

## Socio economic Determinants to Okra Production among Women Farmers in Ivo Local Government Area of Ebonyi State, Nigeria.

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### **Abstract**

*Socioeconomic determinants to okra production among women farmers in Ivo Local Government Area of Ebonyi State, Nigeria were studied. The objectives of the study are to (1) describe the socioeconomic characteristics of farmers. (ii) determine the effect of the farmers' socioeconomic characteristics on their output and (iii) estimate the costs and return of okra production (iv) Identify the constraints to okra production by the women in the study area. 120 respondents were selected using multistage randomly sampling. The information from the respondents was collected using a structural questionnaire and oral interview. The objectives of the study were analyzed using percentage responses, multiple regression and net farm income. The results of the farmers' socioeconomic characteristics showed that most of the okra farmers were young, educated, had fairly large house hold size, membership of organization and engaged in off farm income. Furthermore, members of organization, off farm income and extension services were the farmers' socioeconomic factors that affected their outputs. More so, Okra is profitable in the study area with Net farm income of ₦265,356, gross margin of ₦266,356 and benefit cost ratio of 0.74. The results of constraints to okra production by the women were poor access to credit, land, high cost of hired labour, poor access to improved okra breeds and high cost of inorganic fertilizer. Based on the findings, policies that would enhance farmers' access to fertilizer, credit, extension services and land in order to help them increase their outputs. Furthermore, farmers should be encouraged to engage in off farm income in order to have multiple streams of income. In addition, farmers should be persuaded to form farming organizations in order to have easy access to credit at affordable interest rate.*

**Keyword:** Socioeconomic, Okra, Production, women, Farmers.

### **Introduction**

Agriculture is 'live wire' of most countries in sub Saharan Africa and in South East Asia as it is source of livelihood for over 80 per cent of their populations (FAO, 2003). In these regions, the role of women in agricultural development are well recognised (Onyenweaku, *et al*, 2010, Ume, *et al*; 2016). Here women act as farmers, helpers to their husband or labourers in order to boost the regions' food security (World Bank, 2006). Indeed, women are visible in eventually all categories of agricultural production as they contribute about 70% of agricultural labour force and between 60 -70% of domestic economy (Daramola, 2007). Despite, these roles play by women in agricultural production, yet their efforts are derided by male folk and government as they are never accorded the necessary recognition they deserve (Evensteil, (2009).

In Nigeria, okra production is female stereotyped and feature prominently in mixed cropping systems and home gardens as secondary crops by the farmers (Chukwu, 2013). However, okra is of the genus; *Abelmoschus*, family; *Malvaceae* and originated probably from West Africa but today is widely distributed in the tropics, subtropics, and warmer portions of the temperate region (Daramola, 2007). Okra is use for human consumption as well employment opportunities to especially women who form a substantial producer and as well source of income (Kemble, *et al*; 1995)

Enormous studies in production of okra in Nigeria deduced that the yield of this crop has been dwindling in recent year as less than 1.8 tones per hectare are common achieved by the farmers (Adeshina and Zinnah, 1993). Nevertheless, various factors have been suggested as being responsible for the relatively low yield. For instance, Akorda, (1990) reported poor cultural practices and inefficient farm management, unavailability of improved okra varieties and pests and diseases. Other factors commonly suggested include inadequate fertilizer application, drought, late planting and poor weed control practices (kemble, *et al*; 1995; Sermon, *et al*. 2006). However, fewer studies have been conducted in the study area as relates to the effect of the farmers' socioeconomic on their output. Therefore, there is need to assess the farmers' socioeconomic characteristics as it affects their productivity in terms of profit accruing from the enterprise in the study area. This could help in formulation and implementation of policies that would enhance the food security status of the women through improvement of their production and productivity. Specifically, the objectives were to

(1) describe the socioeconomic characteristics of farmers.

- (ii) determine the effect of the farmers’ socioeconomic characteristics on their output and
- (iii) estimate the costs and return of okra production in the study area
- (iv) Identify the constraints to okro production by the women

**Theoretical framework of multiple regression**

The multiple regression studies involve the nature of the relationship between a dependent variable and two or more explanatory variables. The techniques produce estimators of the standard error of multiple regressions and coefficient of multiple determinations. In implicit form, the statement that a particular variable of interest ( $y_i$ ) is associated with a set of the other variables ( $x_i$ ) is given as:

$$y_i = f(x_1, x_2, \dots, x_k) \dots \dots \dots (1)$$

where  $y$  is the dependent variable, and  $x_1.. x_k$  is a set of  $k$  explanatory variables.

The coefficient of multiple determination measures the relative amount of variation in the dependent variable ( $y_i$ ) explained by the regression relationship between  $y$  and the explanatory variables ( $x_i$ ). the F-statistics tests the significance of the coefficients of the explanatory variables as a group. It tests the null hypothesis of no evidence of significant statistical regression relationship between  $y_i$  and the  $x_i$ s against the alternative hypothesis of evidence of significant statistical relationship. The critical F-value has  $n$  and  $n-k-1$  degrees of freedom, where  $n$  is the number of respondents and  $k$  is the number of explanatory variables.

The standard error of regression coefficients is the measure error about the regression coefficients. The z-statistics is used in testing the null hypothesis that the parameter estimates are statistically equal to zero against the alternative hypothesis the parameter estimates the statistically different from zero. If the computed z-value exceeds the critical value, we reject the null hypothesis and conclude that the parameter estimates differ significantly from zero.

The nature of the relationship between an outcome variable ( $y_i$ ) and a set of explanatory variables ( $x_i$ ) can be modeled using different function forms. The four commonly used algebraic (functional) forms are: linear, log-linear or semi-log, linear-log, and power or double-log. The first functional form is the linear function expressed as:

$$y_i = b_0 + b_1x_1 + b_2 + \dots + B_kx_k + e_i \dots \dots \dots (2)$$

where the  $b_i$ s are the parameters to be estimated and  $e_i$  is the stochastic error term. The elasticity estimates of the linear function are given as  $b_i x_i / y_i$  where  $x_i$  and  $y_i$  are mean values of  $x_i$  and  $y_i$ . the second functional form is the log-linear or semi-log function expressed as:

$$y_i = \exp(b_0 + b_1x_1 + \dots + b_kx_k + e_i) \dots \dots \dots (3)$$

by taking the logarithm of both sides the function of expression (3) can be linearised as followings:

$$\ln y_i = b_0 + b_1x_1 + b_2x_2 + \dots + b_kx_k + e_i \dots \dots \dots (4)$$

Where  $e$  is the error term. The coefficient of elasticity given by  $b_k x_k$

The third form is the linear-log function expressed as:

$$\exp(y_i) = \exp(b_0 + e_i) [x_1^{b_1} x_2^{b_2} \dots x_k^{b_k}] \dots \dots \dots (5)$$

If linearized by taken the log of both sides, the above function will become:

$$Y_i = b_0 + b_1 \ln x_1 + b_2 \ln x_2 + \dots + b_k \ln x_k + e_i \dots \dots \dots (6)$$

The elasticity of the linear-log function is calculated as  $b_k / \bar{y}_i$ . The fourth functional form is the power or double-log function expressed as:

$$Y_i = b_0 x_1^{b_1} x_2^{b_2} \dots X_k^{b_k} \exp\{e_i\} \dots \dots \dots (7)$$

By taking the log of both sides the power function of expression (7) can be linearized as follows:

$$\ln y = b_0 + b_1 \ln x_1 + b_2 \ln x_2 + \dots + b_k \ln x_k + e_t \dots \dots \dots (8)$$

The elasticity coefficient of the power function is defined as the beta-values of the explanatory variables,  $b_{ks}$ .

### Women and Agricultural production

For decades, the role and importance of women in development of rural and national economies have remained issues of serious concern and debate. Historically, in traditional African society such as Nigeria, women, particularly rural ones are not only professed as inferior to men but are marginalized and deprived of equal chances as the men and women are treated as „lower gender“ or „weaker sex“. (World Bank, 2006). However, in recent time, literatures show that rural women in particular is champion in rural and agricultural developments. According United Nation, U N in every four of ten agricultural workers in the world are women (FAO, 2011). Women are in fact seen performing in all facets of agriculture, a times more efficient than the male folk. They take part actively in farming activities and in processing farm products, in addition to their domestic and reproductive responsibilities (Iheke, 2006). Studies show that women comprise 43% of the world’s agricultural labor force, which rises to 70% in some countries ( ). In many developing countries, women account for 70% of agricultural workers, 80% of food producers, 100% of those who process basic foodstuffs and they undertake from 60% to 90% of the marketing (FAO,2003). In Africa, 80% of the agricultural production comes from small farmers, who are mostly rural women ( FAO,2011). In the same, vein Onyenweaku, *et al*; (2010) estimated that women are responsible for 70% of actual farm work and constitute up to 60% of the farming population in Nigeria.

In Nigeria and many part of Africa, the extent of gender participation in agricultural production varies across ethnic groups . Nigerian women farmers work together with their male counterpart with some clear peculiarity in activities between them. In most cases, the men execute the tedious tasks such as land clearing and felling of trees, gathering and burning of bush, and making ridges, while the women engage in weeding fertilizer application and other light activities in the farm ( FAO, 2012)

Despite, the contributions of women in agriculture, they are always in the state of neglect, as they are hardly considered equal to man in wage, social status and in decisions making process as relates to agriculture in which they are the major ‘driver’ , do not have access and control over all land and productive resources.(Nwaru and Ekumankam, 2002).

### Challenges facing women in agricultural development

These problems include;

**Access to financing:** The administrative process, unsuitable loan sizes and credit rates affect women access to credit. According to the National Bureau of Statistics, in 2007, some 20,098 men accessed loans compared to 8,550 women (Ume, *et al*.2016)

**Access to information and training:**Lack of awareness, society barriers, and transportation facilities women participation in training affected . Cultural norms restrict women from accessing information Communication Technology (ICT) (Nwaru and Ekumankama, 2002).

**Access to inputs :** High costs of improved inputs in open markets has been a hindrance to women farmers use in boosting their productivity. At extreme situation, the women farmers plant local varieties whose reward in terms of yield are very meager (Iheke, 2006)

**Access to land:** In many traditional African societies, women do not have right of land ownership but can procure land for farming through gift, purchase, lease or from the husband if the woman is married. This situation is capable of affecting women in enhancing their productivity and reduces the odds for access to finance due to the need for collateral (Udo, 2005).

**High Cost of Labour;** Most women farmers do not have access to hired labour because of high cost. This farming group because of high cost of hired labour, hence resort to use of child labour to accomplish their farming activities ( Ume, *et al* ; 2016 )

### Some Gender Development Programmes in Nigeria.

However, in realization of the important roles women play in agriculture development, many governments and non – government organization in developing countries have started formulating programmes aimed at enhancing their welfares and give them sense of pride in agricultural development industry (Enahoro, and ikpefan, 2005; World Bank, 2006) In Nigeria, such gender biased programmes are better life for rural women, Women-In-Agriculture programme, Community-based Agriculture and Rural Development (CBARDP) and to mention but few(Mbanasor and Obiora,

2003,Ume,*etal*;2007)

### **Women In Agriculture (WIA)**

The formation of WIA farmers' groups facilitates the dissemination of agricultural innovations and provides women farmers with better access to farm inputs and credit than they would have as individuals. The integration of women in extension is essential for the achievement of some goals such as increased food production, food self-sufficiency and sustained reduction of poverty and malnutrition (Iheke, 2006). However the WIA programme places much emphasis on off-farm activities of the women and transfer of the following home economic technology as:

- Cassava processing and utilization- pancake, flour and odorless fufu
- Processing and storage of maize gari, cassava flour, tapioca, maize flour, malted maize drink, corn meal, pap (wet and malted maize flour).
- Processing and utilization of soybean into soymilk, flour paste and soy meal
- Processing and storage of fresh tomatoes into tomato paste.
- Rabbit meat processing and utilization
- Processing and storage of melon
- Cocoyam processing and utilization into cocoyam flour for soup thickening and cocoyam chips
- Dry season vegetable gardening
- Harvesting and storage of paddy rice. (Udo, 2005).

### **Community-based Agriculture and Rural Development (CBARDP)**

CBARDP was formed in 2003 with the goal of improving the living conditions of the ru-ral women through enhancing their farming practices, employments and small scale entrepreneurs.. The program is jointly sponsored by the International Fund for Agricultural Development (IFAD) and the Federal Government of Nigeria (Ewetan; 2005).

### **The Better Life for Rural Women**

It was formed in 1986. The programme was aimed at raising the standard of living of rural women.

- To raise the social consciousness of women about their right and roles, as well as their social, political and economic responsibilities.
- To sensitize, motivate and mobilize women for a more positive and fulfilling life
- To encourage women to work together for better understanding and the resolution of their problems.
- To give basic education and train women in various skills and techniques to enable them to understand and participate more effectively in programs and activities in their communities.
- To encourage, solicit, and strongly support, programs and public policies and government action on matters of gender equity and equality, women empowerment, political participation in governance – local, state, and national – , human rights and health issues.
- To seek, encourage, and support, credible and qualified women civil society organization for avid participation in the design, implementation and monitoring/evaluation of macro-economic reforms and politics and development administration (Aku, *et al* 1997, Egwuatu, 2002).

### **Cost and Returns**

**Cost:** Agricultural production decisions cannot hold without cost considerations.

Cost refers to the value of inputs used in production and the cost of producing commodity such as okra refers to the expenses incurred in producing a particular quantity of the commodity in a given period of time. Ume, *et al* (2016) reported that cost as the change in equity caused by the performances of some special operations. Cost concepts are of great importance as they enable the farmer to make choices among present alternative actions. Types of costs include;

**a) Variable cost:** This refers to operating cost and they vary in direct proportion to the level of activity and include costs of land clearing, cultivation, seed, fertilizer and weeding (Onyenweaku, *et al*; 2010).

**b) Fixed cost:** They are the expenses that cannot be changed or altered in the short run. Fixed cost items include implement action such as machetes, wheel barrow and among others. Developing countries do not necessarily incur explicit fixed cost. It is expected that farmer net return will equate the gross margin. If increase in gross margin can be

achieved with existing supply of fixed resources (often the case in rural agricultural production, profit will be raised by the same amount as the gross margin. Hence, the gross margin represents profit and net farm income of the enterprise under this condition (Mbanasor and Obiora, 2003).

**c) Total cost:** This is derived from the summation of variable costs and fixed costs. Total cost of production is an important parameter in estimating the net profit associated with a given enterprise.

**Returns:** This is the revenue, income that is received from the sale of farm output The net profit therefore, is given by total revenue less total cost (Iheke, 2006).

**Materials and Methods**

Ivo Local Government Area of Ebonyi State, Nigeria was studied. It is located between latitude 5°56" and 6°59'N of equator and longitude 7°35' and 7°46'E of Greenwich meridian . Its rainfall ranges from 1500-2500mm, temperature of 28-45°C and moderate relative humidity of 75%. Ivo L.G.A comprises of seven autonomous communities and many villages. It covers an area of 150, 659km<sup>2</sup> with population of 220, 919 people (NPC, 2006). The Local Government Area people are mainly farmers and engage on other economic activities. Data utilized for this study were primarily sourced and were obtained from farmers using questionnaire. A total of 120 okra farmers were randomly selected from six communities. Baseline information on socio-economic characteristics input use and output levels were collected and analysed.

Percentage response was used to analyse objectives 1, while multiple regression was used to achieve objective 2.

The regression model is represented as thus;  $Y_a = x_1 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + \dots + b_nx_n \dots \dots \dots (1)$

Y= output (kg), X<sub>1</sub>= age of the farmers (years) X<sub>2</sub>= Membership of Organization (Member= 1, Otherwise, 0), X<sub>3</sub>= house hold size(yrs), X<sub>4</sub>= level of formal educations (years), X<sub>5</sub>= Off farm income (Access =1, Otherwise, 0), X<sub>6</sub> = extension contact(Access = 1, otherwise, 0), ei= stochastic error, bi-b<sub>8</sub> =regression coefficient, a= constant.

. Four functional forms (linear, semi-log and Cobb-Douglas) of production function were tried and explicitly represented as

Linear function:  $Y = b_0 + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + ei \dots \dots \dots (2)$

Double log function (Cobb Douglas):  $\ln(y) = \ln b_0 + b_1 \ln x_1 + b_2 \ln x_2 + b_3 \ln x_3 + b_4 \ln x_4 + b_5 \ln x_5 + ei \dots \dots \dots (3)$

Semi double log function:  $Y = \ln b_0 + b_1 \ln x_1 + b_2 \ln x_2 + b_3 \ln x_3 + b_4 \ln x_4 + b_5 \ln x_5 + ei \dots \dots \dots (4)$

Exponential function:  $\ln Y = b_0 + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + ei \dots \dots \dots (5)$

The choice of the best functional form was based on the magnitude of the R<sup>2</sup> value, the high number of significance, size and signs of the regression coefficients as they conform to *apriori expectation*.

Objective 3 was captured using gross margin analysis. Gross margin=

G.M. = TR – TVC  $\dots \dots \dots (6)$

i.e.  $G.M = \sum_{i=1}^n P_i Q_i - \sum_{j=1}^m r_j x_j \dots \dots \dots (7)$

The Net farm income can be calculated by gross margin less fixed input. The net farm income can be expressed as thus:

$NFI = \sum_{i=1}^n P_i Q_i - \left[ \left( \sum_{j=1}^m r_j x_j \right) + k \right] \dots \dots \dots (8)$

Where: GM = Gross margin (₦), NFI = Net farm income (₦), P<sub>1</sub> = Market (unit) price of output (₦), Q = Quantity of output (kg), r<sub>i</sub> = Unit price of the variable input (kg), x<sub>i</sub> = quantity of the variable input (kg) , K = Annual fixed cost (depreciation) (₦), i = 1 2 3 ..... n, j = 1 2 3

**Results and Discussion**

Table 1 indicated that less than 38% of the respondents were below the age of 40 years, while 62% were above 40 years.

Table 1 ; Socio economics characteristics of the Respondents

| Characteristics                   | Frequency | Percentage |
|-----------------------------------|-----------|------------|
| <b>Age</b>                        |           |            |
| 20 – 29                           | 45        | 38         |
| 40 – 59                           | 31        | 43         |
| 60 – 79                           | 24        | 19         |
| <b>Household Size</b>             |           |            |
| 2 -3                              | 12        | 10         |
| 4 – 5                             | 66        | 55         |
| 6 – 7                             | 31        | 26         |
| 7 – 8                             | 11        | 9          |
| <b>Education</b>                  |           |            |
| Non Formal                        | 18        | 15         |
| Primary                           | 32        | 26.7       |
| Secondary                         | 50        | 41.7       |
| Tertiary                          | 2         | 16.7       |
| <b>Extension</b>                  |           |            |
| Access                            | 80        | 66.7       |
| No Access                         | 40        | 33.3       |
| <b>Membership of Organisation</b> |           |            |
| Member                            | 73        | 60         |
| Non Member                        | 27        | 40         |
| <b>Off farm income</b>            |           |            |
| Access                            | 85        | 58         |
| Non Access                        | 35        | 42         |

Source; Field Survey; 2017

This implies that most of the sampled farmers were youths and have the desired energy to overcome the physical strength and strain associated with farming (Sermon, et al, 2006; Ume, et al; 2007) Moreover, 65% of the respondents had household size less than 6, while 35% had above 6 persons. Larger household size serves as proxy to labour availability, especially among poor households in developing countries (Nwaru and Ekumankama, 2012). In addition, 15% of the respondents had no formal education and 85% had access to formal education. This implied that most of the respondents had formal educational which is although contrary to a *priori* acknowledge but could aid the respondents in having not much difficulty in understanding and adopting modern agricultural technologies/innovation for high production and productivity (Mbanasor and Obiora, 2003). Table 1 as well showed that 66.7% of the respondents had contact with extension agent, while only 33.3% had no contact. Extension services help to support and facilitate people engaged in agricultural production to solve problems and to obtain information, skills and technologies in order to improve their livelihoods and well-being (Ochiaka, et al.2015).

More so, 60% of the respondents were members of different organizations such as cooperatives, age grades and others, while 40% did not belong to any organization. Ume, et al (2016) reported that farmers that are members of organization are likely to enjoy the benefits such as training and acquisition of inputs such as fertilizer, improved seeds, and agrochemicals from government at subsidized prices. Table 1 reveals that 58% of the respondents engaged in off - farm income, while 42% did not. Ezeano, *et al* (2017) opined that an engagement in off - farm income by farmers helps them to offset their financial constraints in their farms for high production to ensue. The coefficient of age of the respondents was negative in line with a *priori* expectation that farmers' ability to do manual jobs decrease with advancing in age and significant at 5% alpha level as shown in Table 2.

**Table 2: Multiple Regression Results**

| Variable              | Linear               | Exponential           | Double – Log+          | Semi - Log              |
|-----------------------|----------------------|-----------------------|------------------------|-------------------------|
| Intercept             | 8.538<br>(9.413)***  | 10.171<br>(9.074)***  | 2398.975<br>(7.389)*** | -516.377<br>(-8.063)*** |
| Age                   | -2.062<br>(-2.507)** | -1.222<br>(-3.117)*** | -0.324<br>(-2.455)**   | 931.726<br>(0.801)**    |
| Membership of Organiz | 0.300<br>(0.830)     | 0.298<br>(1.919)      | 0.281<br>(1.464)***    | 273.979<br>(2.720)      |
| Household Size        | -342<br>(-0.867)     | -0.012<br>(-1.513)*   | -1.270<br>(0.882)      | -1416.897<br>(-1.061)   |
| Educational Level     | 0.620<br>(1.010)     | 0.039<br>(1.165)      | 0.498<br>(-3.712)***   | 2.018<br>(0.0511)       |
| Off – farm income     | 0.431<br>(1.631)*    | 1.245<br>(1.371)*     | 2.338<br>(2.006)**     | 2.018<br>(0.0511)       |
| Extension             | 1.135<br>(3.003)***  | 0.541<br>(1.306)*     | 2.009<br>(2.707)**     | 0.240<br>(3.421)***     |
| R <sup>2</sup>        | 0.5021               | 0.409                 | 0.784                  | 0.468                   |
| F – value             | (2.653)**            | 2.364)**              | (4.172)***             | (7.0.96)***             |

**Source: Field Survey, 2017**

\*, \*\* and \*\*\* significant at 10%, 5% and 1% respectively, figures in parentheses are the t-ratio

The sign identity of the variable could be linked to the fact that okra production is labour intensive and hence, age could be a barrier to its production (Egwu, et al; 2010). Moreover, against expectation, the coefficient of education had indirect relationship with okra production at 99% confidence interval. The reason could be because most highly educated persons devote much of their time on salaried employment instead of farming as a vocation. This finding do not concur with Iheke, (2006) and Ume, et al (2016) who opined that education attainment makes person to be receptive to innovations, risk averse and prudent in resources management which in turn improves their efficiency through higher technical and allocative efficiencies for high productivity to ensure. Therefore, policy options aimed at enhancing educational attainment of the farmers through enhanced formal and informal educational programmes for high okra production to be achieved.

In addition, the coefficient of membership of organization was positive and significant at 1% alpha level. Several authors ( Ume, et al; 2006; Onyenweaku, et al.;2010) found positive relationship between membership of organization and farmers' production and productivity. This could be because participating in such social organization can yield a number of benefits to members, including increased access to public goods and perhaps credit, information sharing, and increased solidarity and strengthened reciprocal relationships (Egwu, et al 2010). Nevertheless, (Ochiaka, et al 2015) finding do not agree with the above assertion. They were of the view that organizations activities may consume most of the member farmers' time that little of it (time) may be allocated to their farming activities, which is to the detriment of their farm outputs. likewise, the coefficient of off farm income was positive to farmers' production and significant at 10% risk level. off-farm income may enable household members to better smooth consumption through their impact on income variability and such activities may increase on-farm productivity and total incomes.

As well, the coefficient of extension services was positively related to farmers' production and significant at 5% probability level. The works of (Evensteil, 2009; Ezeano, et al. 2017) made similar assertions. Extension services help in teaching rural people on how to improve their standard of living by their own efforts through making wise use of natural resources at their disposal with better systems of farming and home making. However, Ume, et al (2007) found negative relationship between extension services and farmers' Output. They cited insufficient transfer of technologies to the farmers as well as bottleneck that militate against enhancing the adoption of technology as the critical reasons for the behaviour of the variable.

The cost elements in okra production as indicated in Table 3 were okra seeds, fertilizer, basket and tools.

Table 3: Costs and Return of Okra Production

| Item                         | Unit    | Quantity | Cost/ Unit | Total Return   | Percentage |
|------------------------------|---------|----------|------------|----------------|------------|
| Revenue                      | Kg      | 6000     | 120        | 720,000        |            |
| <b>Variable cost</b>         |         |          |            |                |            |
| Planting material kg         | Kg      | 50       | 150        | 7,500          | 1.65%      |
| Fertilizer input kg          | Kg      | 200      | 6200       | 248,000        | 54.5%      |
| Miscellaneous kg             | Kg      |          |            | 40,000         | 8.80%      |
| <b>Total physical output</b> |         |          |            | <b>295,500</b> |            |
| <b>Labour cost</b>           |         |          |            |                |            |
| Clearing                     | man-day | 40 hrs   | 1500       | 7,500          | 1.65%      |
| Land preparation             | man-day | 96 hrs   | 2200       | 26,400         | 5.81%      |
| Planting                     | man-day | 32 hrs   | 900        | 3,600          | 0.79%      |
| Weeding                      | man-day | 80 hrs   | 1500       | 15,000         | 3.30%      |
| Fertilizer                   | man-day | 48 hrs   | 1000       | 6,000          | 1.32%      |
| Harvesting                   | man-day | 32 hrs   | 800        | 3,200          | 0.70%      |
| <b>Total</b>                 |         |          |            | <b>357,200</b> |            |

$$BLR = \text{N}96444$$

$$TVC = (TC + BLR) = \text{N}453,644$$

$$GM = (TR - TVC) = \text{N}266,356$$

$$\text{Total fixed cost} = \text{Depreciation on (hoe, cutlass, rake and basket)} = \text{N}1,000$$

$$\text{Total cost} = (TVC + \text{Depreciation}) = \text{N}454,644$$

$$\text{Net farm income} = (TR - TC) = \text{N}265356$$

$$BCR = \left( \frac{NFI}{TC} \right) = 0.74$$

Source; Field Survey, 2017

Land was not valued because most lands are either inherited or communally owned of which no rent is paid. The common tools used by farmers are hoe, cutlass, rake and basket; and their depreciation values encountered were ₦380; ₦300, ₦200 and 120 respectively. An average 10kg of okra seeds were used in the production of a hectare of okra. Therefore expenditure on okra seeds per planting was ₦7500 which accounted for 1.65%, of total cost of production. This means that the cost of purchasing okra seeds in the study area is relatively cheap. This could be as a result of availability of seed particularly local varieties. Also, 4 bags (200kg) of NPK fertilizer costing ₦24,800 at ₦6,200 each, constituting about 54-



55% of the total cost of production. Hoarding and diversion of the resources to other state could be the reasons for the scarcity and high cost of fertilizer (FAO, 2003).

A total of 328 man hours equivalent was used to produce one hectare of okra. Land preparation had the highest percentage of 5.81% followed by weeding 3.30%, clearing 1.65%, fertilizer 1.32%, planting 0.79% and harvesting was the least, 0.70% respectively. Wage rate varied with the nature of farm operation. Clearing attracted ₦1500, land preparation ₦2200, planting ₦900, weeding ₦1500 while fertilizer application and harvesting was ₦1000 and ₦800 respectively. Therefore, the total cost of labour was ₦357,200, which was about 13.57% of total cost of production. This result concurs with (Mbanasor and Obiora, 2003), who reported that labour constituted about two-third of total cost of production

A total of 6000g of okra was harvested per hectare and this yielded a market value of ₦720,000. Taking away the total cost from the total revenue generated, therefore the gross margin of okra production was ₦266,356. The net farm income was ₦265,356, implying that the enterprise is profitable, when compared to total costs. The return per investment was ₦1.6 which means that in every ₦1 invested in okra production, ₦1.6k would be realized.

The Table 5 showed that land problem (83.33%) was the major constraint to okra farmers in the study area.

**Table V: Distribution of Farmer According to Constraints to Okro Production**

| Variable                   | Respondent | Percentage |
|----------------------------|------------|------------|
| Land problem               | 100        | 83.3       |
| High cost of Labour        | 98         | 81.67      |
| Poor soil fertility        | 90         | 75         |
| Pests and Disease attack   | 70         | 58.33      |
| Poor access to credit      | 110        | 91.67      |
| Poor storage facilities    | 78         | 65         |
| Fertilizer                 | 85         | 70.83      |
| Lack of extension services | 28         | 23.33      |

Source, Field Survey; 2017.

\*Multiple Responses.

The problems of land tenure system is that most farming lands are fragmented hence making farm mechanization and modernization very difficult, consequently meagre output will result ( ).The problem of high cost of labour was reported by 81.67% of sampled farmers. The recent economic recession in the country and urban drift by youths could be reasons for high cost and unavailability of labour ((Daramola, 2005; Ume, *et al*; 2016, ).

In addition, poor soil fertility, (75%) was reported as a problem to okra production by the women. Poor soil fertility is caused in the study area by continuous cropping in the same piece of land because of scarcity of land. In addition, most of farmers are so poor to procure soil amendment such as inorganic and organic manure to improve their soil fertility, hence reaping misery harvests from their hard working (Ezeano, *et al*; 2016). This finding did not concur with Chukwu, (2013), who reported poor soil fertility as complained the farmers could be as result of soil erosion and poor farming practices by the farmers.Poor access to credit (91.67%) complained as constraints to okra production in the study area. This finding agrees with Ume *et al* (2011), who posited that repayment modalities, administrative bottleneck involved in loan procurement and collaterals often demanded by lending agencies could affect loan assessment by the famers.Furthermore, poor storage facilities was encountered by 65% of the respondents. Consequently, farmers dispose their produce at give away price immediately after harvest at farm gate to avoid possible spoilage (Egwu; *et al* 2010).

Additionally, 58.33% of the sampled farmers complained about pest and diseases. This could result to substantial yield losses as most of the farmers cannot buy pesticide to control the diseases but leave their fate to chance (Chukwu, 2014). As well,70.83% of the farmers encountered problem of scarcity and high cost of inorganic fertilizer. The Federal Government Fertilizer Subsidy programme that was established to ensure farmers’ access to fertilizer at affordable costs at farm level, have been hijacked by some privileged politicians. They procure the fertilizer at government prices and sell them in black market beyond the reach of ordinary farmer can buy (Ume, *et al*; 2016).

**Conclusion and Recommendation.**

The major conclusions drawn from the study are that the majority of the sampled farmers were young, educated, had fairly large household size, membership of organization and engaged in off-farm income activities. Furthermore, memberships of organization, off farm income and extension services were the major socioeconomic factors that affected farmers’ output in the study area. In addition, okra production was profitable in the study area with net farm income of ₦265, 356

and return per investment of ₦1.6. The constraints to okra production by women were high cost of labour, high cost and unavailability of fertilizer, poor access to land, pests and disease, poor storage facilities and poor soil fertility.

Based on the findings, the following recommendations are proffered;

(1) Farmers should be encouraged to diversify some of their resources outside agriculture to reduce risks and uncertainties associated with agriculture as well as to have multiple streams of income.

(2) Farmers should form cooperatives to enable them have access to government farm inputs supplies at affordable prices.

(3) There is need for government to reduce the ration of farmers to extension agents by employing more graduates. Furthermore, extension agents should be motivated in order to improve their effectiveness through adequate motivation, in form of payment of incentives.

(4) There is need to expose farmers to labour saving devices such as hand driven plough to curtail minimally cost of labour in production.

(5) Ensure credit access to farmers through micro credit institutions and other financial institutions in order to boost their outputs.

(6) The need for government through their agencies to enforce the Land use decree of 1978, as this is one of the ways genuine farmers can get access to land for agricultural production

## References

- i. Ashraf, M (2007). *In spatiality okro of the world. Breeding production and marketing* (Ed.Rc Chaudhary Dv tran and R. Duffy) Food and Agricultural Organization Rome Italy; pp 162-165.
- ii. Adeshina, A.A. and zinnah, M.M (1993) *Technology Characteristics Farmer's*
  - a. *Perception and Adoption Decision. A Tobit Model Application in Sierra leone. Agricultural Economics.* Pp.297-311.
- iii. Akoroda, M.O (1990). *Botany of Telferia Occidentalis (Cucurbitaceae) among Igbos of Nigeria. Econ. Bot.* 1990; 44 (1): 29-39
- iv. Aku, P.S; Ibrahim, M.T. and Bulus, Y.D. (1997) *perspective on poverty alleviation strategies in Nigeria. In: proceedings of the Nigerian Economic society Annual conference on poverty alleviation in Nigeria. Nigerian Economic Society, Ibadan PP 41 – 51.*
- v. Chukwu, P.N. (2014) *Economic analysis of resource use efficiency of okra farmer (Abelmoschus spp) in Ivo Local Government Area Ebonyi State. Unpublished Masters Degree. University of Nigeria Nsukka, Nigeria. Pp 23 – 34*
- vi. Daramola, B(2005): *Government policies and competitiveness of Nigeria okra economy. A paper presented at the workshop on okro and food security in sub-Sahara Africa organized by West Africa Okro development association. Cotonou, Republic of Benin. Pp 41-43.*
- vii. Egwuato B. (2002) *“Strategies Towards strengthening poverty eradication programme in Nigeria” A paper presented at a Round – Table Panel Discussion at the centre for Democratic studies and Training, mambayya House, Kano.20*
- viii. Ewetan O.O. (2005) *The challenges and dividends of poverty alleviation in Developing countries. The African Experience. Internation conference paper on Human Development. Covenant University, Otta, Nigeria.*
- ix. Egwu, E.W; Nto, P.O., Mbanasor, J.A and Kalu, K.U (2010). *. Technical Efficiency of Commercial Vegetable Production in Akwa Ibom State, Nigeria. Nigeria Agricultural Journal.* 41(2): 157-161.
- x. Evensteil k. (2009) *Production practices and simple costs to produce furrow irrigation okra. Econ. Bot.* 44 (1): 22-35.
- xi. Ezeano, C I, S. I. Ume, C. C. Okeke and B. Gbughemobin (2017). *Determinant factors to discontinue the adoption of improved okra production technologies by farmers in Ivo Local Government Area of Ebonyi State, Nigeria. Indo – Asian Journal of Multidisciplinary Research (IAJMR) ISSN: 2454-1370 Available online at [www.jpsscscientificpublications.com](http://www.jpsscscientificpublications.com) 2; 5;770– 779.*
- xii. FAO (2012): *FAOSTAT: Food and agriculture. Database result.*

- xiii. F.A.O. (2011): FAOSTAT Statistics Division of the food and agriculture organ. <http://FAO.Stat:FAC.org>.
- xiv. F.A.O (2003) *Food Crop and Storage, Corporate Document Repository and databases*.
- xv. Iheke, O.R (2006) *Economics of homestead vegetable production in Abia State, Nigeria proceeding of the 43<sup>rd</sup> annual conference of the agricultural society of Nigeria, Abuja. Pp 23 – 29.*
- xvi. Kemble, J.M; Sikora E.J; Zehinder, G.W and Patterson M.G (1995): *Guide to commercial okra production.* <http://www.aces.edu/pubs/docs/ANR-09591>.
- xvii. Mbanasor J.A and Obiora J.O (2003). *Resources productivity under farmers' cropping system in Umuahia North Local Government Area of Abia state. Journal of Tropical and Sub tropical Agro ecosystem 2:81-36.*
- xviii. National Population Commission (NPC) (2006) *Statistical Bulletin of Nigeria population Census.*
- xix. Nwaru, J. C. and Ekumankama, O. O (2012). *Economic of resources use by women arable crop farm in Abia State. Research Report submitted to the Senate Grant Committee, Michael Okpara University of Agriculture, Umudike, December. 40p.*
- xx. Ochiaka S, Ume S . I. and Ebe, FE(2015) *Determent to discontinue adoption of catfish by farmer in Anambra State of Nigeria. Journal of Agriculture, Food, Technology and Environment 11(2);60-65. Faculty of agriculture Ebonyi State University.*
- xxi. Onyenweaku, C. E., Igwe, K. C. and Mbanasor, J. A (2010). *Application of stochastic frontier production function to the measurement of technical efficiency in am production in Nassarawa State, Nigeria. Journal of Sustainable Tropical Agricultural Research 13:20-25.*
- xxii. Semon M. Nielsen R. Jones, M.C and Couch S.R (2005) . *The evidence for elevated level of linkage disequilibrium caused by administration of okra and ecological adaptation. Genetics 169:1639-1647*
- xxiii. Udo, E.J (2005) *Technical efficiency in Vegetable farms of humid regions. An analysis of dry season farming by urban women in South-South Zone, Nigeria. Journal of Agricultural Science. 2(4);140 - 147*
- xxiv. Ume, S.I, Arene, C.I. and Okpukpara, B (2007). *Adoption of improved crop production technology in Anambra State, Nigeria: T & V system approach. Farm Management Association of Nigeria, 20<sup>th</sup> Annual National Conference held at Jos. 45p*
- xxv. Ume, SI, Ezeano, CI, Okeke, C C and Gbughemobi, B. O (2016). *Determinants of Okra (Abelmoschus esculentus) Production and Profitability in Ayamelum Local Government Area of Anambra State, Nigeria. Impact Factor 3.582 Case Studies Journal; 5, (11) 76- 81.*
- xxvi. Ume, SI, Ezeano, CI, Okeke, C C and Gbughemobi, B. O ( 2016)*Determinants of Okra (Abelmoschus esculentus) production and profitability inAyamelum Local Government Area of Anambra State, Nigeria. Case Studies Journal 5 (11);– 76 – 90* <http://www.casestudiesjournal.com>
- xxvii. World Bank, (2006) *“Nigeria: Poverty in the midst of plenty. The Challenges of growth with inclusion”.* A World Bank Poverty Assessment Handbook P. 91. Population and Human Resource Division paper; No 14733-UNI, Washington, D.C. the World Bank.