



## ASSESSMENT OF TRAINING NEEDS OF SMALL-SCALE OIL PALM PROCESSORS IN IKWERRE LOCAL GOVERNMENT AREA OF RIVERS STATE, NIGERIA

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### ABSTRACT

The study assessed the training needs of small-scale oil palm processors in Ikwerre Local Government Area of Rivers State, Nigeria. In conducting the study, multi-stage random sampling technique was used to select 80 oil palm processors. Data collection were through structured questionnaire and analyzed using descriptive statistics such as mean and percentage while ordinary least square multiple regression analysis was used to test the hypothesis formulated for the study. Findings show that the mean age of the oil palm processors was 42.68 years. The mean farm size of the oil palm processors in the study area was 0.69 hectares and the mean household size was 6 persons per household. The mean monthly income of the respondents was ₦43,603.86 per month and the mean years of processing experience of the respondents was 11.63 years. Findings also reveal that skimming ( $\bar{x} = 3.99$ ), accessing loans and grants ( $\bar{x} = 3.91$ ), sterilization ( $\bar{x} = 3.89$ ), threshing ( $\bar{x} = 3.88$ ), digestion ( $\bar{x} = 3.86$ ), access to improved oil palm seeds ( $\bar{x} = 3.81$ ), filtering ( $\bar{x} = 3.79$ ), mechanized boiling ( $\bar{x} = 3.73$ ), packaging and branding of palm oil ( $\bar{x} = 3.71$ ), extraction ( $\bar{x} = 3.68$ ) and training on marketing and management skills ( $\bar{x} = 3.61$ ) were the training needs of oil palm processors in the study area. The study also reveals that the age of respondents (-2.396\*\*), level of education (2.844\*\*\*) and farming experience (2.437\*\*) significantly influenced the training needs of small-scale oil palm processors in oil palm processing in the study area. The study concluded that small scale oil palm processors were highly in need of training in various areas such as skimming, sterilization, threshing, digestion, access to improved oil palm seeds, filtering, mechanized boiling, packaging and branding of palm oil, extraction and training on marketing and management skills. The study recommended that the extension agencies should intensify efforts in educating small scale oil palm processors through workshops, seminars and farmer trainings on their identified training needs especially in the areas of accessing improved oil palm seeds and the use of improved oil processing techniques.

**Keywords:** Assessment, Training, Needs, Oil palm, Processors, Processing.

### INTRODUCTION

Oil palm (*Elaeis guineensis*) is regarded as one of the most important economic oil crops in Nigeria. Oil palm is also indigenous to the Nigerian coastal plains though it has migrated inland as a staple crop (Alabi, Famakinwa and Akinawonu, 2020; Nwalieji and Ojike, 2018). It is one of the most productive oil crops and its product (palm oil) ranks high in the list of the world's leading agricultural commodities (Adeniyi, Matanmi, Ajiboye, Kolawole, Ajala and Owolabi, 2019). The high demand for palm oil has contributed to oil palm cultivation and processing becoming a means of livelihood for many rural households in Southern Nigeria (Onu, Onuekwusi and Ekwe, 2021). Processing of oil palm is defined as a process by which palm fruits are processed into palm oil through threshing or stripping, milling and digestion,



pressing and clarification (Emokaro and Ugbekile, 2014). Oil palm fruit processing thus involves harvesting, threshing, fruit loosening, boiling, digestion, pressing/oil extraction, clarification and packaging/storage.

Recent studies by Nwalieji and Ojike (2018), Alabi *et al.* (2020) and Onu, Ekwe and Nwachukwu (2021) revealed that oil palm fruit processing is a major economic activity of the rural farm households in various parts of Southern Nigeria, Ikwerre local government area inclusive and is mostly carried out by these farm households using manual and subsistent methods. Onu *et al.* (2021) further noted that oil palm processing activities in rural communities in Nigeria are dominated by small scale oil processors and the traditional processing of fruits into oil and kernel is tedious and low yielding. Eric and Ikheloha (2017) also reported that, about 25% - 75% of potential palm oil is lost during processing while 9.0 – 28.0% palm oil end up as waste under smallholder palm oil processing in Nigeria depending on the variety of the oil palm. The low yields of processed palm oil fruits have been attributed to small scale processors' overdependence on the use of traditional methods and lack of technical know-how on the use of improved oil processing methods (Onu *et al.*, 2021; Alabi *et al.*, 2020). This suggests that there still exists a gap in the technical knowledge level of small-scale oil processors in oil palm processing and the need for training in the areas of technical deficiencies. Furthermore, Onu *et al.* (2021) reported that small scale oil palm processors in various parts of Southeast Nigeria face financial constraints such as lack of capital for procuring modern processing equipment and high cost of labour for oil processing activities which limit the yields obtained from oil palm processing. However, whether this is the case in the study area is still subject to empirical investigation, hence the study. Training need has been defined as the difference between the required level of individual competence and his present level of competence. A training need is a deficiency in skills or abilities, which could be reduced or eliminated by the means of education and development (Titilope, Lucy, Felix, Olugbenga, Agatha and Elizabeth, 2020). The study thus sought to assess the training needs of small-scale oil palm processors in Ikwerre local government area of Rivers State.

## **MATERIALS AND METHODS**

The study was conducted in Ikwerre Local Government Area of Rivers State, Nigeria. Ikwerre local government has an area of 655 km<sup>2</sup> and an estimated population of 265,400 persons (National Population Commission, 2016). Multistage random sampling procedure was adopted for the study. In the first stage, five (5) towns were randomly selected out of the local government area for the study. The second stage involved the random selection of two (2) villages from each of the selected town, resulting into ten (10) villages in total. The last stage involved the random selection of eight (8) oil palm processors from each of the selected villages. This gave a total of eighty (80) respondents for the study.

Data collection were through structured questionnaire and analyzed using mean, percentage and ordinary least square multiple regression analysis. Training the needs of the oil palm processors was realized using a 3-point rating-scale of; highly needed = 1, needed = 2 and not needed = 3. In using the three-point rating scale, a mid-point was obtained by adding 3, 2 and 1 which gave 6 and when divided by 3 gave a mean score of 2.0. For the purpose of decision making, an upper limit was established. The upper limit is  $2.0 + 0.05 = 2.05$ . A mean of 2.05 and above was regarded as a training highly needed, while a mean less than 2.05 was regarded otherwise.

### **Model specification**

$$Y_1 = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + e$$



Where:

Y = Training needs (measured on a 3-point rating scale).

X = Socio-economic characteristics of the respondents

X<sub>1</sub> = age of processors (years)

X<sub>2</sub> = level of education of processors (years)

X<sub>3</sub> = years of processing experience

e = Error term

b<sub>0</sub> – b<sub>3</sub> = Estimated parameters

## RESULTS AND DISCUSSION

### Socio-economic Characteristics of the Respondents

The result in Table 1 shows that the mean age of the oil palm processors was 42.68 years, implying that most of the respondents are still in their active stage and should be able to undertake the strenuous task of oil palm processing. The results also show that the majority (51.9%) of the respondents were females, implying that females dominated oil palm processing in the study area. Ominikari (2017) noted that female farmers often engaged in agricultural activities than male farmers with a relevant observation that men especially the youths that are supposed to embrace farming are neglecting agriculture and probably migrating from the rural villages to the cities in search of white-collar jobs. The mean farm size of the oil palm processors in the study area was 0.69 hectares. The result also shows that the mean monthly income of the respondents was ₦43,603.86 per month. The result revealed a low-income status for the respondents. Considering the present economic situation in Nigeria, such amount of income may not be sufficiently enough to cater for family needs let alone to be sufficient to support purchase of improved oil processing equipment if policies and technology interventions are not made that would reduce the cost of oil palm production and processing so as to allow the processors optimize their level of income. This finding is consistent with those of Green (2016) and Onu (2016) who in their respective studies observed low monthly income status among processors.

**Table 1:** Socio-economic characteristics of the respondents in the study area

| Variables             | Frequency (n = 80) | Percentage   | Mean               |
|-----------------------|--------------------|--------------|--------------------|
| <b>Age (years)</b>    |                    |              |                    |
| 20 – 30               | 19                 | 23.8         |                    |
| 31 – 40               | 34                 | 42.5         |                    |
| 41 – 50               | 20                 | 25.0         |                    |
| Above 50              | 7                  | 8.8          |                    |
| <b>Total</b>          | <b>80</b>          | <b>100.0</b> | <b>42.68 years</b> |
| <b>Sex</b>            |                    |              |                    |
| Male                  | 38                 | 48.1         |                    |
| Female                | 42                 | 51.9         |                    |
| <b>Total</b>          | <b>80</b>          | <b>100.0</b> |                    |
| <b>Marital status</b> |                    |              |                    |
| Married               | 55                 | 68.8         |                    |
| Single                | 20                 | 25.0         |                    |
| Widowed               | 3                  | 3.8          |                    |
| Widower               | 2                  | 2.5          |                    |
| <b>Total</b>          | <b>80</b>          | <b>100.0</b> |                    |

Source: Field survey data, 2021



**Table 1:** Socio-economic characteristics of the respondents in the study area **Cont'd.**

| <b>Variables</b>            | <b>Frequency (n = 80)</b> | <b>Percentage</b> | <b>Mean</b>          |
|-----------------------------|---------------------------|-------------------|----------------------|
| <b>Farm size (hectares)</b> |                           |                   |                      |
| ≥ 0.5                       | 4                         | 5.0               |                      |
| 0.5 - 1.0                   | 63                        | 78.8              |                      |
| 1.0 – 2.0                   | 12                        | 15.0              |                      |
| 2.1 – 3.0                   | 1                         | 1.3               |                      |
| <b>Total</b>                | <b>80</b>                 | <b>100.0</b>      | <b>0.69 hectares</b> |
| <b>Household size</b>       |                           |                   |                      |
| 1 -3                        | 13                        | 16.3              |                      |
| 4 – 6                       | 46                        | 57.5              |                      |
| Above 7                     | 21                        | 26.3              |                      |
| <b>Total</b>                | <b>80</b>                 | <b>100.0</b>      | <b>6 persons</b>     |
| <b>Monthly income (₦)</b>   |                           |                   |                      |
| 1 – 50,000                  | 55                        | 68.8              |                      |
| 50,001-100,000              | 7                         | 8.8               |                      |
| 100,001– 150,000            | 10                        | 12.5              |                      |
| Above 150,000               | 8                         | 10.0              |                      |
| <b>Total</b>                | <b>80</b>                 | <b>100.0</b>      | <b>₦43,603.86</b>    |
| <b>Educational level</b>    |                           |                   |                      |
| Primary education           | 25                        | 31.3              |                      |
| Secondary education         | 46                        | 57.5              |                      |
| Tertiary education          | 9                         | 11.3              |                      |
| <b>Total</b>                | <b>80</b>                 | <b>100.0</b>      |                      |
| <b>Years of experience</b>  |                           |                   |                      |
| 1 – 10                      | 49                        | 61.3              |                      |
| 10 - 15                     | 21                        | 26.3              |                      |
| 16 – 20                     | 9                         | 11.3              |                      |
| 21 – 30                     | 1                         | 1.3               |                      |
| <b>Total</b>                | <b>80</b>                 | <b>100.0</b>      | <b>11.63 years</b>   |

Source: Field survey data, 2021

### **Training needs of small-scale oil palm processors in the study area**

The result in Table 2 shows that skimming ( $\bar{x} = 3.99$ ), accessing loans and grants ( $\bar{x} = 3.91$ ), sterilization ( $\bar{x} = 3.89$ ), threshing ( $\bar{x} = 3.88$ ), digestion ( $\bar{x} = 3.86$ ), access to improved oil palm seeds ( $\bar{x} = 3.81$ ), filtering ( $\bar{x} = 3.79$ ), mechanized boiling ( $\bar{x} = 3.73$ ), packaging and branding of palm oil ( $\bar{x} = 3.71$ ), extraction ( $\bar{x} = 3.68$ ) and training on marketing and management skills ( $\bar{x} = 3.61$ ) were the major training needs of small scale oil palm processors in the study area. This implies that the oil palm processors were highly in need of training in the areas of skimming, accessing loans and grants, sterilization, threshing, digestion, access to improved oil palm seeds, filtering, mechanized boiling, packaging and branding of palm oil, extraction and training on marketing and management skills. Training on improved processing techniques, accessing loans and grants and marketing and management skills will be of immense benefits to small scale oil palm processors who largely depend on manual processing techniques that are labour intensive and highly inefficient and account for low quantity and poor quality of processed palm oil. Acquisition of training on the best methods to access loans, grants and improved oil palm seeds will enable oil palm processors to access loans and grants to finance their oil palm processing business. This finding is in conformity with those of



Adeniyi *et al.* (2019) who reported that the majority of small-scale oil palm processors in Osun State required training for stripping, digestion, mixing, skimming and clarification.

**Table 2:** Mean responses on the training needs of small-scale oil palm processors

| Training areas                              | SA | A  | D | SD | Total score<br>$\sum F\bar{X}$ | Mean score<br>$\bar{X}$ | Remark               |
|---|----|----|---|----|--------------------------------|-------------------------|----------------------|
| Skimming                                    | 79 | 1  | - | -  | 319                            | 3.99                    | Highly needed        |
| Threshing                                   | 70 | 10 | - | -  | 310                            | 3.88                    | Highly needed        |
| Sterilization                               | 72 | 7  | 1 | -  | 311                            | 3.89                    | Highly needed        |
| Mechanized boiling                          | 65 | 11 | 2 | 2  | 299                            | 3.73                    | Highly needed        |
| Extraction                                  | 60 | 15 | 4 | 1  | 294                            | 3.68                    | Highly needed        |
| Digestion                                   | 70 | 9  | 1 | -  | 309                            | 3.86                    | Highly needed        |
| Filtering                                   | 64 | 15 | 1 | -  | 303                            | 3.79                    | Highly needed        |
| Packaging and branding of palm oil          | 61 | 16 | 2 | 1  | 297                            | 3.71                    | Highly needed        |
| Accessing loans and grants                  | 73 | 7  | - | -  | 313                            | 3.91                    | Highly needed        |
| Access to improved oil palm seeds           | 65 | 15 | - | -  | 305                            | 3.81                    | Highly needed        |
| Training on marketing and management skills | 50 | 29 | 1 | -  | 289                            | 3.61                    | Highly needed        |
| <b>Grand mean score</b>                     |    |    |   |    |                                | <b>3.81</b>             | <b>Highly needed</b> |
| Number of respondents                       |    |    |   |    |                                | 80                      |                      |
| Decision cut-point                          |    |    |   |    |                                | 2.50                    |                      |

Note: SA = Strongly agree; A = Agree; D = Disagree; SD = Strongly disagree

Source: Field survey data, 2021

### Hypothesis of the Study

The result of the Ordinary Least Square (OLS) regression model used to test the hypothesis that the selected socio-economic characteristics (age, educational level, and years of processing experience) of small-scale oil palm processors have no significant influence on their training needs on oil palm processing is presented in Table 3. The linear, semi-log, exponential and double-log functional forms were tried for choice of a lead equation. The linear model was chosen as the lead equation based on the magnitude of the coefficient of multiple determinations ( $R^2$ ), the significance of the regression coefficients, the number of significant variables and the signs of the significant variables as they conform to *a priori* theoretical expectations as well as the significance of the entire model as shown by the F- statistic. The coefficient of multiple determinations ( $R^2$ ) value was 0.820, implying that about 82.0% of the variations in the training needs on oil palm processing was explained by the regressors included in the model.

The regression coefficient of the age of the respondents was negative and significant at 5%, implying that an inverse relationship exists between age of the respondents and their training needs on oil palm processing. Therefore, as oil palm processor's age increases, their training needs on oil palm processing decreases and vice versa. Youthful oil palm processors will be willing to undergo training on oil palm processing despite its strenuous and time demanding nature than older oil palm processors. This finding is in agreement with those of Ezenwa, Omondi, Ubuoh, and Nnamerenwa (2018) who observed that young farmers have





more risk bearing and innovative abilities and mental capacities to cope with the daily challenges and demands of farm production activities and ability to do manual work than old farmers. The regression coefficient of the level of education of the respondents was positive and significant at 1%, implying that a direct relationship exists between the educational level of oil palm processors and their training needs on oil palm processing. Therefore, as the level of education of oil palm processors increase their training needs on oil palm processing also increase and vice versa.

Education brings about enlightenment, and equip processors with the practical steps to undertake oil palm processing. Educated processors will be more eager to get more trainings on the use of sophisticated machines and technologies in oil palm processing that will maximize their output and earn them higher profit. The finding of this study is consistent with Ezenwa *et al.* (2018) who noted that education will likely enhance the adoption of modern farming and processing practices, thereby enhancing the efficiency of the farmers/processors. The finding of this study is also consistent with Titilope *et al.* (2020) who reported a significant relationship between the educational status of oil palm processors and their training needs in Ogun State. The regression coefficient of the years of processing experience of the respondents was positive and significant at 5%, implying that a direct relationship exists between the years of processing experience and their training needs on oil palm processing. Therefore, as the processing experience of oil palm processors increases, their training needs on oil palm processing also increase and vice versa. This is so since processing experience will enable processors identify areas of training needs so as to have the advantages of coping with the complexities associated with oil palm processing in order to minimize their resource use and maximize their outputs from their processing activities.

**Table 3:** Ordinary Least Square (OLS) multiple regression result of the relationship between the selected socio-economic characteristics of small-scale oil palm processors and their training needs on oil palm processing

| Variable            | Linear+                | Exponential         | Double-log          | Semi-log               |
|---------------------|------------------------|---------------------|---------------------|------------------------|
| Constant            | 1212.081<br>(4.728)*** | 2.772<br>(7.039)*** | 4.652<br>(5.028)*** | 24925.64<br>(9.695)*** |
| Age of respondents  | -120.011<br>(-2.396)** | -0.004<br>(-1.147)* | -0.224<br>(-1.362)  | -1210.625<br>(-1.605)  |
| Level of education  | 104.005<br>(2.844)***  | 0.002<br>(2.877)**  | 0.078<br>(2.033)**  | 3411.186<br>(2.759)*** |
| Farming experience  | 313.012<br>(2.437)**   | 0.005<br>(2.193)**  | 0.057<br>(1.272)    | 1119.160<br>(1.502)    |
| R <sup>2</sup>      | 0.820                  | 0.641               | 0.685               | 0.718                  |
| Adj. R <sup>2</sup> | 0.803                  | 0.620               | 0.663               | 0.691                  |
| F-statistics        | 59.893***              | 39.038***           | 41.481***           | 45.179***              |

Note: \*\*\*, \*\*, and \* indicates statistically significant at 1%, 5% and 10% levels of significance respectively. + = Lead equation.

Source: Field survey, 2021

## CONCLUSION AND RECOMMENDATIONS

The study concluded that small scale oil palm processors in the study area were relatively young, educated, married and experienced. Oil palm processors were also highly in need of training in various areas such as skimming, accessing loans and grants, sterilization, threshing, digestion, access to improved oil palm seeds, filtering, mechanized boiling,



packaging and branding of palm oil, extraction and training on marketing and management skills. The study further concluded that the age of respondents, level of education and farming experience significantly influenced the training needs of small-scale oil palm processors in oil palm processing in the study area. Recommendations are as follows:

1. The study recommended that the extension agencies should intensify efforts in educating oil palm processors through workshops, seminars and farmer trainings on their identified training needs especially in the areas of accessing improved oil palm seeds and the use of improved oil processing techniques. This is because access to improved oil palm seeds and the use of improved oil processing techniques were some of the major training needs of small-scale oil palm processors in the study area.
2. Government should increase the financial capacities of small-scale oil palm processors either by providing grants to them or by encouraging them to form cooperatives through which they could access loans from financial institutions since accessing loans and grants was one of the major training needs of oil palm processors in the study area.
3. The government should also assist in the provision of oil processing machines that would address the training needs of small-scale oil palm processors in the areas of skimming, sterilization, threshing and mechanized boiling.

## REFERENCES

- Adeniyi, V. A., Matanmi, B. M., Ajiboye, B. O., Kolawole, A. E., Ajala, A. O. and Owolabi, A. O. (2019). Technological training needs of small-scale oil- palm processors in Nigeria. *International Journal of Mechanical Engineering and Technology*, 10(02): 1546–1557.
- Alabi, D. L., Famakinwa, M. & Akinlawonu, O. E. (2020). Involvement of rural households in oil palm (*Elaeis guineensis*) fruits postharvest activities in Ondo State, Nigeria. *Journal of Agricultural Extension*, 24(1): 42-53.
- Emokaro, C. O. and Ugbekile, P. C. (2014). Economic analysis of oil palm processing in Ovia Northeast and Ikpoba-Okha local government areas of Edo State, Nigeria. *Nigerian Journal of Agriculture, Food and Environment*, 10(2): 70-78.
- Eric, G. O. and Ikheloha, E. E. (2017). Analysis of the structure and performance of palm oil marketing in Edo State Nigeria. *Global Approaches to Extension Practice (GAEP)*, 3(1): 61-67.
- Ezenwa, L. I., Omondi, P., Ubuoh, E. and Nnamerenwa, G. C. (2018). Effects of climatic variability on livelihood choices among rural populace in Baringo County, Kenya and Jigawa State, Nigeria. *Journal of Research in Forestry, Wildlife & Environment*, 10(4): 55-70.
- Green (2016). Analysis of Price Differentials in the Marketing of selected agricultural produce Abia state, Nigeria. M.Sc thesis, Department of Marketing, Michael Okpara University of Agriculture Umudike.
- National Population Commission (2019). Projected population, National Bureau of Statistics.
- Nwalieji, H. U. and Ojike, H. U. (2018). Characteristics of small-scale palm oil production enterprise in Anambra State. *Journal of Agricultural Extension*, 22(1): 22-34.
- Ominikari, A. G. (2017). Assessment of effectiveness of National Fadama III project in empowering the participants in Bayelsa State, Nigeria. Unpublished M.Sc. thesis in the Department of Rural Sociology and Extension, Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria, pp. 49-110.



- Onu, N. P. (2016). Transaction cost and profitability differentials in the marketing of selected meat products in Abia state, Nigeria. Department of Agribusiness Management, Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria.
- Onu, S. E., Ekwe, K. C. and Nwachukwu, I. M. (2021). Gender analysis of rural households' involvement in oil palm production, processing and marketing in Southeast Nigeria. *Journal of Community and Communication Research*, 6(1): 76-84.
- Onu, S. E., Ekwe, K. C. and Onuekwusi, G. C. (2021). Comparative analysis of the level of engagement in palm oil processing among rural households in Southeast Nigeria. *Journal of Agricultural Extension*, 25(3): 26-35.
- Titilope, O. O., Felix, O. I., Agatha, I. O., Lucy, A. O., Olugbenga, S. O. and Elizabeth, F. O. (2020). Training needs assessment of palm oil processors in Ijebu North Local Government Area, Ogun State. In: Obayelu, A. E. & Obayelu, O. A., (Eds). Developing sustainable food systems, policies, and securities. Published in the United States of America by IGI Global, Pp.151-161.