

Towards Palm Oil Self-sufficiency in Nigeria: Constraints and Training needs Nexus of Palm Oil Extractors

J. A. Akangbe¹, G. B. Adesiji^{1*}, S. B. Fakayode² and Y. O. Aderibigbe¹

¹Department of Agricultural Extension and Rural Development, ²Department of Agricultural Economics and Farm Management, P.M.B 1515, University of Ilorin, Ilorin, Nigeria

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ABSTRACT This study investigated constraints and training needs of oil palm fruit processors- 'palm oil extractors' in Nigeria, using Afijio Local Government Area of Oyo State, Nigeria as a case study. A two stage sampling technique was used to select one hundred and sixty (160) households involved in palm oil extraction activities across the study area. Data were collected using interview schedule and were analysed using both descriptive and training need analyses. Study findings revealed that palm oil extractors were aged women who have had little or no formal education and have been involved in palm oil extraction activities for about 35 years. Almost all the major palm oil extraction activities were carried out using the outdated unhygienic traditional methods. Training needs assessment indicated that sterilization (mean score = 7.54), stripping (8.17), mixing (9.36), skimming (8.46) and clarification activities (8.72) in palm oil extraction are all tasks that extractors require training on. Constraints to palm oil extraction activities reported were those of poor and inadequate transportation system (36.3%), water scarcity (26.2%), inadequate labour supply (21.9%), as well as non-contact with extension (15.6%). The study therefore calls for the design of extension and training programmes by stakeholders for oil palm extractors, provision of boreholes at palm oil extraction vicinities, and mobilization of extractors to form cooperatives to acquire modern extraction machines

INTRODUCTION

Oil palm (*Elaeis guineensis*) is one of the most important economic oil crops in Nigeria. According to World Rain-forest Movement (2001), oil palm is indigenous to the Nigerian coastal plain though it has migrated in-land as a staple crop. The crops' cultivation serves as a means of livelihood for many rural families indeed it is in the farming culture of millions of people in the country. The often referral of oil palm as a crop of multiple value underscores its economic importance. All its essential components namely, the fronds, the leaves, the trunk and the roots are used for several purposes ranging from palm oil, palm kernel oil, palm wine, broom, and palm kernel cake (Daramola Igbokwe Mosuro Abdullahi, 2002). Laying credence to the economic value of oil palm, the International Potash Institute (1957) identified the principal products of oil palm to be the palm fruit, which is processed to obtain three commercial products: namely palm oil, palm

kernel oil, and palm kernel cake. In his study, Iwena (2002) found that on commercial basis, both palm oil and palm kernel are important products of oil palm.

Oil palm stands out as one of the important food security crops for Nigeria mainly because of its usefulness. Oil palm is known for the production of various important products such as palm oil, palm kernel oil, palm wine, palm kernel cake and broom. Amongst the products derivable from oil palm, palm oil is the most useful and important. According to Adelekan Laleye Idowu (2002), palm oil is the principal source of much of the edible oil consumed in Nigeria and the rest of the West African region. Ayeni Kolawole (1997) explained that extracted oil can be used in the manufacture of soaps, margarine and, candles. Other uses of palm oil include its use in the manufacture of baking fats, tin plate and sheet steel materials (Adeniji Udeogalanya Okeke Abdullahi Iheukwumere 1997).

Hitherto, in the early 1960's, Nigeria's palm oil production accounted for 43 per cent of the world production, but now only accounts for merely 7 per cent of total global output. According to Hartley (1988), Nigeria lost her foremost place in oil exports to Zaire and regained it only temporarily in 1964 – 1965. As at today, the

Corresponding Author:
Dr. G. B. Adesiji
Department of Agricultural Extension
and Rural Development,
P.M.B 1515, University of Ilorin,
Kwara State-Nigeria
E-mail: drgbolaadesiji@yahoo.com

country has lost her place to Malaysia, which is now the largest oil palm producer in the world. Beyond this problem, there has been a steady decline in the nation's domestic supply of palm oil. This has been attributed partly to the crude palm oil extraction methods employed by palm fruit processors, which results into low quantity and poor quality oil. The scarcity of palm oil at particular period of every year leads to increase in the price. Also, varying quality and drudgery involved in the processing of palm fruits are some of the important reasons responsible for the recurrent short fall in domestic palm oil supply in the country.

In the light of this, it thus becomes reasonable to assess the procedures involved in palm oil extraction. Also, an investigation of palm oil extraction procedures, the skills of participants involved in the activity and constraints associated with the extraction activities is necessary in order to identify the areas in which the farmers require training and other empowerment. This study therefore seeks to address the following research questions:

- What are the palm oil extraction practices in Nigeria?
- How adequate are these extraction activities?
- What training needs do the palm oil processors require?
- What are the constraints encountered with palm oil extraction activities in Nigeria?

This study therefore identified palm oil extraction activities that require trainings and examined constraints that confront Nigerian palm oil extractors using Oyo state, Nigeria as a case study.

Objectives of the Study

The general objective of the study is to investigate the training needs of oil palm fruit processors in some selected villages in Afijio L.G.A. of Oyo State and specifically to:

- ✓ identify the demographic characteristics of oil palm fruit processors in the study area;
- ✓ determine the factors that affect the production of palm oil in the study area;
- ✓ examine the problems militating against the supply of palm oil;
- ✓ assess the method of oil palm fruit processing in the study area.

METHODOLOGY

Study Area

The area of study is Oyo State, Nigeria. Oyo State comprise of thirty-three Local Government Areas (LGAs). Out of these LGAs, palm oil extraction is popular amongst residents in Afijo Local Government Area of the state. Afijo Local Government area was therefore selected for the study. Areas popular for oil palm production in Afijo LGA include Akinmorin, Awe, Fiditi, Ilora, Jobele, Iware, Imeni and Oluwatedo. Afijio LGA is bounded by Osun State in the East, in the North by Oyo West and Oyo East, in the West by Iseyin and Ido and in the Southern part by Akinyele all in Oyo State. The population for this study consisted of all the farm households involved in palm oil extraction activities in Afijo LGA. The study's sampling technique comprised a two-stage procedure. The first stage involved the random selection of four (4) towns out of the seven renowned for palm oil extraction activities in the LGA, while the second stage involved the random selection of forty palm oil extractors' households in each of selected towns. This made a total of one hundred and sixty respondents for the study. Data were analysed using the descriptive statistical tools of frequency distribution, percentages, and mean, and the needs analyses. The latter analyses comprised of task and gap analyses.

MEASUREMENT OF VARIABLES

Variables to be measured are:

Independent Variable

Age: Respondents were requested to state their ages in years.

Sex: Respondents were requested to indicate whether they are male or female.

Marital Status: Respondents were requested to indicate whether they are single, married, divorced or widowed.

Educational Level: Respondents were requested to pick the level of educational attainment from the options given.

Farming Experience: Respondents were requested to indicate, in years, how long they have been farming.

Dependent Variable

1. *Training needs*: The training needs were measured by conducting the task analysis and skill gap analysis.

Procedure for Conducting a Task Analysis

The following steps provide was used for task analysis.

Step 1: Several “task Analysis worksheets” were duplicated and wrote the name of the job at top of each.

Step 2: One task on the “Task Analysis Worksheets” was written.

Step 3: All component parts of each task on its respective Task Analysis worksheet were listed

Step 4: How frequently each part of the component is performed were determined. Use the following scale:

Seldom=1, Occasionally=2, Weekly to Monthly=3, Daily to Weekly=4, Daily=5

Step 5: Determine the relative importance of each step or component. Steps that are performed seldom may be very critical to one job. Therefore, it is important to gain both an importance rating as well as a frequently rating by using the following scale:

Marginally important=1, Moderately important=2, Extremely important=3,

Step 6: Difficulty of learning the task component or step were estimated. An estimate of learning difficulty is one other dimension of the analysis. Task Analysis worksheet were used with the following scale:

1. Easy=1, Moderate difficulty=2, Very difficult=3, Extremely difficult=4

Step 7: Total score for each task component or step were tallied by simply adding the scores for frequency, importance and learning difficulty for each component.

Procedures For Skill Estimating and Gap Analysis

The following steps were used to estimate the skill levels of trainees.

Step 1: The “steps or components” that were identified on the task analysis worksheet onto the Gap Analysis Worksheet were listed.

Step 2: Each “step or component” in terms of the trainees’ current proficiency were rated

on a scale of 1 to 5, with the following descriptors.

1. - cannot complete any part
2. - can complete less than half the task
3. - can complete more than half but less than the total
4. - can complete the entire task but takes too long
5. - complete the task within time standard.

Step 3: The proficiency ratings and check those tasks that appear to have low proficiency were reviewed. Low proficiency means that there is a gap between what is desired and what the situation is currently.

RESULTS AND DISCUSSION

Socio-economic Characteristics of Respondents

Results in Table 1 indicate that close to half (46.9%) of the palm oil extractors interviewed were aged, being (above 60 years) of age, while only about a quarter (16.9%) fall within the agile youthful age bracket of between 20-40 years. The mean age of respondents is 54 years, implying that the palm oil extractors are generally aged. These were mostly old women since all the respondents were found to be females as indicated by their gender distribution. It is expected, therefore, that these females who are naturally weaker than the men may not have sufficient agility and strength to produce palm oil in large quantities (But oil palm processing is a female dominated endeavor in the study area!). Table 1 also shows that more than half (55.0%) of the respondents had no formal education. Only 21.3% had at least the basic primary school education while a handful of them (11.2%) had post primary education. Generally therefore, statistics on respondents’ educational status indicate a low level formal education for respondents. This could be a limiting factor affecting respondents’ ability to adopt and use improved palm oil extracting techniques and facilities.

Respondents’ experience in palm oil extraction which was proxied as their years of involvement in the extraction activity was also investigated and the results revealed that about half of respondents had been involved in palm oil extracting activities over the last 26 – 50 years while, only a quarter of them have been

involved for more than 51 years. The mean years of respondents' involvement in palm oil extraction is 35 years, implying that palm oil extractors in the study area are conversant with traditional palm oil extraction practices.

Table 1 further revealed that most of the respondents (68.1%) were involved in petty trading as additional occupation to their palm oil extraction activities; while others are involved in hair plaiting (16.2%?), tailoring (8.8%?) and farming (6.9%?). According to respondents, the seasonal nature of palm oil extraction activities in the study area make them undertake other jobs during off season period. However, respondents reported that they cherished the palm oil extraction occupation, regardless of their involvement in other occupations. The result confirms the fact that women from the 'Yoruba' tribe in Nigeria as obtained in the study area are traders. This is consistent with the position of Ekong (2003) that Yoruba women are traders, and such sex role had given them more autonomy economically and a higher degree of mobility to and from distant markets than women of other ethnic groups.

Table 1: Socio-economic characteristics of respondents

	Frequency	Percentage
<i>Age</i>		
20-40	27	16.9
41-60	58	36.2
61 above	75	46.9
Total	160	100.0
Mean	54	
<i>Gender</i>		
Male	0	0.0
Female	160	100.0
Total	160	100.0
<i>Level of Education</i>		
No education	88	55.0
Adult Education	18	11.2
Primary Education	34	21.3
Secondary Education	18	11.2
Post Secondary Education	2	1.3
Total	160	100.0
<i>Years Involved in Palm Oil Extraction</i>		
1 - 25	48	30.0
26-50	84	52.5
51 - 75	26	17.5
Total	160	100.0
Mean	35	
<i>Secondary Occupation</i>		
Petty trading	109	68.1
Hair Plaiting	26	16.2
Tailoring	14	8.8
Farming	11	6.9
Total	160	100.0

Source: Field Survey 2008

Resources used in palm oil extraction activities

The results in Table 2 show that majority of the respondents obtained their oil palm farms (where they source their oil palm fruits) through their husbands' extended family systems, as an inherited family possession. Over half of the respondents (60%) acquired their lands through inheritance, while very few of them obtained theirs as gift (3.8%). The remaining respondents bought their own land, while other respondents were operating on rented oil palm farms. Since oil palm fruits/bunches are the major raw materials/ input in the production of palm oil, the number of oil palm fruits/bunches that a farmer have access to will definitely determine the quantity of palm oil produced from their extraction activities. Half (50%) of the respondents usually have access to 30 oil palms bunches or greater, while the remaining had access to about or more than 30 oil palms bunches available for each extraction activity. Based on this result, it could be seen that respondents' level of palm oil extraction is on a small-scale basis.

Table 2: Distribution of respondents based on their usage of resources for palm oil extraction activities.

Resources	Frequency	Percentage %
<i>Source of Oil Palm Farmland</i>		
Inheritance	96	60.0
Purchase	37	23.1
Rent	21	13.1
Gift	6	3.8
Total	160	100.0
<i>Accessibility to Palm Bunches</i>		
5 - 30	80	50
31 - 56	58	36.3
57 - 82	22	13.7
Total	160	100.0
<i>Mode of Transportation</i>		
Head portage	128	80
Bicycle	2	1.3
Vehicle	30	18.7
Total	160	100.0

Source: Field survey 2008

Almost all the respondents (80%) conveyed their palm fruits from the farm to the palm oil extraction sites via head portage. Others conveyed their own products via bicycles (1.3%), and vehicles (18.7%). This definitely will serve as deterrent to large scale profitable palm oil extraction activities.

Quantity of Palm oil Extracted

The result in Table 3 shows that majority of the respondents (84.4%) processed above 37 litres of palm oil output per forty bunches of palm fruits. However, 6.2% and 3.8% of the respondents processed 20-25 and 26-31 palm oil output per forty bunches of palm fruits respectively.

Table 3: Distribution of respondents based on their yields of palm oil during extraction

<i>Palm oil processed (in litres) per 40 oil palm bunches</i>	<i>No of respondents</i>	<i>Percentage %</i>
20-25	10	6.2
26-31	6	3.8
32-37	9	5.6
38-43	65	40.6
44-49	48	30.0
50-55	22	13.8
Total	160	100.0

Source: Field survey 2008

Palm oil extraction practices

The various activities involved in palm oil extraction vis a vis their corresponding practices as carried out by respondents is shown in Table 4. The results revealed that all respondents' palm oil extraction activities were predominantly carried out using traditional practices, except in the case of the digestion activities where digesters were used. More than half of the respondents (53.1%) stored their palm oil in drums while others stored their palm oil in rubber containers. About two-thirds (68.8%) of the respondents indicated that they produced palm oil for commercial purpose.

This result on respondents' palm oil extraction practices generally agrees with that of Purseglove (1985) that the indigenous methods of extracting palm oil in West Africa are crude, resulting in poor quality oil. The result also conforms with the findings of Ayeni Kolawole (1997) that the traditional processing techniques are labour intensive and inefficient. Based on findings from his study of palm oil fruit processors in Osun State, Oke (2002) revealed that majority of palm oil fruit processors adopted the traditional technique of production.

Training Needs Assessment

Table 5 reveals the result on the training needs assessment of palm fruit processors in the

Table 4: Distribution of respondents based on methods used for palm oil extraction activities

<i>Activities and practice</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Harvesting</i>		
Traditional	160	100.0
Oil mill (Modern)	0	0.0
Total	160	100.0
<i>Chopping</i>		
Traditional	160	100.0
Oil mill (Modern)	0	0.0
Total	160	100.0
<i>Sterilization</i>		
Traditional	160	100.0
Oil mill (Modern)	0	0.0
Total	160	100.0
<i>Stripping</i>		
Traditional	160	100.0
Oil mill (Modern)	0	0.0
Total	160	100.0
<i>Boiling of Fruits</i>		
Traditional	160	100.0
Oil mill (Modern)	0	0.0
Total	160	100.0
<i>Digestion</i>		
Traditional	0	0.0
Oil mill (Modern)	160	100.0
Total	160	100.0
<i>Mixing</i>		
Traditional	160	100.0
Oil mill (Modern)	0	0.0
Total	160	100.0
<i>Skimming</i>		
Traditional	160	100.0
Oil mill (Modern)	0	0.0
Total	160	100.0
<i>Clarification</i>		
Traditional	160	100.0
Oil mill (Modern)	0	0.0
Total	160	100.0
<i>Storage Medium</i>		
Tankers	0	0.0
Drum	85	53.1
Rubber containers	75	46.9
Total	160	100.0
<i>Sale</i>		
Commercial	110	68.8
Consumption	50	31.2
Total	160	100.0

Source: Field Survey 2008

study area. The analysis covers how frequently each task is performed per extraction activity, the level of importance of such task and the level of difficulty encountered in learning the task. The analysis result shows that palm oil extractors (respondents) require training for mixing, clarification, skimming, and stripping as well as sterilization operations during palm oil extraction. The total mean scores of these operations were above the threshold score of 6. Tasks whose scores tend towards 12 imply that those that carry out the tasks require appreciable amount of training in order to improve and increase overall production level while those with

Table 5: Task analysis of palm oil extraction activities of respondents

Activities	Frequency of performance	Level of importance	Level of difficulty	Mean score	Implication
Chopping	2.00	2.58	1.20	5.78	Do not require training
Sterilization	2.20	2.80	2.54	7.54	Require training
Stripping	2.18	2.72	3.27	8.17	Require training
Boiling of fruits	1.80	2.40	1.56	5.76	Do not require training
Digestion	1.66	2.24	1.20	5.10	Do not require training
Mixing	2.80	2.92	3.64	9.36	Require training
Skimming	2.72	2.76	2.98	8.46	Require training
Clarification	2.60	2.90	3.22	8.72	Require training
Storage	1.60	1.22	1.56	4.38	Do not require training

Source: Field survey 2008

scores below 6, although require no training but will also require some level of improved technology in order to boost the production level. However, the result indicated that no training is necessary for chopping, boiling of fruits, digestion and storage operations carried during palm oil extraction.

Gap Analysis

Table 6 presents the frequency rating of tasks requiring improvement/training during palm oil extraction. The gap analysis indicates whether or not a task can be improved upon by providing training for such task executors. In actualizing this, tasks were arranged in order of their magnitude of requirement for training with mixing having score of 2.3, clarification (2.4), skimming (1.4), stripping (2.2) and sterilization (1.5). The gap analysis results showed that all the task deficiencies can be addressed via training the performers of the task, as all task scores were below average.

Table 6: Oil palm bunch task analysis

Task	Frequency rating	Check this box if proficiency is a problem	Can the problem be addressed by training
Mixing	12345	2.3	Yes
Clarification	12345	2.4	Yes
Skimming	12345	1.4	Yes
Stripping	12345	2.2	Yes
Sterilization	12345	1.5	Yes

Source: Field survey 2008

Constraints to palm oil extraction

The result on constraints of palm oil extraction as reported by respondents in Table 7 showed

the magnitude of various problems militating against the palm oil supply in the study area. A major constraint reported was poor and inadequate transportation (36.3%). This was followed by water related problems especially the scarcity of the resource (26.2%), inadequate labour supply (21.9%), as well as no contact with extension agents from any organisation as relates to their palm oil extraction activity (15.6%). These problems perhaps explain why traditional method of palm oil extraction has persisted in the study area.

Table 7: Distribution of respondents based on problems confronting their palm oil extraction activities

Problems	Frequency	Percentage
Water related	42	26.2
Transportation	58	36.3
Inadequate labour	35	21.9
No contact with extension	25	15.6
Total	160	100.0

CONCLUSION AND RECOMMENDATIONS

This study examined training needs and constraints profiles of palm oil extraction venture in Nigeria, using Afijo Local Government Area of Oyo State as a case study. The study reveals that palm oil extractors are mostly aged women of mean age of 54 years, who have been involved in palm oil extraction for about 35 years. These extractors had little or no formal education. All the respondents have never had contact with extension agents from any organisation their palm oil extraction activities. The study also revealed that all the major palm oil extraction activities were carried out using the unhygienic traditional methods that have been used. Constraints to palm oil extraction activities reported

were that of non-contact with extension, poor and inadequate transportation, water scarcity, crude and poor palm oil extraction technology, as well as inadequate labour supply.

The study therefore calls for the rehabilitation of bad infrastructures and the provision of other necessary social amenities in the study area. This indirectly will help attract and encourage young female to live in rural areas, and by extension be encouraged to partake in palm oil extraction activities. Extension and training programmes should be designed by appropriate stakeholders for the oil palm extractors in the study area. The study indicates that extractors require training for most of the extraction activities. Extension Agents should be trained and empowered to carryout training programmes in the study area as regards oil palm fruit processing. Boreholes should be provided by the government and other stake holders at palm oil extraction vicinities so as to permit easy access to water. Palm oil extractors should also be availed opportunities especially finance to be able to acquire modern machines. This will definitely help reduce drudgery in the extraction process. In this vein, extractors should be mobilized to form cooperatives. Via such co operations they can pool their resources and become capacitated to acquire modern extraction machines.

REFERENCES

- Adelekan BA, Laleye AO, Idowu OJ 2002. *Spectrum Agricultural Science*. Ibadan: Spectrum Books Limited.
- Adeniji MO, Udeogalanya ACC, Okeke GC, Abdullahi Y, Iheukwumere CA 1997. *Countdown to Senior Secondary Certificate Examination*. Agricultural Science, Ibadan Evans.
- Ayeni IA, Kolawole FA 1997. *Spectrum Memory Guide, Agricultural Science for Senior Secondary Certificate Examination*. Ibadan: Spectrum Books Limited.
- Daramola AM, Igbokwe EM, Mosuro GA, Abdullahi JA 2002. *Examination Focus, Agricultural Science*. Ibadan: Ibadan University Press Plc.
- Ekong EE 2003. *An introduction to Rural Sociology*. Uyo: Dove Educational Publishers.
- Fakayode SB, Tsoho AB, Obadiah J 2008. Economic analysis of small-scale groundnut oil extraction in Kwara State, Nigeria. *Green Farming Journal* 2: 3. Available on-line at <http://www.greenfarming.in>
- FAO 1992. *Planning for Effective Training. A Guide to Curriculum Development*. FAO: Rome.
- Hartley CWS 1988. *The Oil Palm*. Third Edition. Harlow, England: Longman.
- International Potash Institute 1957. *The Oil Palm, Its Culture, Manuring and Utilization*. Berne, Switzerland: IPI.
- Iwena OA 2002. *Essentials Agricultural Science for Senior Secondary Schools*. Ikeja, Jonad Publishers Limited.
- Oke OE 2002. *Evaluation of Palm Oil Processing in Egbadore LGA of Osun State, Nigeria*. Ile-Ife, Nigeria: OAU.
- Purseglove JW 1985. *Tropical Crops; Monocotyledons*. Singapore, Longman Singapore Publishers.
- World Rainforest Movement 2001. Nigeria: Palm oil deficit in a traditional Palm oil producing country. <http://www.wrm.org.uy/bulletin/47/nigeria.html>. (Accessed on 4th January, 2008).