



IJASVM

**International Journal of Agricultural
Sciences and Veterinary Medicine**



ISSN : 2320-3730

Vol. 1, No. 4, November 2013



www.ijasvm.com

E-Mail: editorijasvm@gmail.com or editor@ijasvm.com

Research Paper

THE ROLE OF INFORMATION ON ADOPTION OF IMPROVED PALM OIL PROCESSING TECHNOLOGIES IN DELTA STATE, NIGERIA

Patience Gunn¹ and James Asu Nandi^{1*}

*Corresponding Author: James Asu Nandi, ✉ jamesanandi@yahoo.com

Information is a key to success. This research found out the role played by information sources in adoption of improved palm oil processing technologies in Delta State. Multi-stage sampling procedure was used to select 164 respondents from the State. Primary data were collected using structured questionnaire; and analyzed using descriptive statistics. It was observed that processors' main sources of information were fellow processors, neighbours, friends and relatives. Result indicates that digester and mechanical press recorded 100% adoption rate each; sterilizing and separating machines had 79%, and 33% respectively. Sterilizer, digester and mechanical press recorded high overall perception on adoption. Hence, palm oil processing can be a very lucrative and attractive enterprise in the agricultural sector if processors receive the necessary encouragement by availing them with information needed for palm oil processing to thrive. Therefore, it was recommended that: government should make effort to extend extension services in regards to palm oil processing technologies in the study area; training should be organized by concerned organizations on best practices and management of small-scale palm oil processing enterprises; processors should form associations for easy flow of information; manufacturers of the improved technologies should arrange for after sale service for adopters on how to handle the technologies.

Keywords: Adoption, Information, Palm oil, Perception

INTRODUCTION

The oil palm (*Elaeis guineensis*), is one of the most important economic crops in the tropics. It is the most important source of vegetable oil in terms of yield among all the oil bearing plants

(Kolaosoye, 2005; and Odior, 2007). This important economic tree is generally agreed to have originated in the tropical rain forest region of West Africa. In Nigeria, oil palm cultivation is part of the way of life of most people living in the

¹ Department of Agricultural Economics and Rural Sociology, Faculty of Agriculture, Ahmadu Bello University, Zaria, Kaduna State, Nigeria.

southern part of the country. It is like their culture. Additionally, every part of the oil palm can be put to advantageous use, and is particularly suitable for low-cost and low-technology activities such as palm ribs and fronds for roofing and thatching, brooms, baskets, wickerwork and mats while its residue can be used for fire lighting and as energy source. Due to all these uses, it offers an almost unlimited scope for employment and thus a source of livelihood and income for many people (Oladipo, 2008).

The increase in demand for oil palm products has necessitated the improvement of the crop in various ways, from its method of cultivation, harvesting to processing in harmony with recommended agronomic practices. For this harmony to be realized, the Nigerian Institute For Oil palm Research (NIFOR) was established in Benin City in 1939, to genetically improve oil palms by improving its agronomic practices, including planting, cultivation and harvesting techniques, to develop control measures for pests and diseases, processing, preservation, storage and utilization of palm products among other functions (NIFOR, 2006).

Ugwu (2009) reported that for some time now, palm oil has been the driving force in the world of edible oil and fats as one of the most produced and consumed oil. For palm oil processing industry to sustain this competitive edge, continued research is very crucial in regards to appropriate processing technologies to pave the way forward in shaping the future of the industry because Nigeria, which was one of the world's exporters of palm oil in the 70s can no more meet up with local demand; she has rather become a net importer of the product. Therefore, Nigeria's goal should be to meet the domestic demand; and compete with other countries like Malaysia

and Indonesia known as the leading palm oil producing countries (Ayodele, 2010). Sequel to this, NIFOR has made various efforts to improve palm oil processing by producing Small-Scale Palm oil processing Equipment (SSPE) (Ugwu, 2009), which can remove the tedium and improve the quality of the palm oil extracted. Extraction rate for traditional technologies in Nigeria has been reported low compared to other countries. It was rated 18%, as against 25% in Thailand and 90% in Malaysia (WRM, 2001; and Chavalparit, 2006). These new processing equipment cannot be adopted if the information required for necessary adoption is not passed to the processors from the right sources.

Knowledge and information are basic ingredients for increased agricultural production and productivity. It is against this background that Hossain (1998) quoted in Opara (2008) noted that communication of agricultural information is a vital factor in the change process of the farming community. Therefore, information is a critical resource in the operation and management of the agricultural enterprise. Furthermore, access to the right information at the right time and from the right source, may shift the balance between success and failure of farmer. Farmers must have access to information about new technologies before they can consider adopting them. According to the International Finance Corporation (IFC) (2010), access to quality information, technical assistance and extension services is a critical factor for successful smallholder production and adoption.

Adoption occurs when the individual apply the innovation on a large scale and continue to use it in preference to old methods (Roger, 1995). Although, adoption of mechanized operations depended largely on the scale of production; it

also depends on available information about the technology. Therefore, this study intends to identify sources of information about the new innovations and the role it plays in adoption; verify the rate of processors' adoption; and ascertain processors' overall perception on the processing technologies in the study area, and also help to ascertain if adoption have actually taken place or not.

MATERIALS AND METHODS

This study was conducted in Delta State, located on latitude 5° and 30' in the North and longitude 5° and 57 in the East. The study area has a humid tropical climate, with a very long rainy season lasting from April-October; with rain forest, swamps and rivers. The predominant occupations of the people are trading, farming and fishing. They plant tree crops such as oil palm, citrus, guava, rubber and mango (Ugwu, 2009). Their major food crops are cassava, plantain, banana, melon (egusi), maize, yam, vegetables, and cocoyam. The study focused on the population of people involved in palm oil processing in the area. The study made use of multi-stage sampling procedure to select a total of 164 respondents from Ughelli North and Isoko-North Local Government Areas of Delta State. Data were collected from primary sources through the use of structured questionnaire, observation, and interview. The collected data were analyzed using descriptive and inferential statistics.

RESULTS AND DISCUSSION

Sources of information of the respondents in the study area were identified and analysed. The result is presented in Table 1. Getting the right information at the right time and from the right source can boost agricultural activity of

Variables	Frequency	Percentage
Relatives	26	10.6
Neighbours	32	13.1
Friends	37	15.2
Fellow Processors	141	57.8
Others	8	3.3
Total	244*	100.0
Sources of Training		
Neighbour		7.7
Friend		7.7
Relatives		7.7
Fellow Processors		76.9
Total		100.0
Note: * The frequency is more than 164 respondents due to multiple responses from the respondents.		

respondents. However, it revealed that 11% of the respondents got their information concerning the recommended palm oil processing technologies from their relatives. This means that they started using the recommended technologies and adopted them because their relatives informed them about the technologies. Furthermore, the result indicates that 13% of the respondents learnt about the recommended technologies from their neighbours. Invariably, their neighbours are the ones that educated these set of processors about the existence of recommended technologies for palm oil processing. Additionally, 15% of the respondents were informed by their friends. Therefore, these processors only got to know about the recommended technologies for palm oil processing from their friends who informed them about the technologies and they decides to adopt them.

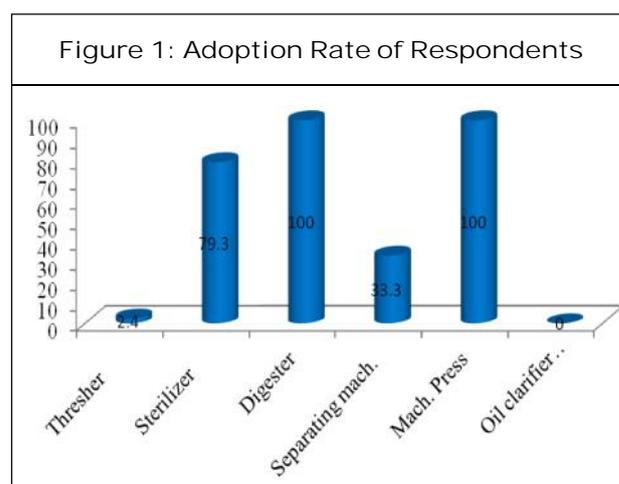
Results from Table 1 revealed that 58% of the respondents got their information about recommended palm oil processing technologies

from fellow processors. A brief interview with most respondents confirmed that they got all they knew about the recommended palm oil processing technologies from their fellow processors, the respondents also confirmed that they would have preferred extension agents (what they call government people) to educate them about the technologies, but they have not seen anyone. As for the respondents who agreed on having formal training on how to operate the recommended palm oil processing technologies, 77% of the respondents reported that they had their training from fellow processors. Moreover, many of them also alleged that they learnt to operate the processing machines through trial and error under the tutelage of fellow processors.

According to Onweremadu and Njoku (2007), being a member of an association encourages social participation, which serves as a forum where farmers could exchange ideas about new farm practices. Association can also serve as an avenue where processors can share ideas. Unfortunately, all the respondents do not belong to palm oil related association. Therefore, they may not be able to meet as a group to discuss their welfare as fellow processors. It was also revealed that buyers are the ones who fix the prices of the palm oil in the market because they have a functional trade union. However, for experienced palm oil processors, they found out that if their palm oil reacts positively to a caustic soda test (local soap made from caustic soda) then, they can sell their palm oil at exorbitant price. But not all processors have access to this privilege information. However, if they had a functional trade union in place then, members would have been educated on how to test for soda acceptance and be able to sell their product at a high price.

Adoption Rate

Adoption rate is the percentage of respondents who adopted each of the recommended technologies and continued using them, therefore, the higher the percentage of processors using a particular technology, the higher the adoption rate. Result presented in Figure 1 shows the adoption rate of digester to be 100%. This ascertained that the digester enjoys complete adoption from all the processors interviewed. The reason could be that the digester machine reduces the drudgery associated with either the pounding of the palm fruit with mortar and pestle or the stress from mashing them with feet. Using either of the traditional method is stressful and labour intensive. The mechanical press also enjoy 100% adoption rate. Respondents praised the performance of the press. They opined that using the press has made their processed palm oil to be hygienic, because using traditional method sometimes contaminates the quality of palm oil produced. On the other hand, sterilizer technology recorded adoption rate of 79%, indicating that some of the processors refuse to adopt it. Majority of the respondents may have adopted this technology because of its proximity to the digester and the press.



However, separating, threshing and clarifying machines recorded 33%, 2% and 0% adoption rates respectively. The reason may not be far-fetched, processors' resources are already over stretched; spending additional money to sterilize, separate and thresh their palm fruit will be extra burden to them. Therefore, using manual threshing method seems appropriate to them so as to conserve their scarce resources (money). Not all processors employed the services of the separating machine to separate the palm kernel nut from the fibre. Most of the respondents confirmed that they do the selection manually at their spare time to keep them busy when they are bored. The oil clarifying machine was not adopted by any of the processors. Oil clarifier may not have been adopted because processors prefer to use the traditional method of clarifying which involve boiling of the pressed oil to dry it and to remove impurities with small baskets.

Overall Perception on Processing Technologies

Result on overall perception on oil palm processing technologies revealed that some of the technologies vary in their perceptive outlook (Table 2). It depicts perception on thresher, separating machine and oil clarifier to be low with mean score of 0.1, 1.7 and 0 respectively. This indicates that much time is still spent by the processors to thresh manually thereby increasing drudgery in oil palm processing. The separating machine separates fibre and kernel nuts. The fibre is returned to the press for another set of palm oil extraction; palm oil realized from this pressing is mostly used for soap making. Therefore, with the low perception and adoption rate, quantity of oil processed will be reduced, hence, reduction in income. On the other hand, sterilizer, digester and mechanical

Table 2: Respondents' Overall Perception on Processing Technologies

Technologies	Total Weighted Scores	Mean Weighted Scores	Overall Perception
Thresher	20	0.1	Low
Sterilizer	650	4.0	High
Digester	820	5.0	High
Separating Mach.	273	1.7	Low
Mechanical Press	820	5.0	High
Oil Clarifier	0	0	Low

Source: Field Survey (2013)

press enjoyed high adoption perception of weighted mean score of 4.0, 5.0 and 5.0; indicating that digester and mechanical press experienced full adoption rate. This could be stemming from the tedious and time consuming nature of digesting and pressing oil palm nuts through traditional techniques.

CONCLUSION

This research was conducted to find out the role information play in adoption of improved palm oil processing technologies in Delta State. It was observed that processors' sources of information were fellow processors, neighbours, friends and relatives. Similarly, those who alleged having formal training on how to operate the technologies affirmed receiving their training from their fellow processors. Adoption rate of respondents indicates that the digester and the mechanical press enjoys 100% adoption rate, while the sterilizing machine had 79%, and separating machine on the other hand had 33% adoption rate. The oil clarifier, however, did not enjoy any patronage, thereby having 0% adoption rate. The perception show that sterilizer, digester and mechanical press recorded high adoption rate perception.

In conclusion, palm oil processing can be a very lucrative and attractive enterprise in the agricultural sector if processors receive the necessary encouragement by availing them with information needed for their palm oil processing to thrive. Therefore, it was recommended that: government should make effort to extend extension services in regards to palm oil processing technologies in the study area so that processors can benefit from their wealth of experience; since processors do not get the right training from the right sources, therefore, training workshops should be organized by concerned organizations on best practices and management of small-scale palm oil processing enterprises; processors should form associations for easy flow of information; manufacturers of the improved technologies (that is NIFOR) should arrange for after sale service for adopters on how to handle the technologies. 🌀

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International Journal of Agricultural Sciences and Veterinary Medicine

Hyderabad, INDIA. Ph: +91-09441351700, 09059645577

E-mail: editorijasvm@gmail.com or editor@ijasvm.com

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