

ECONOMIC ANALYSIS OF YAM PRODUCTION IN IBI LOCAL GOVERNMENT AREA OF TARABA STATE, NIGERIA

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ABSTRACT

The study examined the Economic Analysis of yam production in Ibi Local Government Areas of Taraba State. Primary data were collected from 120 yam farmers selected from six council wards using simple random sampling technique. The data from cropping season were collected with the aid of structured questionnaire. Data collected were analyzed using Net Farm Income and Regression Analysis. The results indicated that a gross margin realized by a typical small-scale yam farmer was ₦13,527,550 per hectare. The result of the analysis indicates that yam production is profitable in the study area. The result of the multiple regression in table above shows a high coefficient of multiple determination (R^2) of 76.6 percent which implies. The level of education (X_1), Sex of the respondents (X_3) and farm income (X_4) were Negative and statistically significant at 1 percent. It implies that the higher the level of education, sex and farm income of respondents, the lower their yam output. The respondents' farm size (X_5) and family/household size (X_6) were positive and significantly related to the dependent variable at 5 percent and 1 percent level of significant respectively. This shows that the higher the farm size and household size of the farmers, the more the output of yam in the study area. The following recommendations were drawn: Government should help to reduce cost of inputs. Problems of pest and diseases, storage and high cost of labour can be minimized if more farmers embraced cooperative association so that they can pool their resources together for seeking information on new technology, marketing and effective management of resources.

Keywords: *Yam yield, Yam profitability, Constraints, Ibi*

INTRODUCTION

Yam, a tropical crop of the genus *Dioscorea* is grown in the coastal region in rain forests, wood savanna and southern savanna habitats. Yam has many species out of which five are staples species. These are *Dioscorea rotundata* (White Yam), *Dioscorea esculenta* (Chinese yam), *Dioscorea alata* (Water yam), *Dioscorea bulbifera* (Aerial yam) and *Dioscorea dumentorum* (Trifoliate yam). Out of these, *Dioscorea rotundata* (White yam) and *Dioscorea alata* (Water yam) are the most common species in Nigeria. Yam is an important source of income for all value chain participants. Yam is one of the principal root crops in Nigeria both in terms of land under cultivation and in volume and value of production. It's one of the carbohydrate foods that is nutritionally superior to most roots and tubers in terms of digestible proteins and minerals (Calcium, Magnesium and Potassium) (Ebewore, 2013). Tuber crops, such as yam has high relative value per unit of land used in its cultivation when compared with other crops particularly, the cereals (Mbah, 2010)

Nigerian Government at various stages has found it needful to prevent post-harvest loss of crops produced by farmers. This has become imperative to help the small-scale farmers who are always at the mercy of the buyers of their commodities at every production season for lack of storage facilities. A probable solution to overcome these constraints is by strengthening the post-harvest sector at national level through the improvement of the indigenous agro-industries. Processing of food crops to a form which has a longer shelf life and at the same time adding value to the original

crop help the farmer not only to overcome the spoilage and losses, but also earn more money due to the newly added value of the product (Kushwaha and Polycarp, 2001).

Problem Statement

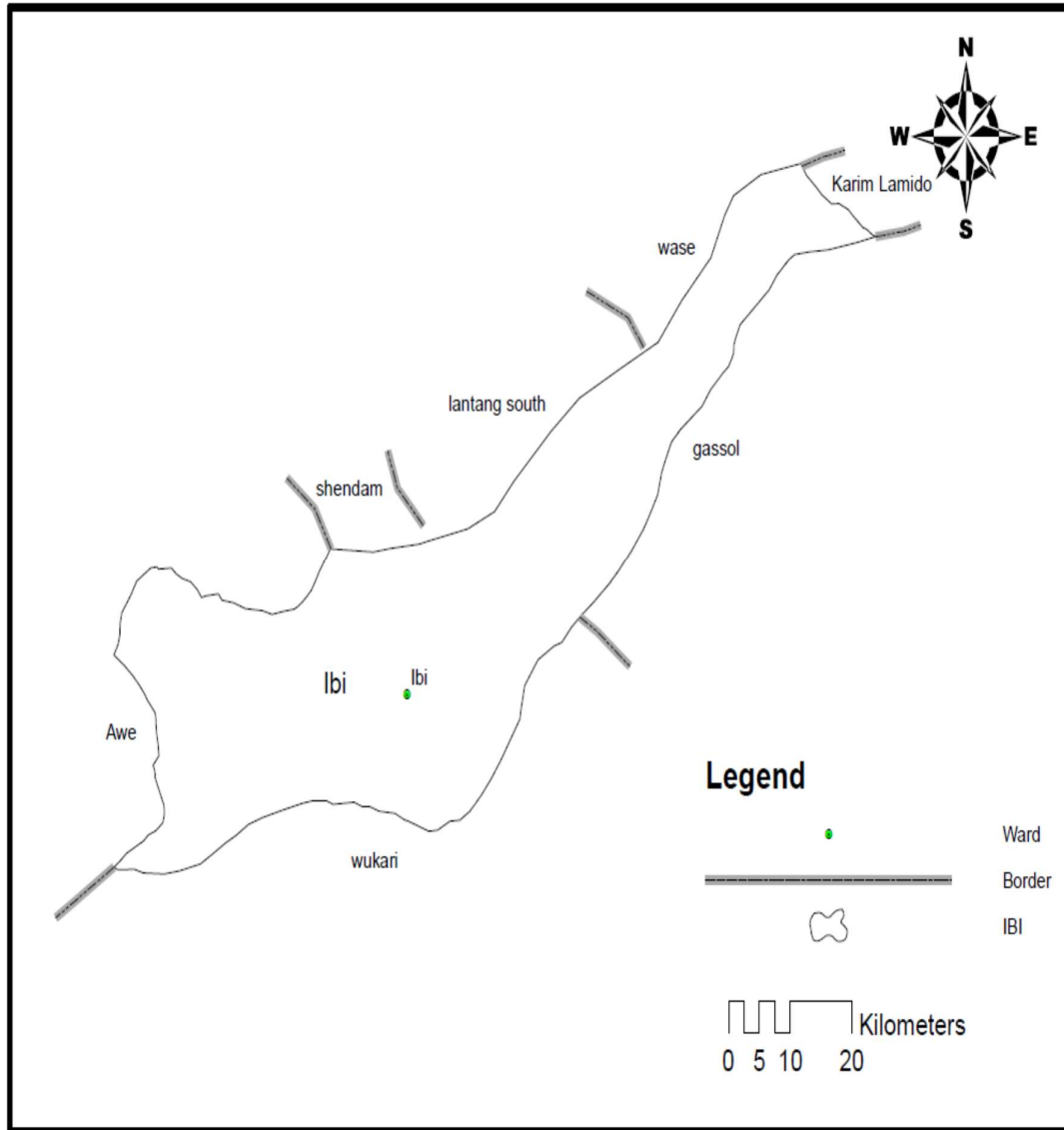
Food crop is grown during the rainy season in Nigeria, and harvested when mature. Food crop are abundant immediately at the end of harvest but become expensive and scarce a few months after due to poor post-harvest storage system among farmers. Storage of yam poses a problem during the peak harvest period, since it is a tuber crop. The difficulty in storage raises the problems of farmers benefiting from the incidence of seasonal price increases for yam. Yam in the country is also becoming expensive and relatively unaffordable in urban.

Oladeebo and Okanlawon (2010) noted that the absolute level of yam production has remained static over a decade. this study was undertaken to empirically ascertain the profitability of yam production among small-holder farmers in the study area (in Ibi Local Government Area). In view of these problem statements, the following research questions were asked: What is the cost efficiency on revenue? What are the factors of production?, What are the constraints associated with yam production in the study area? The objectives are as follows: Estimate the profitability of Yam production, Determine the factors that affects Yam production, Determine the constraints associated with yam production

Study Area

Ibi is a Local Government area in Taraba State, Nigeria. The Local Government is located on the south bank of the Benue River. Ibi lies between Lat. 8° 11'N and *longitude* 8°47'51"E. It has a land area of 1410.99km² and a population of 116,930 per square meter based on 2006 census (CBN 2007). The Local Government has ten council wards namely, Nwonyo1, Nwonyo2, Rimi uku1, Rimi Uku2, Sarkin Kudu1, Sarkin Kudu2, Sarkin Kudu3, Dampar1, Dampar2 and Dampar3. The markets available in this area include Sarkin Kudu market, Ibi market and Dampar market among other smaller ones. Retailers come from different places to buy yams and other agricultural produce from these markets. Farming is the major activity within this area; a lot of agricultural activities are practiced by the people such as animal husbandry and crop cultivation. Crops such as rice, yam, millet and vegetables among others give this rural populace a gainful employment.

MAP OF IBI LOCAL GOVERNMENT AREA



SOURCE: GEOGRAPHY DEPT, KWARARAFI UNI, WUKARI

Methods of Data Collection

The data for this study was collected from primary source only. The data was obtained using the interview method with a structured questionnaire administered among the respondents.

Sampling Procedure

A multi-stage sampling technique was employed. In the first stage, Nwonyo ii, RimiUku ii, Sarkin-Kudu i, Sarkin-Kudu ii, Sarkin-Kudu iii, and Dampar ii were purposively selected from the 10 council wards in the Local Government Areas because of the predominance of yam farmers in the areas. In the second stage, two villages were randomly selected from each council wards. Finally, simple random sampling technique was used to select 10 farmers from each village giving a total number of 120 yam farmers' as the sample size for the study.

Data Analysis Techniques

Objective i was analyzed using Net Farm Income while objective ii and iii was analyzed with Multiple Regression.

Model Specification

Net farm income

The net farm income analysis was used to achieve objective i

$$NFI = TR - TC$$

Where;

NFI= Net farm income

TR = Total revenue

TC = Total cost of production

TC = TVC+TFC

GM=TR-VC

Regression Analysis

The regression model is specified as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7$$

Where, Y = Yam output (Tons),

a= Constant (Intercepts),

X₁ = Farm size (hectare),

X₂ = Farm Income (naira),

X₃ = Age (years),

X₄ = Farming experience (Years),

X₅= Sex,

X₆ = Family size (number),

X₇ = Educational level (Years),

b₁.....b₇= Coefficients of independent variables.

RESULT AND DISCUSSION

Profitability of yam production

The variable cost items were determined by each producer based on the quantity used for yam production at the purchase price. The profitability of yam production enterprise was examined using the estimated costs and return analysis presented in the Table below

The results indicated that a gross margin realized by a typical small-scale yam farmer was ₦13,527,550.per hectare. This was obtained by subtracting the total variable cost (₦984,450) from the total revenue (₦14,512,000).The total fixed cost of yam production per hectare was ₦30,000. This implies that variable costs where the most important cost items in yam production in the study area compares to the fixed cost items. This agrees with the finding of Reuben and Barau (2012) who reported that yam farmers spent over 94% of the total cost of production on variable inputs. It was further revealed that total cost of production was ₦1,014,450. This was obtained by adding the total fixed cost to total variable cost. The return per naira invested was ₦13.3. The result implies that yam production is a profitable enterprise in the study area.

Table 1: Average Costs and Return (in Naira) per Hectare for Yam Production

Items	Average Price(₦)	Total (N)
Yam revenue(TR)	1,314,927.27	14,512,000.00
Variable Cost		
Cost of weeding	5250.91	577,600.00
Cost of herbicide	4,000.00	440,000.00

Cost of yam seed	635.00	69,850.00
Cost of planting	2,663.64	293,000.00
Total Variable Cost (TVC)	12,549.55	₦984,450.00
Fixed Cost		
Land renting		₦30,000
Total Fixed Cost (TFC)		₦30,000
Total Cost (TC) = (TVC + TFC)		₦1,014,450.00
Gross Margin(GM)=(TR - TVC)		₦13,527,550.00
Net Farm Income(NFI)=(TR-TC)		₦13,497,550.00
Return per ₦1 Invested=(NFI/TC)		13.3

Source: Field Survey Data 2022

Determinants of the factors of production

Coefficient of determination of 76.6 percent variation in the dependent variable was caused by changes in independent variables included in the regression model. The overall influence of the independent variables on the dependent variable was shown by the value of F-statistics (45.441) which was highly significant at 1% level of significance. Absence of autocorrelation was shown by the low value of Durbin-Watson constant (2.206); which means that the regression model was well specified. The level of education (X_1), Sex of the respondents (X_3) and farm income (X_4) were Negative and statistically significant at 1 percent. This means that the higher the level of education, sex and farm income of respondents, the lower their yam output. This negates the apriori expectation because educated farmers can understand technical knowledge on the use of farm implement and tools than uneducated farmers and increased farm income should increase yam/farm output. The respondents' farm size (X_5) and family/ household size (X_6) was positive and significantly related to the dependent variable at 5% and 1% level of significant respectively. This shows that the higher the farm size and household size of the farmers, the more the output of yam in the study area. This is true and had met the apriori expectations because farmers with higher farm size usually engage in farm mechanization and positive relationship exists between the farmer's household size and their level of productivity. This is because farmers whose household size is high have many dependent and also source of family labour.

Table 2. Summary of Regression Analysis

Variable	Variable names	Regression Coefficient	Standard Error	T- value	Level of Significance
Bo	Constant		0.248	0.685	.006*
X_1	Education Level	-0.233	0.0003	-2.932	.004*
X_2	Age	0.036	0.077	0.581	.562
X_3	Sex	-0.171	0.098	-2.715	.008*
X_4	Farm income	-0.236	0.011	-3.523	.001*
X_5	Farm Size	0.186	0.008	2.372	.020**
X_6	Family Size	0.382	0.036	5.300	.000*
X_7	Farm experience	0.072	0.000	1.159	.249

R ²	0.766
Adjusted R ²	0.749
F – Statistics	45.441
Durbin-Watson Constant	2.206

Source: Field Survey, 2022. * Significant at 1%, ** Significant at 5%

Constraints associated with Yam production

The result of Table 3 showed that the respondents considered inadequate access to credit (33%) a major constraint and it ranked first among the identified constraints. This is so because credit is important to enhance access to inputs and marketing costs like storage and transportation. The problem of inadequate credit results in difficulty of accessing inputs like fertilizer, herbicide, insecticides, seed yams, and staking materials. Transportation (23.1%) was considered the next problem because yam is heavy and fragile, so transporting it can be difficult and costly. It is often transported manually using head pans or baskets. Difficulty in transporting yam output to market could result in low income and losses resulting from breakages and spoilage. Pest and disease (19.7%) ranked third because they are constraints to the yam farmers both on the field and when in storage. Those attacked by pest and disease result in losses reflected by fall in the price of the yam due to reduction in quality. The respondents also considered storage (15.5%) a problem because the bulky and perishable nature of yam requires special space for storage and this is not always available to farmers. The result is that most farmers sell their produce at low prices shortly after harvest. High cost of labour (8.7%) ranked least because family labour is used to compliment high cost of labour.

Table:3 Distribution of respondent according to the constraints faced in yam production.

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Variable	Frequency	Percentage	Rank
Inadequate access to credit	98	7.91	7 th
Lack of Hire labour at Critical period	91	8.52	5 th
High cost of inputs	95	8.16	6 th
Erosion problems	99	7.83	8 th
Poor marketing	88	8.81	4 th
Pest and Diseases	68	11.39	2 nd
Soil Infertility	60	12.92	1 st
High cost of Transportation	85	9.12	3 rd
Lack of Quality Seed Yam	91	8.52	5 th

Source: Field survey, 2022

CONCLUSION

Based on the findings of the study, it can be concluded that although yam production was profitable, farmers still have the potential to increase their overall efficiency to maximize yield and profit in the study area.

RECOMMENDATIONS

From the findings of this study, the following recommendations were drawn:

- i. High cost of transportation was found to be one of the problems of the respondents in the study area hence, the government should help to provide good roads
- ii. Government should help to reduce cost of inputs
- iii. Problems of pest and diseases, storage and high cost of labour can be minimized if more farmers embraced cooperative association so that they can pool their resources together for seeking information on new technology, marketing and effective management of resources.
- iv. Farmers should practice bush fallow on farmland to enable the soil to become nutritious.

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