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Full Length Research Paper

Socio-economic analyses of plantain production in Etche, Rivers State, Nigeria

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ABSTRACT

The study analyzed the socio-economics of plantain production in Etche Local Government Area of Rivers State, Nigeria. Multistage sampling involving stratified and random sampling methods were used in selecting a sample of 120 plantain farmers. A structured questionnaire was used for data collection. Data were analyzed with frequency, percentage, farm budgeting and the linear multiple regression methods. Plantain farmers were made up of more males than females. On the average, the farmers were 31 years old, had 10 years of schooling, 14 years of production experience and with a household size of four persons. Costs and returns of plantain farming indicated ₦4.17 as gross return per naira invested. This shows that plantain production is highly profitable in Etche. The two major constraints toplantain production were identified as insufficient fund (93%)and poor extension service (92%).The study recommends sufficient delivery of micro-credit and extension service to plantain producers in the area.

Keywords: Socio-economic, plantain production, Etche.

INTRODUCTION

Plantain belongs to the family of *musaeceae* and the genus,*Musa* (Karikari, 1971). It is a perennial herbaceous plant of two to nine metres tall. Ekunwe and Ajayi (2010) reported that plantain originated from Southern India in Asia, was moved to South East Africafrom where it spread to Central and West Africa. It is believed to be the oldest cultivated fruit crop in the West and Central Africa. The crop is grown as a staple food crop in 52 countries of the world.Globally, Africa is the highest producer of plantain whileLatin America ranks second. In Africa, plantain is grown more in the western part of the continent.In Nigeria, plantain features prominently in the cropping system of the forested coastal states of the south-south agro-ecological zone. In Rivers State, plantain is cultivated more by the upland ethnic groups. The first known plantain plantation was established in Isiokpo (Ndubuizu, 2008), in Ikwerre Local Government Area; which is in the upland zone of Rivers State. Rivers State has one of the best growing conditions for plantain in Nigeria. Etche which is the study area of this research, being part of the upland area of Rivers State is also rich in plantain production.Plantain production worldwide is at 33 million metric tonnes(Faturoti,*et al.*, 2008) on about 12.5 million acres of land (Ekunwe and Ajayi, 2010). According to Akinyemi*et al.* (2010), plantain production in Africa is estimated at more than 50% of world's production. It is estimated that 70 million people in the sub-Saharan Africa derive more than 25% of their carbohydrates from the crop, making it one of the most

important sources of food energy in the African lowland humid forest zone (Akinyemi*et al.*, 2010; Ekunwe and Ajayi, 2010). Nigeria is the fifthlargest producer of plantain in the world. Plantain ranks next to yam and cassava as an important staple food crop in the south-south zone of Nigeria (Rufai and Omonona, 2012).

The demand for plantain increases with increase in the income of its consumers unlike some other starchy staple crops whose demand tend to decrease as the income of their consumers increases. Plantain is a high income generating commodity for the rural and urban dwellers especially for the small scale holders in Nigeria. The crop is a good source of carbohydrate, iron, certain vitamin C, pro-vitamin A (carotene), calcium, phosphorus and potassium (Anojulu*et al.*, 1990; Nlerum*et al.*, 2011). Due to its little fat and no cholesterol content, plantain is used to manage patients with high blood pressure and heart diseases (Dzomeku*et al.*, 2007).The crop is also a useful feed for livestock.

The various food forms in which plantain is consumed in Nigeria are: boiled, porridge, boiled and mixed with cassava, yam or garri, roasted, fried, chip, flour, etc. Industrially, plantain is now being processed in the baking of bread, cakes, biscuits, etc. The demand for plantain has risen sharply in recent years and this high demand is expected to continue to rise in view of the fact that the Nigerian population is increasing at a faster rate.

Despite the prominence of Nigeria as one of the largest plantain producing countries in the world, the country does not feature among plantain exporting nations because it produces more for local consumption than for export (Akinyemi*et al.*, 2010). The local demand for the crop is currently higher than the production level which is on the decrease. The estimated yield of plantain in Nigeria in tonnes per hectare for a six year figure was ₦6.939;₦6.710;₦6.767; ₦5.374; ₦5.345 and ₦5.420 for 1999, 2000, 2001,2002, 2003 and 2004 respectively (Federal Republic of Nigeria, 2006). These figures indicate mean yields per hectare of 6.805 tonnes from 1999 to 2001 and 5.380 tonnes from 2002 to 2004.These yield figures show that plantain yield has been on the decline since 2002.

The research problem of the study was to know if plantain production is profitable in Etche in view of the declining yield of the crop in Nigeria. The study objectives were to determine the personal characteristics of plantain farmers, costs and returns of plantain production and constraints of producers. The tested null hypothesis of the study was that, there is no significant relationship between socio-economic characteristics of producers and the net return of plantain production.

METHODOLOGY

This study was carried out inEtche Local Government Area of Rivers State, Nigeria. The Etche ethnic nationality lies at the north east of Rivers State towards the southern portions of Imo and Abia States. Etche land is fertile and supports farming, which is the indigenous occupation of the people. The main crops produced in the area are yam, cassava, cocoyam, plantain, maize, melon, vegetables and fruits (Ihejirika, 2012).

The study population covered all plantain farmers in the area. Plantain farmers as used in the study covers all persons who are into plantain production as mono or mix cropping, full or part time cultivation and subsistence or commercial farming.Multistage sampling involving stratified and random sampling methods were used in selecting the sample size of 120 respondents. From the clans of Igbo, Mba, Okehi, Ozuzu and Ulakwo/Umuselem, random sampling was used in selecting two communities each to give a total of ten. Random sampling was finally used in drawing 12 plantain growers from each community to give a total of 120 respondents.

Both the descriptive and inferential statistics were used for data analyses. The respondents' socio-economic characteristics and their constraints in plantain production were analyzed with frequency and percentage. The net return of plantain production was determined by farm budgeting analysis, which was expressed as the difference between the gross revenue and the total cost of production. This is presented mathematically as used by Onwumere*et al.* (2011) and Onoja and Emodi (2011) as:

$$NP = GR - TC \quad \ldots (1)$$

Where: NP = Net Profit
GR = Gross Revenue
TC = Total Cost

The linear multiple regression was the inferential statistics used for the test of hypothesis of the study. The linear multiple regression model is specified explicitly as follows:

$$Y = a + b_1X_1 + b_2X_2 \ldots b_6X_6 + e_i \quad \ldots (2)$$

Where Y= Net return (Dependent variable)
a = Intercept
$b_{(1-6)}$ = Slope of the equation
$X_{(1-6)}$ = Independent variables
X_1 = Sex (dummyvariable;male = 0, female = 1)
X_2 = Age (in years)
X_3 = Marital Status (dummyvariable; Married = 0, single = 1)
X_4=Educational level (years spentin school)
X_5 = Farming experience(years offarming)
X_6 = Household size (personsliving and feeding under a roof)
e_i = Stochastic error term

RESULTS

Table 1 indicates that 74% of the respondents were male. The highest age range among these respondents was 21–30 years (43.3%). The average age of the respondents was 31 years. Table 1 further shows that the production of plantain is more among married people (56.7%). Educationally, the study revealed that as much as 98.3% of the respondents have acquired various levels of education with 10 years as the mean age spent in schooling.

The mean farming experience among these respondents was 14 years while the mean household size of the respondents was 4 persons (Table 1). Table 2 shows that the total revenue from plantain production among these respondents was ₦1,812,000.00 per hectare. The total cost of production was ₦434,050.00 per hectare.The net income among the respondents was ₦1,377,950.00 per hectare. The benefit cost ratio which represents the gross return per naira invested was ₦4.17 (Table 2).

Table 3 reveals that the coefficient of the linear multiple determination R^2 was 0.597, which indicates that about 59.7% of the variation in net return was accounted for by the joint action of the studied personal characteristics of the respondents. The result further shows that the coefficients for age (0.001) and farming experience (0.024) were significant at 0.05. This implies that these two variables were important determinants of the net income of the respondents. Sex, marital status, education and household size had no significant relationship and, therefore were unimportant determinants of net return among these respondents. However, the F-ratio (0.000) was significant, showing that the combined effort of all the independent variables had asignificant effect on net return. Given this outcome, the null hypothesis was rejected for the significant variables (age and farming experience) and accepted for the non-significant ones (sex, marital status, education and household size).

Table 1: Personal Characteristics of Respondents

Characteristics	Frequency	Percentage (%)	Mean
Sex			
Male	89	74.0	
Female	31	26.0	
Total	**120**	**100.0**	
Age (Years)			
11 – 20	17	14.2	
21 – 30	51	43.3	
31 – 40	32	26.7	31
41 – 50	6	5.0	
Above 50	14	11.7	
Total	**120**	**100.0**	
Marital Status			
Married	68	56.7	
Single	52	43.3	
Total	**120**	**100.0**	
Educational level (Years of schooling)			
No education	2	1.7	
Primary education	31	25.8	
Secondary education	62	51.7	10
Tertiary education	25	20.8	
Total	120	100.0	
Farming experience (years)			
1 – 5	18	15.0	
6 – 10	17	19.2	
11 – 15	22	18.3	14
16 – 20	45	37.5	
Above 20	18	15.0	
Total	**120**	**100.0**	
Source:			
Household size (persons)			
1 – 2	10	8.3	
3 – 4	50	41.7	4
5 – 6	35	29.2	
7 – 8	20	16.6	
9 and above	5	4.2	
Total	**120**	**100.0**	

Source: Field Survey, 2010.

Table 2: Costs and Returns of Plantain Production

Items	Value in Naira (N) per hectare (ha)
Revenue	
Total Revenue (TR) from sales	1,8,12,000.00
Expenditure	
i) Variable Cost (VC)	
Suckers	22,650.00
Labour	125,000.00
Transportation	45,000.00
Agro-chemicals	24,000.00
Total Variable Cost (TVC)	**216,650.00**
ii) Fixed Cost (FC)	
Cutlasses	2,800.00
Shovels	4.200.00
Wheelbarrows	7,000.00
Land rent	200,000.00
Fixed assets depreciation	3,400.00
Total Fixed Cost (TFC)	217,400.00
Total Cost (TC)	**434,050.00**
Net Income (TR-TC)	1,377,950.00
Gross margin (TR-TVC)	1,595,350.00
Benefit Cost Ratio (BCR)/Gross return per naira invested (TR/TC)	4.17

Source: Field Survey, 2010. Total bunches/ha = 2,265 at N800.00 per bunch.

Table 3: Summarized Linear Regression Analysis showing Relationship between Respondents Personal Characteristics and Net Returns.

Variable	Coefficient	t-value	Significance	F-cal	F-ratio	R	R^2	Adjusted R^2
Stant	1776.4	3.375	0.022					
Sex(X_1)	2387.3	1.078	0.283 NS					
Age (X_2)	3771.2	3.337	0.001*	23.667	0.000	0.772	0.597	0.571
Marital Status (X_3)	1160.8	0.725	0.470 NS					
Education (X_4)	823.4	0.270	0.236NS					
Farming Experience (X_6)	1199.9	12.613	0.024**					
Household size (X_6)	1561.7	1.560	0.122 NS					

Source: Field Survey, 2010 *Significant at 0.05 level, NS = Not significant.

Table 4: Distribution of Constraints to Plantain Production (n=120)

Constraints	Frequency	Percentage (%)
Inadequate land	40	33
Insufficient fund	112	93
Scarcity of labour	20	17
Diseases and pests	78	65
Poor storage facility	60	50
Poor extension service	110	92

Source: Field Survey, 2010. Multiple responses were used.

Table 4 clearly shows that the major constraints of plantain producers in the study were insufficient fund (93%). The second problem was poor extension service (92%). Diseases and pests, which represented 65% of the response was the third constraint of producers.

DISCUSSION

Socio-economically, the fact that the majority of the respondents were males appears to mean that plantain production in the study area is dominated by men. This result agreed with that of Ekunwe and Ajayi (2010) which showed that 82% of plantain farmers in Edo State, Nigeria were males. The average age of 31 years of the respondents implies that the producers of plantain in the study are within the active and productive working age. This result further implies that plantain production in Etche has a good future because a reasonable proportion of these respondents are youths. The study by Ekunwe and Ajayi (2010) in Edo State had shown a mean age of 44 years among plantain farmers whichis higher than the mean age of the respondents for this study.

The mean age of 10 years of schooling of respondents indicated that most of the farmers could not complete their secondary school. However, with this level of education they would be able to read and apply basic information on plantain production improvement from extension officers. The mean farming experience of 14 years of these respondents varied with the mean farming experience of 22 years among the plantain farmers in Edo State, Nigeria (Ekunwe and Ajayi, 2010). The mean household size of 4 persons of these respondents implied a reasonable family size of plantain farmers. The higher the household size, the higher the amount of income that would go into taking care of the domestic need of the family. This will lead into lesser income remaining for investment in expansion of the plantain production. A reasonable household size as shown in this study would lead to more savings for investment in the plantain production business.

The net income of ₦65, 781.67 per hectare recorded by Baruwa*et al.* (2011) among plantain farmers of Osun State, Nigeria was less than that of Etche farmers. The high net income recorded in this study area may have arisen from the fact that Etche market days are highly patronized by traders from the highly metrolitian cities of Port Harcourt in Rivers State, Aba and Umuahia in Abia State and Owerri in Imo State. Apart from these cities, several other buyers from far and near patronize Etche for the purchase of high quality plantain and other agricultural products. The benefit cost ratio implied that every ₦1.00 invested in plantain production yielded a ₦4.17 return. This benefit cost ratio is closer to the value of ₦3.90 recorded by Echezona*et al.* (2011) among plantain farmers in the derived savanna agro-ecosystem. This result implied that plantain production in

Etche is highly profitable. The crop is a good source of livelihood and sustainable poverty alleviation.

Insufficient fund, being a major problem in this study agrees with the study of Onumadu, (2010), which showed that lack of fund/credit facility was the highest (89.4%) problem of farmers in Imo State. Diseases and pests problem in this study was not as devastating as in the study of Okoli(2012) where diseases and pests accounted for 100% problem to farmers in Abia State, Nigeria.

The study has shown that plantain production in Etche is very profitable. This is irrespective of the fact that there is a steady decline of yield of the crop in Nigeria. The gross return per naira invested in plantain production was high. It is concluded that plantain production is a good source of rural livelihood and poverty alleviation. The two major constraints of producers in the area were insufficient fund and poor extension service. The study recommends the provision of micro-credit and improvement of extension services to plantain farmers in the study area.

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