

## ASSESSMENT OF TRAINING NEEDS OF COCOA FARMERS IN BENDE LOCAL GOVERNMENT AREA OF ABIA STATE, SOUTH EAST NIGERIA

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### Abstract

*In Nigeria, low productivity of cocoa has been attributed to poor maintenance practices, planting low yielding varieties and incidence of pest and diseases. In order to address this, cocoa farmers need appropriate training to increase productivity. This study therefore was undertaken to assess the training needs of cocoa farmers in Bende Local Government Area of Abia State, Nigeria. Purposive and multi-stage random sampling techniques were used to select 90 farmers from the cocoa producing communities in the Local Government Area. Data were collected with the aid of a structured questionnaire and analyzed using descriptive and inferential statistics (multiple regression analysis). The results indicate that 95.56% of cocoa farmers were males, with mean ages of 55.5 years, mean farm size of 8 hectares, mean annual farm income of ₦1.3 M (10,000 USD), while 72.22% inherited their farm land and had extension contact once in a month (52.22%). The result showed that of the farmers' sourced information on cocoa production from farm field school (96.67%) and research institutes (74.44%). The farmers assert that the needed training on Plantation establishment and control of black pod disease ( $\bar{x}=2.9$ ), control of swollen-shoot virus and mirad control ( $\bar{x}=2.8$ ), punning techniques, cocoa bean storage and processing ( $\bar{x}=2.7$ ). Other areas were on cocoa bean marketing ( $\bar{x}=2.6$ ), fertilizer application ( $\bar{x}=2.5$ ) and nursery establishment techniques ( $\bar{x}=2.4$ ). The multiple regression analysis showed that coefficients for land ownership, age, farming experience, farm income and extension contacts influenced training needs of the cocoa farmers in the study area. The study recommends review of Land Use Act of 1990, increased extension contact and training and re-training of farmers on pesticide and fungicide usage for boosting cocoa production in the study area.*

**Key words:** assessment, cocoa farmers, needs, training, Abia State

### INTRODUCTION

Nigeria as a developing country had long ago commercialized her cocoa production and was rated the second highest producer of cocoa in the world ranking until 1971, when its export declined to 21,600 and 1,500 metric tons in 1986. Thus, reducing the country's market share to about 6 percent, and to the fifth largest world producer of cocoa with about 385,000 metric tons per annum, an increase of 215, 000 metric tons from the year 2000 [8]. Nigeria produces about 250,000 metric tons of cocoa [1]. By these ratings, Nigeria competed favourably with other front liners in cocoa industry like Cote d' Ivore, Indonesia and Ghana [18]. Cocoa (*Theobroma cacao L*) is grown in 14 states out of Nigeria's 36 states;

Abia, Adamawa, Akwa Ibom, Cross Rivers, Delta, Edo, Ekiti, Kogi, Kwara, Ogun, Ondo, Osun, Oyo and Taraba states [20]. The cocoa sector in Nigeria employs over 800,000 small holder farm families, providing employment, income and also as a major source of foreign exchange for the country. After petroleum, cocoa is the country's most important export. Before independence, cocoa generated 90 percent of Nigeria's foreign exchange earnings.

Training involves acquiring information and development abilities or attitudes, which result to greater competence in the performance of a worker. Training is mostly directed at improving the ability of individual to do their vocation more effectively and efficiently [4]. Training needs to cocoa farmers are needed for cocoa producers to

achieve their full productivity potential in order to bridge the imbalance of global demand and supply [10]. The significance and value of training has long been recognized.

Therefore, extension organizations need to consider some important issues relating to farmers' needs [11]. In most cocoa producing countries, cocoa extension agents seem to be inadequate [6]. Those continuous changes have challenged extension organizations to learn how to manage their contact farmers in the context of these continuous unpredictable technologies successfully through highly competent and skilled extension staff. [13] Identified training needs of cocoa farmers to include; nursery establishment, plantation establishment, agrochemicals, pruning, fertilizer application, storage and processing.

A number of problems militate against increased cocoa production. These problems range from planting low yielding varieties, poor maintenance practices, to pest and diseases such as black pod, capsid attack, die back, ageing of the farming population, lack of profitability of the farming in the case of the farmers, availability of land, marketing problems, training and legislation among others. In most cocoa producing countries, cocoa extension agents seem to be inadequate [2]. Nigerian government recognized the importance of cocoa as a cash crop, hence, these governments through policy statements, institutional arrangements, among others continuously intervened in the production and marketing of cocoa. In a bid to revamp the cocoa subsector in Nigeria and disseminate improved cocoa technologies to farmers, the Federal Government of Nigeria established the National Cocoa Development Committee (NCDC). The Cocoa Research Institution of Nigeria (CRIN) is another stakeholder's in the sector; established in 1964. As a Government agency, the institution conducts research on cocoa, distributes seedlings to farmers and trains growers in modern agricultural practice as well as in business development skills [5].

In view of the above facts, this study seeks to assess the training needs of cocoa farmers in Bende Local Government Area of Abia State,

Nigeria.

The specific objectives were to: describe the socio-economic characteristics of cocoa farmers in the study area; sources of agricultural information utilized by cocoa farmers in the study area; and ascertain the training needs of cocoa farmers in the study area.

### **Hypothesis**

Ho: Socio-economic characteristics of cocoa farmers do not influence their training needs.

## **MATERIALS AND METHODS**

### **Study Area**

This study was conducted in Bende Local Government Area of Abia State, Nigeria. Bende Local Government Area has a land area of 679 km<sup>2</sup> and a population of 192,111 inhabitants [12]. Bende Local Government Area is in Abia North Senatorial Zone of Abia state. It is bounded in the North by Ivo Local Government Area of Ebonyi State and Afikpo South Local Government Area of Ebonyi State, North-west by Isukwuato Local Government Area of Abia State, East by Ohafia Local Government Area of Abia state, South-West by Umuahia North Local Government of Abia State, and South by Ikwuano Local Government Area of Abia State and Akwa Ibom State. The Local Government Area falls within the forest belt region of Nigeria, while the temperature range is between 27° and 36° Celsius. It lies between latitude 5° and 15° East of the equator and longitude 7° and 27° North of the Greenwich meridian. It is located within the rain forest zone of the state and has plain but undulating topography. Bende Local Government Area has 12 major communities; Bende, Ozuitem, Itumbauzo, Umuhu-Ezechi, Uzuakoli, Nkpa, Ugwueke, Ntalakwu, Alayi, Igbere, Item, and Umuiemenyi. The soil is slightly fertile and slightly acidic. The major food crops grown are cassava, rice, yam, vegetables, and maize among others. The tree crops grown are mainly cocoa, rubber and oil palm.

Purposive and multi stage random sampling techniques were used in the study. Five (5)

communities namely Ntalakwu, Itumbauzo, Bende, Umuhu-Ezechi and Uzuakoli out of the 12 communities were purposively selected because they are the major cocoa producing communities of the Local Government Area. Also, from the selected five communities, three (3) villages each were randomly selected to give a total of fifteen (15) villages. Finally, six (6) cocoa farmers each were randomly selected from the selected villages to give a total of 90 cocoa farmers (respondents). Primary data were collected with the use of structured questionnaire which was used to obtain information from cocoa farmers (respondents) on the issues that bother on the set objectives of the study.

Data from the study were analyzed using frequency distribution, percentages and mean scores. In ascertaining the training needs of cocoa farmers, a 3-point Likert type scale of highly needed = 3, fairly needed = 2 and not needed = 1 was used. A mid-point was obtained, thus:  $3 + 2 + 1 = 6/3 = 2.0$ . Based on the obtained mean score decision rule, any mean score of 2.0 and above implied needed training and below 2.0 is not needed. Multiple regression analysis was used to test the hypothesis to determine socio-economic factors influencing training needs of cocoa farmers in the study area.

### Model Specification

The four functional forms of regression model like: linear, semi-log, and exponential and Cobb-Douglas were tried. The best fit was chosen as the lead equation based on its conformity with econometric and statistical criteria such as the magnitude of  $R^2$ , F-ratio and number of significant variables. The four functional forms are expressed as follows:

#### Linear Function

$$Y = b_0 + b_1x_1 + b_2x_2 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7 + b_8x_8 + b_9x_9 + b_{10}x_{10} + b_{11}x_{11} + e_i$$

#### Exponential Function

$$\ln Y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7 + b_8x_8 + b_9x_9 + b_{10}x_{10} + b_{11}x_{11} + e_i$$

#### Cobb Douglas Function

$$\ln Y = \ln b_0 + b_1 \ln x_1 + b_3 \ln x_3 + b_4 \ln x_4 + b_5 \ln x_5 + b_6 \ln x_6 + b_7 \ln x_7 + b_8 \ln x_8 + b_9 \ln x_9 + b_{10} \ln x_{10} + b_{11} \ln x_{11} + e_i$$

#### Semi- Log Function

$$Y = \ln b_0 + b_1 \ln x_1 + b_3 \ln x_3 + b_4 \ln x_4 + b_5 \ln x_5 + b_6 \ln x_6 + b_7 \ln x_7 + b_8 \ln x_8 + b_9 \ln x_9 + b_{10} \ln x_{10} + b_{11} \ln x_{11} + e_i$$

Y = Mean counts of training needed by cocoa farmers

X<sub>1</sub> = Gender (Male = 1, Female = 0)

X<sub>2</sub> = marital Status (married = 1. Otherwise = 0)

X<sub>3</sub> = Primary occupation (farming = 1, otherwise = 0)

X<sub>4</sub> = Land Ownership (Inheritance = 1, otherwise = 0)

X<sub>5</sub> = Age (years)

X<sub>6</sub> = Education (years)

X<sub>7</sub> = Household size (number)

X<sub>8</sub> = Farming experience (Years)

X<sub>9</sub> = Farm size (Hectares)

X<sub>10</sub> = Farm income (Naira)

X<sub>11</sub> = Extension contact (number of visit)

e<sub>i</sub> = Error term

## RESULTS AND DISCUSSIONS

The results in Table 1 show that majority (95.56%) of cocoa farmers were males. The results indicate that cocoa farming in the study area is gender sensitive. Cocoa farming required tedious operations which require men to perform most of its agronomic practices such as bush clearing, chemical application, pruning and harvesting of pods. Majority (90%) were married with mean ages of 55.5 years. This indicates that cocoa farming is practiced by farmers who were not in their active ages. The ability of a farmer to bear risk and adopt improved technologies decreases with age. [16] noted that aged farmers were not energetic in farm practices. However, 50% of the respondents, representing half of the respondents had primary education, had mean household size of 8.5 persons, mean farm experience of 23.5 years and a mean farm size of 8 hectares. The large household size has some implications on the amount of labour available for cocoa farming activities, since it requires more labour to sustain its rigorous operations. The size of land available to farmers is a strong determinant in output of a crop. A farmer acquiring large farm sizes requires appropriate

training needs in areas of production to maximize profits. Furthermore, the farmers had mean annual farm income of ₦1.3 M (10,000 USD), while majority (72.22%) of the cocoa farmers inherited their farm land and 52.22% of them claimed they were visited by extension agent once a month. The frequency of visit to cocoa farmers may be attributed to the presence of farmer field school in the area which played a complementary role in extension delivery. [14] identified infrequency visit of extension workers to cocoa farmers as a major constraints to cocoa farmers in Abia State, Nigeria.

Table 1. Socio-economic Characteristics of Cocoa Farmers in the Study Area (N =90)

Variables	Indices
<b>Gender</b>	
Males	95.56%
<b>Marital status</b>	
Married	90.0%
<b>Age</b>	55.5 years
<b>Education</b>	
Primary Education	50%
<b>Household Size</b>	8.5 persons
<b>Farming experience</b>	23.5 years
<b>Farm size</b>	8 hectares
<b>Farm income</b>	₦1.3 M (10,000 USD)
<b>Land Ownership</b>	
Inherited	72.22%
<b>Extension Contact</b>	
Monthly	52.22%

Source: Field Survey, 2014

IUSD = 130 NGN as @ the period the research was conducted

### Sources of Agricultural Information

The result in Table 2 shows the sources of agricultural information used by the respondents. The respondents indicated that majority (96.7%) sourced information on cocoa production from farm field school, 74.4% claimed the sourced from research institutes. The result is not surprising because Bende Local Government Area is one of the beneficiaries LGA of the farmer field school. Also the sub-station Cocoa Research Institute of Nigeria (CRIN) is located in the Local Government Area which facilitates the discrimination of improved agricultural technologies in the study area. [7] opined that sources of information to cocoa farmers on improved production technologies have

proved to enhancing their production.

Table 2. Sources of Agricultural Information among Cocoa Farmers in the Study Area

Sources	Frequency	Percentage*
Research institutes	77	74.4
ADP/Ministry of Agriculture	45	50.0
Agricultural workshops	36	40.0
Attending field days	28	31.1
Radio Programmes	26	28.9
Television Programmes	1	1.1
Other cocoa farmers	31	34.4
Farmer field school	89	96.7
Personal Observations	31	34.4
Printed materials	11	12.2

Source: Field Survey, 2014

\*Multiple Responses Recorded

### Training Needs of Cocoa Farmers

The distribution of cocoa farmers according to their training needs is shown in Table 3. The result indicates that cocoa farmers needed trainings on all areas except for HIV/AIDS.

Table 3. Training Needs of Cocoa Framers in the Study Area

Trainings Needed	Mean
Nursery establishment techniques	2.4
Plantation establishment	2.9
Training in Agrochemical application	2.7
Pruning techniques	2.7
Fertilizer application	2.5
Cocoa bean storage/fermentation	2.7
Cocoa bean processing	2.7
Cocoa bean marketing	2.6
Control of black pod disease	2.9
Controlling of swollen-shoot virus	2.8
Mirad control	2.8
HIV/AIDS	1.3

Source: Field Survey, 2014

Values in parenthesis are nominal likert values multiplied by frequencies. Decision rule of 2.0 and above is training needed, below 2.0 is training not needed.

Plantation establishment and control of black pod disease ( $\bar{x}$ =2.9), control of blank pod

disease ( $\bar{x}=2.8$ ), controlling of swollen-shoot virus mirad control ( $\bar{x}=2.8$ ), punning techniques, cocoa bean storage and processing ( $\bar{x}=2.7$ ). Also, the farmers indicated that they needed training in cocoa bean marketing ( $\bar{x}=2.6$ ), fertilizer application ( $\bar{x}=2.5$ ) and nursery establishment techniques ( $\bar{x}=2.4$ ). Efficient management of cocoa farms especially disease control in black pod had shown to have produced healthy cocoa pods, which in turn leads to good quality of processed cocoa beans and high market value [17]. [19] assert that when farmers are given appropriate and required training on their farm business, it helps them acquire information and develop abilities and attitudes which will result in

greater competence in the performance of their work.

### Determinants of Training Needs among Cocoa Farmers

The results in Table 4 show the regression estimates of the determinants of training needs among cocoa farmers in the study area. The linear functional form was the lead equation because of a high  $R^2$  value, number of significant factors and agreement with a *prior expectation*. The  $R^2$  value of 0.6032% variability in training needs was explained by the independent factors. The F value of 2.63 was significant at 5% level indicating goodness of fit of the regression line.

Table 4. Multiple Regression Estimates of Determinants of Training Needs among Cocoa Farmers in Bende LGA, Abia State, Nigeria

Variables	Linear +	Exponential	Cobb Douglas	Semi log
Constant	33.1613 (15.24***)	3.5304 (47.07***)	3.5872 (13.50***)	35.0044 (4.45***)
Gender	0.3546 (0.29)	0.01167 (0.26)	0.0244 (0.56)	0.7334 (0.56)
Marital status	-0.4511 (-0.58)	-0.0156 (-0.60)	-0.0187 (-0.62)	-0.5273 (-0.59)
Occupation	-0.1966 (-0.86)	-0.0063 (-0.82)	-0.0071 (-0.90)	-0.2169 (-0.92)
Land ownership	-1.3335 (-2.76**)	-0.0445 (-2.74**)	-0.0461 (-2.70**)	-1.3753 (-2.71**)
Age	0.343 (3.20**)	-0.0011 (-1.10)	-0.039 (-0.77)	-1.1213 (-0.75)
Education	0.0300 (0.29)	-0.0007 (-0.29)	-0.0157 (-1.30)	-0.4588 (-1.28)
Household Size	0.0539 (0.43)	0.00206 (0.49)	0.0042 (0.18)	0.0646 (0.09)
Farming Experience	0.04525 (2.57**)	0.0014 (1.50)	0.0189 (0.80)	0.5945 (0.85)
Farm size	0.0048 (0.06)	0.00032 (0.12)	-0.029 (-0.72)	-0.6880 (-0.80)
Farm Income	0.0059 (2.42**)	0.0018 (2.14*)	0.0049 (0.29)	0.1857 (0.37)
Extension Contact	0.347 (2.8***)	0.0118 (2.00**)	0.0288 (1.67*)	0.8896 (1.68*)
$R^2$	0.6032	0.4030	0.3040	0.2783
R Adjusted	0.4909	0.3906	0.1443	0.1484
F- value	2.63**	1.81*	1.20	1.29

Source: STATA 84 RESULTS

\*, \*\* and \*\*\* significant at 10%, 5% and 1% levels of probability respectively  
 Figures in parenthesis and t value, + = lead equation.

The coefficient for age was positive and significant at 5% level of probability. This implies that any increase in age will lead to a corresponding increase in training needs. This is expected because as cocoa farmers get older

more training is required in the areas of need identified so as to keep space with new innovations in cocoa production. This result is in conformity with the findings of [15] where he found age influencing cassava processors'

training needs in Oyo state, Nigeria. The coefficient of farming experience was positive and significant at 5% level of probability. This implies that any increase in farming experience will lead to a corresponding increase in training needs. This also is expected because with more experience, farmers tend to adopt new ideas and technologies that will increase their performance and crop productivity. This result is in agreement with the findings of [9] as they affirmed that farming experience is a determinant of training needs of livestock women farmers in Oyo state, Nigeria.

The coefficient for farm income was positively signed and significant at 5% level. This implies that any increase in income will lead to increase in training needs. These result implied wealthier cocoa farmers are exposed to training than a poor ones, whereby they can afford to sponsor themselves for workshops and conferences and cocoa production. The coefficient for extension contact was also positively signed and highly significant at 1% level. This implies that any increase in extension contact will lead to increase in training needs among the farmers in the study area. This is expected and in accordance with *a priori expectation*. Extension as a veritable tool in technology dissemination enhances farmers' knowledge and ability to acquire more skills. This result is in consistence with [3] as they found that information from extension increased clustered fish farmers training needs in Delta state, Nigeria. The result of the hypothesis which states that the socio-economic characteristics of cocoa farmers do not influence their training needs is hereby rejected.

## CONCLUSIONS

The result also revealed that the farmers sourced agricultural information on cocoa technology from farmer field school, research institutes. The results of this study show that cocoa farmers need training in the area of plantation establishment, controlling of black pod disease, controlling of swollen shoot virus, cocoa bean processing, pruning

techniques, agrochemical application, cocoa bean storage/information, cocoa bean marketing, fertilizer application, nursery establishment and mirad control. It also revealed that land ownership, age, farming experience, farm income and extension contact were factors that influence training needs of the farmers.

Based on the research findings the following recommendations were made:

- (i) Government should review the Land Use Act of 1990 to enable landless farmers have access to land for increased cocoa production.
- (ii) Extension of packages for cocoa production to farmers should be intensified by extension agents. This will facilitate adoption of these technologies among farmers.
- (iii) Provision of rural infrastructural facilities such as good roads will ease in evacuating bags of dried cocoa bean processed by farmers to the urban areas for high value of the product. In addition, youths will be encouraged to reside in the rural areas which will help provide cheap labour needed in cocoa production and in turn reduce cost.
- (iv) Since pest/disease infestation is a major problem identified by cocoa farmers, training and re-training of farmers in pesticide and fungicide usage and application should be intensified.

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