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National Root Crops Research Institute, Umudike, Abia State

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Asumugha, G. N[1*], M. E, Njoku[2]B. C, Okoye[1], O.C. Aniedu[1], M.C. Ogbonna[1], H.N. Anyaegbunam[1], O. A. Akinpelu[1], O. Ibeagi[1] and A. Amaefula[1]

1National Root Crops Research Institute, Umudike, Abia State, Nigeria.
2Deptartment of Agricultural Economics, Micheal Okpara University of Agriculture, Umudike, Nigeria.

ABSTRACT

This study was conducted to examine the supply of seed yam in major yam producing areas of Northern and Southern Nigeria using the supply function analysis. A cost-route approach was adopted in eliciting data from 120 seed yam farmers and marketers spread across the six states studied in 2006 using the multi-stage random sampling technique. Results show that price of seed yam and age had a significant relationship with value of seed yam supplied at the 1.0% level. Disposable income was significant at the 5.0% level, while labour cost and supplier experience were negatively related with value of seed yam supplied at the 10.0% and 1.0% levels respectively. Price of substitute and credit had a negative relationship with value of seed yam. The elasticity of supply of seed yam with respect to income is positive but inelastic while the elasticity of supply with respect to years of experience and labour were negative and elastic. Price of seed yam had positive price elasticity. Result of the field work show that there were no commercial structures for supply of seed yam in Nigeria. Farmer's only sell seed yams after satisfying own requirements. The results therefore call for policies aimed at ensuring framers entitlement to productive resources and to target farmers in credit and large-scale farm enterprise.

INTRODUCTION

With growing demand and the accompanying supply response, yams have assumed great importance, and Nigeria now ranks the highest producer of yam in the world. Nigeria produces about 31.5 million metric tonnes of yam annually (CBN, 2003). The entire production and marketing chain offer vast employment opportunities. The supply of yam offers prospects for higher income jobs because of the number of people involved and the value attached to it. The marketing system, which affects the prices received by the farmers and those paid by the consumers, has a profound impact on food security, particularly in augmenting the amount of food available and improving the physical and economic access of the masses to it. In predominantly small farm agriculture, the marketing system is required to assemble the small surpluses of farmers. (FAO, 2003)

In Nigeria, yam is becoming more expensive and relatively unaffordable in urban areas as production has not kept pace with population growth leading to demand exceeding supply (Kushwaha and Polycap, 2001). Although yam production in Nigeria is quite high (Nigeria is known to be the largest producer of yam in the world), there is still need for increased production of yam to satisfy domestic and export demand. Increased production

of yam in Nigeria is believed to be constrained mostly by high cost of seed yam (NRCRI, 1985). There is also substantial wastage, deterioration in quality, and frequent mis-match between demand and supply spatially and over time (Subbanarasiah 1991; Singh *et al*, 1985). The supply of yam is also quite complex and risky due to their perishable nature, mode of transportation (mainly in Trucks and Lorries), seasonal production and bulkiness.

Three types of seed yams were identified in Nigeria (Asumugha *et al*, 2004). These are milked seed yam, Cut setts (minisetts) and small whole tubers. Farmers may produce seed yams either mostly for sale, for own production or both. Most farmers sell seed yams only after meeting their own production needs, suggesting limited specialization in seed yam production. Seed yam is a major item of cost in yam production. The minisett technique of seed yam production holds a lot of prospects for reducing the cost of seed yam. In light of these issues the paper examines the supply for seed yam in Nigeria. The objective of this study is to analyze the supply for seed yams in major yam producing areas of Nigeria. The specific objectives include to:

- **i.** examine the socio-economic characteristics of the various participants in the seed yam sector;
- **ii.** estimate and analyze the supply function for seed yams in the major producing areas;
- **iii.** estimate the relative supply elasticities for yam;
- **iv.** make policy recommendations for increasing the supply of seed yams.

METHODOLOGY

The study area

The study was conducted in the major yam producing Northern and Southern States of Nigeria: Benue, Nasarawa, and Federal Capital Territory (FCT) in the North as well as Delta, Enugu, and Ebonyi states in the South.

Sampling Procedure

The multi-stage random sampling procedure was adopted in the choice of States, seed yam producers and traders. In the second stage, an agricultural zone was chosen from the list of Agricultural Development Project Zones in each of the selected States. In the third stage, 20 seed yam traders from each zone were studied making a total of 120 yam traders.

Data Collection:

Primary and secondary data were used in the study. Primary data were generated through a set of well structured questionnaire administered on the target respondents. Data collected generally were household characteristics and employment, household expenditure on seed yams, inputs, complements and substitutes, prices of seed yam and close substitute, disposable income, household size and experience in seed yam marketing. Others were age and education of the household head, major and minor occupation, gender of the household head, farm sizes, labour, fixed inputs, value of credit, storage cost and value of losses during storage, membership of association or cooperative society, income level, and transportation means. Secondary data were sourced from literature and relevant research works in the area.

Data Analysis

Supply function analysis via a cross-sectional model was employed to assess the influence of explanatory variables on the value of seed yams supplied. Descriptive statistics (frequencies, tables, means and percentages) and linear regression models were applied to estimate the effect of the above variables on the value of seed yams supplied. Partial derivative of the elasticity formula was estimated.

Implicitly the supply function is specified;

SS = f (GD, ED, I, HHS, P, PS, C42, LAB, AGE, EXP, e) ……. (1)

Where:

SS = Value of seed yams supplied in Naira

GD = Gender of the supplier

ED = Educational level of the household head in years

I = Disposable income in Naira

HHS = Household size

P = Price of Seed yams in Naira

PS = Price of Substitute in naira

C42 = value of credit in Naira

LAB = Labour in mandays

EXP = Experience in years

AGE = Age of the trader in years

e = error term

Supply Elasticity for Seed Yam

Supply elasticity is defined as the responsiveness of quantity supplied to changes in price. For linear functions, price elasticity of demand can be written thus,

E_d = $\underline{s_{q/}}\ s_P$ x $\underline{p/q}$

= s. P_i/q_i

Where;

E_d = elasticity of supply

s_q = change in quantity supplied

s_P = change in price

P_i = mean value of the explanatory variables

q_i = mean value of the dependent variable

s_i = coefficient of the variables

RESULTS AND DISCUSSION

Table 1 shows the descriptive statistics and Socio-economic profile of seed yam suppliers in Nigeria. The average age was about 47 years. This indicates that most of the seed yam suppliers were middle aged. This is the active farming and trading group. The mean number of years of schooling was about 13 while experience in years was about 20 which imply that they are literate as well as experienced. Experience influences decision making in relation to risk aversion. The suppliers were mostly males. About N98, 254 worth of seed yams are supplied by an average seed yam producer with a mean price of about N34 per seed yam.

Table 1. Mean Values of Descriptive Statistics for Supply of Seed Yam

Variables	Mean Values
Gender	0.92
Age	46.93
Education (Ed)	13.93
Experience (Exp)	19.98
Income (i)	17, 0610.62
Price of Seed Yam (P)	33.89
Price of Substitute (Ps)	161.18
Variable Inputs (Vi)	2,455.86
Fixed Inputs (Fi)	0.02
Access to Credit (C41)	0.23
Amount of Credit (C42)	15,798.61
Loss of Seed Yam (N)	1,167.86
Value of Supply (ss)	98,254.12
Storage (St)	0.42
Variety of Seed Yam used (va)	3.09
Labour Cost (lab)	2,559.86
Cooperatives (coop)	0.37

Source: derived from survey data, 2006.

Supply for Seed Yam

Table 1 shows the supply function analysis for seed yams. The regression model explained 98% of the total variation. The estimated slope coefficient was significantly different from one at 95 percent confidence level. Disposable income of the supplier, price of seed yams, labour cost, age and experience of the supplier exerts significant effect on the supply of seed yams in the country. Cost of Labour has inverse relationship with supply of seed yams indicating that resources that should have helped enhance seedyam supplies may be diverted to take care of labour cost. Experienced growers are now diversifying to other farm enterprises as alternative sources of income as indicated by the negative sign of the coefficient.

Table 2. Determinants of Supply of Seed Yam in Nigeria

Variable	**Regression Coefficients**
Constant	206107.794**
	(-3.314)
Gender (GD)	20701.232
	(0.773)
Educational Level (ED)	3714.797
	(1.431)
Income (1)	0.186**
	(3.338)
Household size (HHS)	1093.220
	(0.712)
Price of Seed Yam (P)	1694.292***
	(10.836)
Price of Substitute (PS)	-89.434
	(-1.035)
Credit (C42)	-0.323
	(-1.283)
Labour cost (LAB)	-89.943*
	(-2.351)
Age	6633.791***
	(6.134)
Experience (Exp)	-6385.584***
	(-4.946)
R^2	0.978
Adjusted R^2	0.941
F – value	26.507***

Source: derived from survey data, 2006.
Note: * is significant at 1%, ** is significant at 5%, * is significant at 10%.**
Values in parentheses = t – values.

Elasticity of Seed Yam Supply

Table 2 shows that elasticity of supply of seed yam with respect to income is positive but inelastic. Thus increases in income will lead to a less than proportionate increase in seedyam supply. The elasticity of supply with respect to years of experience and labour

were negative and elastic. This implies that increases in these variables lead to a more than proportionate decrease in seedyam supplied. For labour, the reduction in supply may be as a result of channelling of funds to labour cost as against increased supply. Experienced farmers may want to diversify to supply of other crops. Seed yam supply, from the result of this study, is localised. Price of seed yam had positive price elasticity indicating that seed yam supply will increase with increase in price. Total value of elasticity was 3.872 which is greater than unity indicating that changes in the socio-economic variables together will bring about a more than proportionate change to seed yam supplied.

Estimated Elasticities of Supply for Seed Yams in Nigeria

Variables	Elasticity
Gender	0.194
Age in years	3.170
Education in years	0.527
Experience in years	-1.299
Income in Naira	0.323
Price of seed yams in Naira	0.600
Price of substitute in naira	-0.150
Credit	-0.00
Labour	-2.34
Age	3.17
Total	**3.872**

Source: derived from survey data, 2006.

CONCLUSION

Supply of seed yams in Nigeria is localised. Farmers' only sell seed yams after satisfying own requirements. Relevant variables influencing supply for seed yams in Nigeria include farm size, education level and the disposable income of the farmers. Others are experience in seed yam production and labour availability. Thus, for the commercialisation of the seed yam sector, farmers should be educated especially on the benefit of seedyam enterprise through extension services. These set of farmers can be assisted with soft loans to address the capital deficiency to increase farm sizes for seedyam production and access farm inputs. Currently, there are no commercial structures for supply of seed yams in Nigeria, this may be due to low prices for the commodity.

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