

Analysis of Factors Determining Yam Production in Ikole-Ekiti Local Government Area of Ekiti-State, Nigeria

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ABSTRACT: This study analyzed the factors determining yam production in Ikole-Ekiti LGA in Ekiti-State, Nigeria. Multistage random sampling technique was employed in collecting data from (70) yam farmers in the study area. The data collected were analyzed using descriptive statistics such as mean, frequencies, percentages and likert scale. Linear regression was also employed. Results on socio economic characteristics of the respondents showed that age range of 41-50 years had the highest % with 38.57% showing that most of the yam farmers were in their active age range. Most of the yam farmers had secondary school level of education as their highest level of education with 45.71%, meaning that ideas and innovations introduced to these yam farmers will easily be understood, also about 50% of the yam farmers had household size of 4-6 persons showing they have fairly available labour in the cultivation of yams in the study area while 45.72% of the respondents had 0.6-1.0 hectares of land showing that yams were cultivated on a subsistence level. The results on extent of involvement of respondents in yam production showed that the respondents participated in yam minisett cutting with mean value of 4.20 which marked the highest level of involvement in the likert scale rating, followed by planting yam minisett (4.05), weeding of farm (3.92), fertilizer application (3.90), ridging of land (3.40), harvesting of yam (3.35), while farmers who did not participate in land clearing had mean of (1.40). The linear regression analysis showed factors influencing yam production in the study area; were marital status, age, household size, farm size and farming experience with an R^2 value of 73.9% and they were all positive and significant implying that if these variables were increased they will increase yam output. In the study area the major constraints in yam production were difficulty in procuring fertilizer with mean of (2.78), high incidence of disease (2.58), inadequate farmland (2.55) and poor extension contact had mean of (2.50) and this findings therefore calls for policies that will provide adequate farmlands and also mitigate constraints of lack of agrochemicals and inadequate extension visits to these yam farmers so as to enhance productivity.

Keywords: Yam, output, constraints, production

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INTRODUCTION

Yam is grown on free draining, sandy and fertile soil, after clearing the farm. Land is prepared in the form of a heap of 1 m (3ft 3 in) height. Planting is done by seed yam or cut sets from ware tubers. A day before planting, the tubers have to be subjected to treatment with wood ash or a fungicide (thiabendazole) to prevent damage in the soil. The sets are planted at an interval of 15-20 cm (5.9-7.9 in) with the cut face facing up. Mulching is essential during October-November with dry grass or

plant debris weighted down with balls of mud. Dosage of fertilizer application, as essential, is decided after chemical analysis of the soil samples. Manual weeding by hoeing is done three or four times depending on the rate of weed growth. Two stakes, each of 2m (6 ft 7 in) height are used for staking the plants to vine over it; one for two plants with the other used for bracing with the adjacent stakes. Sorghum stovers are also used for this purpose. Yams are twinning vines which form stem

tubers annually. The vine however, withers at the end of the rain. The yams grown and eaten in many parts of Nigeria is the white yam or white guinea yam (*Discorea rotundata*) and water yam or yellow yam (*Discorea alata*). As a food crop, the place of yam in the diet of the people of Nigeria cannot be overemphasized. It contributes more than 200 dietary calories per capital daily for more than 150 million people in West Africa while serving as an important source of income to the people. Yam has some inherent characteristics, which make it attractive; first, it is rich in carbohydrate especially starch and consequently have a multiplicity of end use. Secondly, it is available all year round making it preferable to other seasonal crops (Izekor and Olomese, 2010).

According to Oyenuga (1968), yam contains a higher value in protein (2.4%) and substantial amount of vitamins (thiamine, riboflavin and ascorbic acid) and some other minerals like Ca, P and Fe than any other common tuber crop. It is also comparable to any starchy root crop in energy and the fleshy tuber is one of the main sources of carbohydrate in the diet of many Nigerians. CGIAR (1996) also reported that yam tends to be higher in protein and minerals like P and K than sweet potatoes though the latter is richer in vitamins A and C. Yam is a preferred food and a food security crop in some sub-Saharan African countries. Yam could be eaten as boiled yam or fried in oil. It can also be processed into yam flour or pounded yam. Moreover, yam is also a source of industrial starch, the quality of which varies with the species.

Apart from all these, yam also plays vital roles in traditional culture, rituals and religion as well as local commerce of the African people. Yam is reported to be part of the religious heritage of several Nigerian tribes and up to date often play a key role in religious ceremony. Worthy of note is the fact that many important cultural values are attached to yam, especially during wedding and other social ceremonies. In many farm communities in Nigeria and other West African countries, the size of the yam farm that one has is a reflection of one's social stature. Due to the importance attached to yam many communities celebrate the new yam festival annually. Yam production in Nigeria has more than tripled over the past 40 years from 6.7 million tons per annum in 1961 to 27 million tons per annum in 2007 (FAO, 2009). This increase is however attributed to larger hectares of land planted for yam than to increased productivity. In lieu of the above, this study is aimed at examining the following research objectives; to examine the socio-economic characteristics of the respondents in the study area, to assess yam farmers involvement in yam production in the study area, to examine the factors influencing yam farmers involvement in yam production and also assessing the constraints militating against production in the study area.

METHODOLOGY

Study area

Geographically, Ikole LGA is entirely within the tropic. It is located between longitude 45° East of Greenwich and latitude 7°-8°-15° North of the Equator. Its neighbors are Kwara State to the North, Kogi State to the North East, Ekiti East LGA to the East, Gboyin LGA in the South and Oye LGA in the West. The headquarters of Ikole LGA is about 22.5 km from Ado-Ekiti, the Ekiti State capital. Ikole Ekiti LGA is mainly on the upland zone rising to about 250m above sea level. The LGA occupies about 374,940kms of land according to the 2006 NPC figure, the total population of the LGA was 168,436. Males were 87,976 and Females were 80,460. Rainfall in Ikole Ekiti occurs between the months of November to March while rainy season occurs from April to October, with a mean annual rainfall of 1200 mm to 2200 mm. Temperature is generally high during the dry season particularly between the months of March and April and the mean monthly temperature in the region ranges from 25°C to 35°C. Ikole Ekiti is a sub-urban LGA with predominantly agricultural settlers.

Sampling technique

A multi-stage random sampling technique was adopted for the selection of samples from the population. In the first stage (7) villages which cultivates yams very well were selected. In the second stage, (10) yam farmers were selected from these villages making a total of (70) respondents in the study area. The 7 villages selected were; Odo Oro, Ipao, Itapaji, Iyemero, Oke Ako, Ikumi and Temidire.

Method of data collection

This study employed the use of primary data; the primary data for this research was gotten by administering well-structured questionnaire to the yam farmers and also through focus group discussion (FGD).

Data analysis

The data gotten were analyzed with the use of descriptive statistics such as frequency distribution, percentages, mean, and likert scale. Linear regression analysis was also employed.

Model specification

A five point likert scale with a mean score was used to estimate the level of involvement in yam production in the

Table 1: Socio-economic characteristics of the respondents

Socio-Economic Characteristics	Frequency	Percentages %
Age		
<20	-	-
21-30	10	14.28
31-40	20	28.57
41-50	27	38.57
51-60	9	12.85
>61	4	5.73
Educational level		
No Formal education	7	10.00
Primary school	20	28.57
Secondary school	32	45.71
Tertiary school	11	15.72
Family size		
1-3	19	27.14
4-6	35	50.00
>7	16	22.86
Farm size		
0.1-0.5	22	31.42
0.6-1.0	32	45.72
1.1-1.5	16	22.86
Total	70	100.00

Source: Field survey, 2023.

study area thus; Always (5), Occasional (4), Often (3), Seldom (2), Not involved (1). The scale is expressed thus;

$X = \frac{\sum F_n}{N}$. Where X =mean level of awareness, \sum =summation, F =frequency, n =likert numerical value, N =Number of respondents, i.e.:

$$X = \frac{1+2+3+4+5}{5} = \frac{15}{5} = 3.0.$$

Respondents with rating score of 3.0 and above were regarded as having being involved in yam production, while respondents with rating score less than 3.0 were regarded as not being involved in yam production. Constraints militating against yam production was estimated with a 3 point likert scale as very serious (3), less serious (2), not serious (1) and its expressed as; $X = \frac{1+2+3}{3} = \frac{6}{3} = 2$.

Constraints with the rating score of 2.0 and above were regarded as being serious, while constraints with rating score less than 2.0 were regarded as not being serious constraints. The linear regression model was used to estimate the factors involved in yam production as specified as:

$$Y = X_0 + X_1 + X_2 + X_3 + X_4 + X_5 + X_6 + X_7 + X_8 + e.$$

Where Y = Yam Output

X_1 = Marital status (Married =1, Otherwise= 0

X_2 = Age of respondents (years)

X_3 = Level of education (years)

X_4 = Household size (numbers)

X_5 = Farm size (ha)

X_6 = Labour (N)

X_7 = Fertilizer (Kg)

X_8 = Farming experience (years)

B_1 - B_8 = Estimated parameter

e = Error term

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

From the results in (Table 1), the age range of 41-50 years had the highest % with 38.57% followed by a close age range of 31-40 years with 28.57% while those above 61 years had the least % with just 5.73% implying that the majority of the farmers in the study area were in their active age range and can indulge in strenuous farming activities involved in the cultivation of yams in the study area. These findings were in line with the works of Ironkwe *et al.*, (2010) who asserted that farmers in their active ages still have enough strength to tackle labour intensive root tuber farming. From (Table 1) also, it showed that those respondents with secondary school level of education had the highest % with 45.71% followed by those with primary school level of education with 28.57% and those with tertiary level of education with just 15.72 %. Respondents with no formal education were just 10% in the study area. This implies that majority of the respondents 90% have had one form of education or the other and ideas and innovation introduced to them will easily be imbibed and this findings is in line with the works of Anugwo *et al.*, (2022) which states that farmers literacy levels helps in efficient adoption of improved production technologies in the study area. Table 1 also revealed that 50% of the respondents have household size of 4-6 persons while those with household size of more than 7 persons were 22.86% while just 27.14% of the farmers have household size of just 1-3 persons. This implies that in the study area most of these yam farmers have fairly available labour in the cultivation of yam. This finding is in agreement with the work of Anugwo *et al.*, (2021) who posited that larger families can use household labour to partly satisfy their labour needs in times of scares labour. The results from (Table 1) also showed that those yam farmers with 0.1-0.5 hectares of land were 31.42% while those with 0.6-1.0 hectares of land were 45.72% and just 22.86% had between 1.1-1.5 hectares of land. This also shows that yam farmers in the study area were cultivating yams on a subsistence level in the study area. The findings are in line with the works of Onumadu, (2009) who stated that in rural areas farmers generally have small farm holdings.

Yam farmer's involvement in yam production

Table 2 shows the rating scale analysis of level of involvement of yam farmers in the study area. The result

Table 2: Distribution of respondents according to level of involvement in yam production.

Cultivation practice	Always	Often	Occasionally	Seldom	Never	Total	Mean
Clearing of land	40(20)	6(24)	10(30)	10(20)	4(4)	98	1.40
Ridging of land	22(110)	12(48)	14(42)	16(32)	6(6)	238	3.40
Yam minisett cutting	40(200)	14(56)	9(27)	4(8)	3(3)	294	4.20
Planting yam minisett	35(175)	17(68)	7(21)	9(18)	2(2)	284	4.05
Weeding of yam farm	29(145)	20(80)	11(33)	7(14)	3(3)	275	3.92
Fertilizer application	32(160)	14(56)	12(36)	9(18)	3(3)	273	3.90
Harvesting of yam	11(55)	29(116)	10(30)	14(25)	6(6)	235	3.35

Source: Field Survey, 2023. (3.0 above= Involvement <3.0= Non Involvement). Always=5, Often=4, Occasionally=3, Seldom=2, Never=1.

Table 3: Linear Regression Estimates of Factors Influencing Yam Output in Ikole-Ekiti LGA, Ekiti State, Nigeria.

Variables	Estimated coefficient	Standard error	T-Ratio
Constant	38.5670	9.6883	3.9807
Marital status	0.6624	0.0673	9.8411*
Age	0.1968	0.0529	3.7219**
Educational level	0.0101	0.0756	0.1337
Household size	0.5520	0.1780	3.1011**
Farm size	0.7510	0.2140	3.5093**
Labour	0.0166	0.0931	0.1789
Fertilizer	0.8422	0.6764	1.2451
Farming experience	0.089	0.039	2.2820*
Model	R ² = 0.739. Adjusted R ² = 0.672.		

Source: Field Survey, 2023. ***, **, * means significant at 1%, 5%, 10%

revealed that yam farmers participated in yam minisett cutting with a mean value of 4.20 and was the highest activity they participated, followed by planting of yam minisett with mean of 4.05, weeding of yam farm (3.92), fertilizer application (3.90), ridging of land (3.40), and harvesting of yam (3.35). Clearing of land was the least activity they participated in with mean of 1.40

Factors influencing farmer’s involvement in yam production

The linear regression analysis showed factors that influenced yam output in the study area. From (Table 3), the model showed an R² value of 0.739 implying that the explanatory factors explained up to 73.9% of the differences in yam output and the remaining 26.1% were unexplained variables which exists as error term. From the linear regression estimate 5 out of the 8 independent variables were statistically significant at 5% and 10% levels of significance. They were marital status, age, household size, farm size and farming experience. Marital status was positive and significant at 10% implying that increase in married couples participating in yam production will enhance productivity as partners could help out themselves with financial, emotional and physical support when needed which will go a long way in improving participation in production of yam. This finding is in conformity with the work of Anyiro *et al.*, (2013) who stated that married couples support each other on the farm and as such enhances productivity. Age was positive and significant at 5% meaning that as

age increased it helped increase yam production, implying that as age increased yam farmers get better with yam farming techniques, ideas and innovations. This finding is in line with the works of Ojo, (2003) which states that as farmers grow old in cultivating a crop they get better with the cropping technique. Household size was positive and significant at 5% implying that as household size increased it increased the output of yam production as large household size increase the required amount of labour needed for high yam productivity. Farm size was also positive and significant at 5% level implying that increase in farm size will also bring about increase in yam production in the study area. This is in line with works of Nandi *et al.*, (2011) who posited that large farm size aids high productivity. Farming experience was also positive and significant at 10% level and as such implying that years of cultivating yams on the farm leads to higher farm output. and in line with apriori expectation that farming experience leads to higher output and conforms with the work of Nwosu *et al.*, (2013) who posited that more years of experience leads to higher productivity.

Constraints militating against yam production in the study area

Results from (Table 4) revealed the major constraints militating against yam farmers in the study area. Difficulty in procuring fertilizer (2.78), high incidence of disease (2.58), inadequate farmland (2.55), and poor extension contact (2.50) were the major constraints in the study area.

Table 4: Distribution of respondents according to their perceived constraints to yam production.

Constraints	Serious	Less serious	Not serious	Total	Mean
Poor extension contact	44(132)	17(34)	9(9)	175	2.50
Inadequate farmland	49(147)	11(22)	10(10)	179	2.55
Poor marketability of yam	41(123)	18(36)	11(11)	170	2.42
Difficulty in procuring fertilizer	58(174)	9(18)	3(3)	195	2.78
Inadequate planting material	33(99)	28(56)	9(9)	164	2.34
Lack of access to credit	37(111)	20(40)	13(13)	164	2.34
High cost of labour	31(93)	21(42)	18(18)	153	2.18
Crude Implements	32(96)	20(40)	18(18)	154	2.20
High Incidence of disease	49(147)	13(26)	8(8)	181	2.58
Poor income from yam	37(111)	20(40)	13(13)	164	2.34
Lack of chemical for diseases	41(123)	17(34)	12(12)	169	2.41
Poor yield of yam	38(114)	21(42)	11(11)	167	2.38

Source: Field Survey, 2023. –Mean=2.0, Agreement.

This finding is in line with the works of Usongo *et al.*, (2014) who posited that constraints such as inadequate planting materials, poor soil quality, lack of access to funds poses threats to yam farmers.

Conclusion and Recommendation

In the study area, yam production was influenced by marital status, age, household size, farm size, and farming experience. Major constraints faced by these farmers were difficulty in procuring fertilizers, high incidence of diseases, inadequate farmland and poor extension contact and if all of these are put in check yam production in the study area will be enhanced. It is recommended therefore that policies which will provide solutions to these constraints faced by these yam farmers be pronounced as it will go a long way in enhancing yam productivity in the study area.

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