production and farmer's standard of living require the introduction of improved farm equipment and technologies as well as increased availability and utilization of energy and power. However, the vast majority of farmers work at near subsistence level of production (Cobezas et al, 1995).

METHODOLOGY:

The study was conducted in Imo State in southeast Nigeria. Imo State has an average annual rainfall of over 1400 mm per annum from (ODNRI, 1989) which encourages the growth of such tree crops as the oil palm. Consequently, oil palm trees are the dominant tree crops observable in the farming systems.

The study was conducted in Nsu Community in the Ehime - Mbano Council area. The study employed the key informants method after a reconnaissance survey to identify processing mills while have introduced this technology. Twenty such millers and fifty processors were interviewed.

Results and Discussions

Post Harvest System

The principal aim of the post harvest treatment of oil palm fruit is to generate the red palm oil and the palm nut. These are joint products and this influences the choice of palm variety for planting by farmers. The Tenera strain has fleshy fruits but with softer smaller nuts yielding more red palm oil, while the Dura has thinner flesh yielding less red palm oil, but with harder bigger nuts.

Recently, some technologies for the digesting of palm fruit, a step in the production of palm oil and kernel leave become available. These are locally fabricated and are expected to reduce labour input and boost output the objective of this paper is to examine the extent these have seen the case. The stage in palm fruit processing (fig. 1) shows that the ripe fresh palm fruit is harvested after which it is

threshed. The fruits are then picked and taken to the processing centre for parboiling. The parboiled fruits are pounded I digested, producing a mash, from which oil is extracted using a local press. The digesting of the parboiled fruits was done manually using local pestles and mortars until recently when mechanical, diesel engine - operated machines became available.

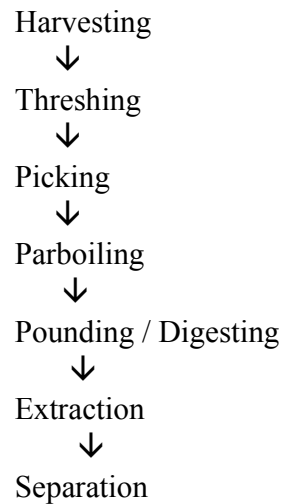


Fig 1: The processing of palm fruit

Labour Use

Until recently the digesting/producing of parboiled fruit was mannerly done, using pestles and mortars. However, mechanical, diesel - powered digesters are now found in some processing centres.

Under the manual digesting systems, one drum, approximately 250 kg of palm fruits required 5 adults pounding for about 30 minutes.

In effect that required 2¹/₂ man - hours. However, this labour is eliminated with the introduced mechanical digesters, which now required 6 minutes.

Beyond this however, is the problem of drudgery and therefore reluctance to engage in palm fruits processing. This became worse with increased rural - urban migration, which leaves mostly aged men and women for this task.

People are therefore happy with the machines because of labour scarcity, lack of labour to hire and relatively high cash expenditure to pay for the labour, which may be up to N200 per man-hour.

Effect on Output

An advantage of the use of mechanical digestion is the shorter period expended, which means that the mash has higher temperature than when it is pounded manually. High temperature means that oil extraction is more efficient. With manual processing, it is slower and oil yield is cold and there is less output. Output is about 50% more as a result, 250 kg of palm fruit. Which yields about 30 litres of fresh palm oil now yields up to 45 litres of fresh palm oil.

Effect on Income

Oil price fluctuates between N70 / litre to N120 / litre between the surplus season (February - May) and deficit season (August - November). This means an average price of N85 / litre. With output increasing by 50% due to the machines, and with an average household processing up to 300 kg of fresh fruits per annum, this means an increased output of fresh palm oil from 360 litres per annum to 540 litre per annum. At an average price of N85/ litre, this means an increase in income from N30, 600) to (N45, 900). At about \$ = N140, this is means an average annual income of \$ 218.6 to \$327.9 thus is a significant source of rural liquidity with important consequences for rural livelihood and welfare.

However, the patronage of the processing centres comes with higher charges. Without the machines, processors charged N10 for each 20 litre, but with machines, the processors are charged N50 for each 20litre. This is to take care of the cost of fuel.

Problems with palm fruit processing

The main problems with palm fruits processing is with scarcity of fuel wood. The parboiling of palm fruits is done in open drums, with fuel wood as source of energy. However, the rainforests of eastern Nigerian has been significantly depleted, such that all the processors interviewed as the main constraints to palm fruits processing mention fuel wood scarcity. Another problem mentioned by 60% of the processors is scarcity of water for parboiling.

Conclusion

This paper has shown that the introduction of mechanical palm fruit digestion eliminates labour at that stage of palm fruit processing while increasing income and contributes to rural livelihood.

However, the scarcity of fuel wood and water are some problems experienced by processors, while the operators of the oil mills have problems with finding fuels and gas to power their machines.

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