SOCIO-ECONOMIC DETERMINANTS OF PRODUCTIVITY AMONG SWEETPOTATO FARMERS IN EBONYI STATE OF NIGERIA

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ABSTRACT

Sweet potato is among the most important root crops produced in the Ebonyi State of Nigeria. However, the production obtained in the area is below its genetic potential. The study was carried out in Ebonyi State, Nigeria in 2011. A multistage randomised sampling procedure was used for the analysis. Ten sweetpotato producers were selected from each of the 12 communities to give a total of one hundred and twenty respondents with the aid of well structuredquestionnaire. The data collected were analyzed with the use of descriptive statistics as well as Ordinary Least Square Regression procedure. The regression analysis results showed that the coefficients of age and household size were negatively signed and significant at 10% level of probability. The coefficients of gender, education and labour positively signed and significant at 5% level of probability as well as fertilizer use and annual income at 10% and 1% level respectively. All factors directly related to sweetpotato productivity call for policies aimed at increasing educational level, fertilizer and labour as well as encouraging male farmers to remain in sweetpotato farming. There is also the need for provision of value re-orientation in birth control measures.

Keyword: Socio-Economics, Productivity and Sweetpotato.

INTRODUCTION

Sweetpotato (*Ipomoea batatas)* is globally a food security crop in many of the poorest rural dwellers in Nigeria. Globally it is among the important food crops in the world, after wheat, rice, maize, Irish potato, and barley. It ranks second after Irish potato in the world's root and tuber crops production and third after Irish potato and cassava in consumption in several parts of tropical Africa (Lenne, 1991). Sweet potato has been cultivated for many years and is an important diet where population growth is highest, land holding is least and threat of large-scale starvation is ever present (Habtu 1995). According to Tesfaye *et al*., (2008) the world's average of about 14.8t/ ha of sweetpotato production is mainly for food and it is also cultivated for animal feed as well.

Nigeria is faced with a problem of increasing rural poverty that leads to increasing urbanization, joblessness, crime, food insecurity and malnutrition. It is important to emphasize that the potential benefits stemming from the expansion of the agricultural sector through various government efforts, its overall productivity remains low and the poor performance of agriculture is most clearly evidenced by the low standard of living of these small-scale rural farmers (Dogon-Daji, 2005). Root crops such as sweet potato, is an important crops for food security. Sweetpotaton offer a particularly significant potential for increasing food production and income in Nigeria. Tewe, *et al*, (2003) reported that among the root and tuber crops in Sub-Saharan Africa, sweetpotato had a positive per capita annual rate of increase in production. The place of sweetpotato in balancing the natural nutrient requirements of the human nutrition can never be overemphasized.

Sweetpotato is one of the principal crops grown in Ebonyi State because of its importance as food and as an income generation. The crop is particularly important in villages surrounding the Ebonyi state such as Ohaukwu, Isiagu, Ivo and Ohaozara. It is a staple crop in Eungu, Anambra, Abia state and Imo states and plays a primary role in food security in the states. In 2009, annual sweeetpotato production in Nigeria constitutes abou3.46million metric tons of the total staple food production (FAO, 2010).The immediate challenge is to ensure that improved varieties that have been generated together with improved production technologies reach a wider section of the rural farmers. Given the

various sweetpotato programmes and policies implemented over the years by government to raise farmers' efficiency and productivity in sweetpotato production, it has become imperative to empirically analyze the relationship of productivity and socioeconomic variables of cassava farmers. This will further guide policy makers in making policy for the improvement of the welfare of sweetpotato farmers, which will give room for the expansion of their sweetpotato production.

METHODOLOGY

The study was carried out in Ebonyi State, Nigeria in 2011. A multistage random simpling procedure was used for the study. The three agricultural zones namely Ebonyi North, Ebonyi Central and Ebonyi South were chosen in the first stage. In the second stage two sweetpotato producing local Government Areas were purposively selected from each of zone in the study area, given a total of six (6) LGAs. In the third stage two communities were selected from each of the LGAs to give total of (12) communities. In the four stages Ten (10) Farmers sweetpotato producers were selected from each of the 12 community to give a total of one hundred and twenty respondents with the aid of structured questionnaire. The data collected were analyzed with the use of descriptive statistics and ordinary least square regression procedure.

The model is specified thus;
$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, e)$$

Where ;
Y = Quantity of sweetpotato (t/ha)
X_1 = Age of the farmer (years)
X_2 = Gender (dummy variable; 0=female, 1=male)
X_3 = Marital status (dummy variable; married=1, 0=otherwise)
X_4 = Household size
X_5 = Level of education (years)
X_6 = Annual income (naira)
X_7 = Fertilizer use (kg)
X_8 = Labour (mandays)
e = Error term

RESULTS AND DISCUSSION

The Result of Socio-Economic Analysis of the Respondents is shown in figure1-5

Age

The farmers who contributed information to this study were within the age range of 21—70 years but majority (70-84 %) were between 31—50 years old (figure 1). The mean age of the respondents in the study area was 42.5 years. This is a positive development as many energetic young farmers are involved in sweetpotato production in the study area.
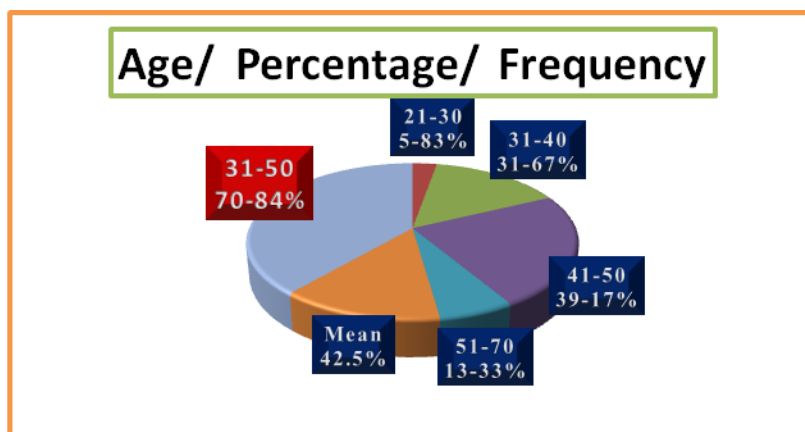
Source: Field Survey, 2011.

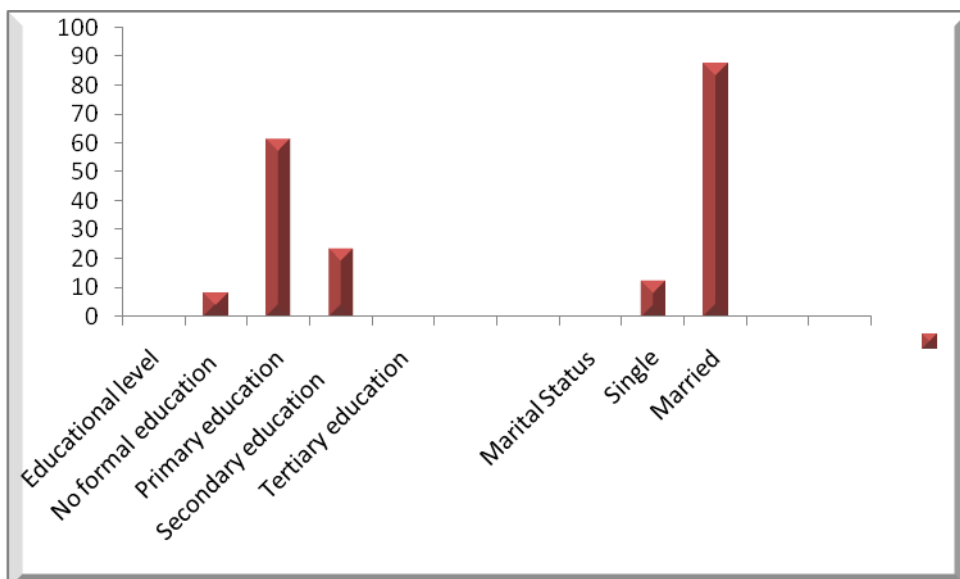**Figure 1: Distribution of Respondents According to Age**

The results in figure 2 show the frequency distribution of respondents according to gender. The result shows that majority of respondents (71.6%) were females while the proportion of the males were 28.4%. These show that females were more involved in the sweetpotato production than their male counterparts in the study area.
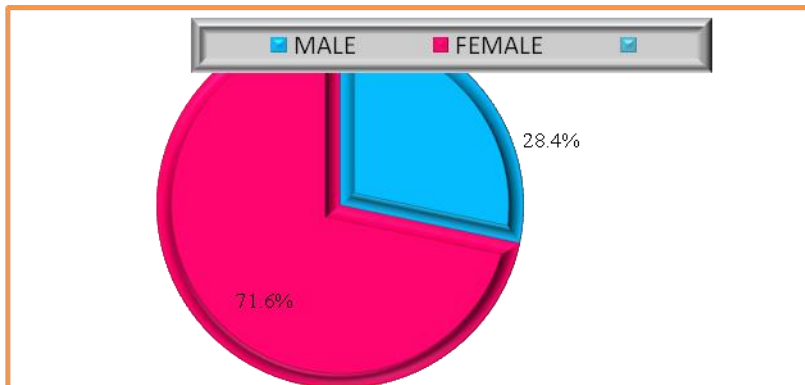
Source: Field Survey, 2011.
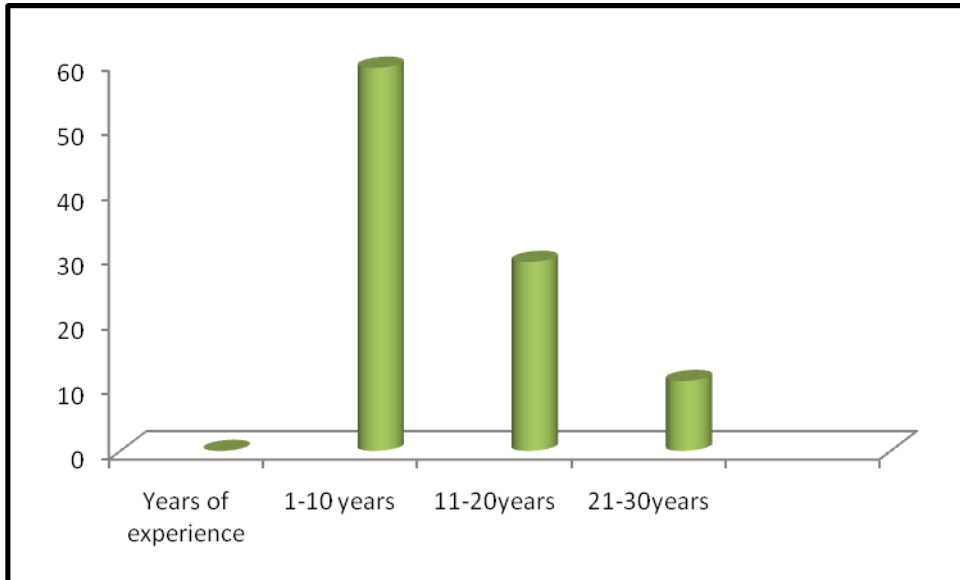**Figure 2: Distribution of Respondents According to Gender**

About 87.4% of the total respondents were married while 12.6% were single) figure 3). Since majority of the respondents were married, this signifies the possibility of more availability of family labour for farming activities. It also showed the importance of sweetpotato production as source of food security to individual households. The result also shows that about 91% of the respondents had formal education while only 8% had no formal education. Although most (67.5%) of the respondents attained primary level of education. A high level of literacy will positively influence the farm business. High literacy level will enable farmers to understand the intricacies of new techniques for production and also predispose them to adopt and use improved farm practices (Oluyole, 2005). This is in line with findings of Abubakar (2000) who stated that the ability and readiness with which a particular producer accepts or rejects an innovation depends on his educational background.

Source: Field Survey, 2011.
Figure 3: Distribution of respondents according to Educational Attainment and Marital Status

The results in figure 4 show that all the respondents were experienced. Most (59.2%) of the respondents had farming experience ranging from 1-10 years. About 38.67% and 11.17% had farming experience ranging from 11-20 and 21-30years respectively. Long farming experience is an advantage for increase in farm productivity since it encourages rapid adoption of farm innovation (Obinne, 1991).

Source: Field Survey, 2011.
Figure 4: Distribution of respondents according to Years of Farming Experience

It was observed in figure 5 that 60.8% of the total respondents had more than 1-6 persons per household. The results also show that about 35.8% and `13.4% had between 17-12 and 13-18 persons involved in sweetpotato farming respectively. The mean household size was 5.9 persons per household. The implication of the result shown is that the ability to maintain a large sweetpotato production area depends on the availability of labor which comes from the members of the family. This is a positive indication that there would be more availability of family labor for farm work.
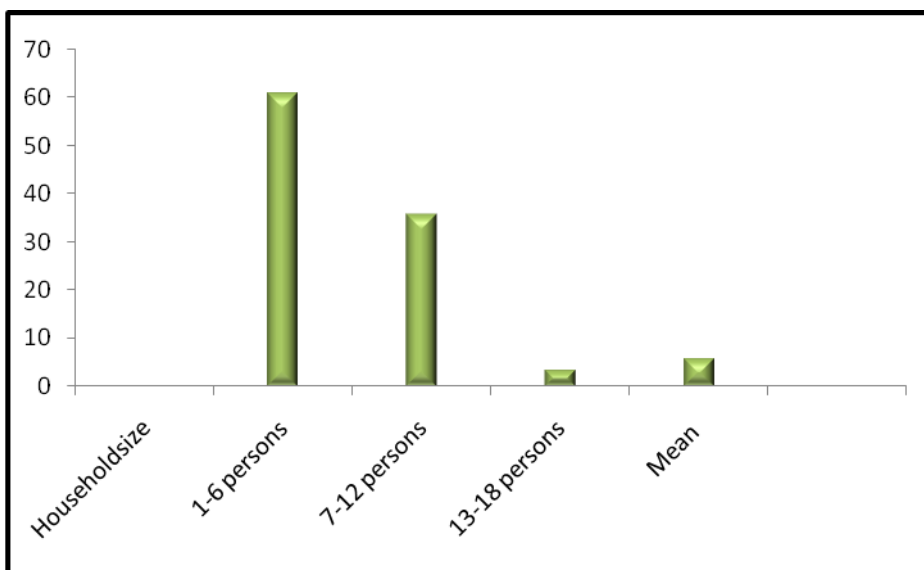
Source: Field Survey, 2011.
Figure 5: Distribution of respondents according to Household Size

The results in Table 1 show the regression estimates of the determinants of productivity of sweetpotato among farmers in Ebonyi State, Nigeria. The regression analysis results showed the R square value for the linear functional form as the highest with 0.6827 to other functional forms. It shows that 68.2% of the observed variations in the productivity are explained by the independent variables. The F-value was highly significant at 1% level implying a regression of best fit. Six variables were significant at 1% and 5% levels of probability. The results show that coefficients of age ($P<0.10$), educational status (<0.05), gender ($P<0.05$), annual income ($P<0.01$), fertilizer use ($P<0.10$) and labour ($P<0.05$) had direct relationship with productivity in the study area while household size ($P<0.10$) was negative.

Age: this was positively signed implying that any increase in the age of the farmers will lead to increase in productivity of sweetpotato in the study area. This result contrasts with the findings of Okoye *et al.,* (2007) and Ajibefun and Aderinola, (2004) who found out that ageing farmers would be less energetic to work. In the current study, the farmers had long years of farming experience which most times correlates with age.

Gender: gender had strong positive relationship with productivity of sweetpotato in the study area. This implies that the male sweetpotato farmers were more productive than their female counterparts. This may probably be because they are stronger and more agile.

Education: the result showed that the level of education had positive relationship with the productivity of sweetpotato in the study area. This implies that increase in the level of education would lead to an increase in productivity of sweetpotato. According to Oluyole (2005) high literacy level will enable farmers to understand the intricacies of factor and product markets and also predispose them to adopt and use improved farm practices.

Annual income: this had a direct relationship with productivity of sweetpotato in the study area. This implies that any increase in annual income will lead to a corresponding increase in sweetpotato productivity in the study area. With increased income farmers are assured of access to inputs and timely too.

Fertilizer use: the quantity of fertilizer used showed a positive relationship with the productivity of sweetpotato in the study area. This implies that increase in farmers' use of fertilizer increases the productivity of sweetpotato. According to Ogunlade *et al* (2009) adequate use of fertilizer has been found to increaese agricultural output. Also the study is in line with Anon (1995) that the most common way of addressing this problem of soil infertility is through the use of fertilizer.

Labour: labour had a direct relationship with sweetpotato productivity in the study area. This implies that any increase in labour will lead to a corresponding increase in sweetpotato. This is expected and in accordance with a priori expectations.

Household size: this was negatively signed and in contrast with a priori expectations. This implies that any increase in household size will lead to decrease in sweetpotato productivity in the study area. This may probably be because most of the children who would have assisted in farm work are mostly in school.

Table 2: Regression estimates of the determinants of Productivity for sweetpotato among farmers in Ebonyi State, Nigeria

Variable	Linear	Exponential	Cobb Douglacs	Semi-Log
Constant	-0.0369	-6.5305	-7.4945	0.2090
	(-1.95)*	(-8.32)	(-3.07)	(-3.25)
Age	-0.0004	-0.0109	-0.1300	-0.0121
	(1.85)*	(1.16)	(0.30)	(1.07)
Gender	0.0124	0.5121	0.4897	0.0104
	(2.41)**	(2.43)**	(2.42)**	(1.98)*
Marital status	0.0057	0.1060	0.2805	-0.0015
	(0.92)	(0.41)	(1.10)	(-0.23)
Household size	-0.1380	0.0512	0.0911	-0.004
	(-1.91)*	(1.52)	(0.66)	(-0.12)
Education status	0.0107	0.3106	1.0228	0.0348
	(2.43)**	(1.70)*	(2.42) **	(3.16) ***
Annual Income	5.216	4.98e.06	0.1352	0.0160
	(5.02)***	(1.16)	(2.53)	(2.59) **
Fertilizer use	0.0925	0.4394	0.5437	0.0146
	(1.67)*	(1.92)	(2.53)	(2.59) **
Labour	0.9790	0.2183	0.2863	0.0035
	(2.16)**	(1.24)	(1.68)*	(0.79)
R^2	0.6827	0.4950	0.4467	0.5226
R^2	0.5827	0.3279	0.3839	0.4661
F-Ratio	7.44***	2.91**	3.93**	5.71***

CONCLUSION

The results show that sweetpotato production in the study area was dominated by male farmers who are educated, experienced, still in their most productive years and married with large household sizes. All factors directly related to sweetpotato productivity call for policies aimed at increasing educational level, fertilizer and labour as well as encouraging male farmers to remain in sweetpotato farming. There is also the need for provision of value re-orientation in birth control measures.

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