

DETERMINANTS OF GINGER OUTPUT IN ISIALA-NGWA NORTH ABIA STATE, NIGERIA.

¹Nze, E.O., ²Okpara, B.O. and ¹Iroegbu-Orji, O.

¹Department of Agribusiness and Management,

²Department of Agricultural Economics

Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria

E-mail: nzeedith3@gmail.com

ABSTRACT

This study examined determinants of ginger output in Isiala-Ngwa North Local Government Area of Abia State. The research area consisted of three selected communities from which two villages each were selected. Seven Ginger farmers were randomly selected from each of the selected villages to give a sample size of forty-two ginger producing farmers. The instrument for data collection was questionnaire, using only primary source of data. The objectives of the study included to ascertain factor determinants of ginger output and to determine cost and returns of ginger production. Methods of data analysis included inferential statistical tools. 100% of the farmers were educated, 100% local variety was being produced. The determinants of ginger output were age, cost of planting materials, cost of land preparation, initial capital and fertilizer used being highly statistically significant at 99.9% of confidence level. Gross margin was ₦132,400 indicating a profitable business ideal to tackle hidden hunger. The challenges included used of crude implements, among others. It was recommended that ginger farmers must access improved technological packages which include improved ginger varieties, pesticides, and used of modern technique in production.

Keywords: Determinants of output, Ginger production, Isiala Ngwa North, Constraints to ginger production.

INTRODUCTION

Ginger (*Zingiberofficinale*) is an herbaceous perennial plant belonging to the order *Scitamineae* and the family *Zingiberaceae*. It is a root crop and a typical herb extensively grown across the world for its pungent aromatic under-ground stem or rhizome which makes it an important export commodity in world trade (Folorunso and Adenuga, 2013 and Ajibade and Dauda, 2005).

Ginger's origin is not well established though it is generally thought to be a native of Asia, where it was first cultivated. Ginger was introduced to West Africa and other part of the tropics in the sixteen century by the Portuguese, and finally came to Nigeria in 1927 (Hass, 1998 and KADP, 2002). The plant is now cultivated in different parts of Nigeria, though the major producing areas include Kaduna, Nassarawa, Sokoto, Zamfara, Akwalbom, Oyo, Abia and Lagos states, and southern Kaduna still remains the largest producers of fresh ginger in Nigeria in its Kachia, Jabba, Jama'a and Kagarko Local

Government Areas (KADP, 2004; and Bernard, 2008). Recently, ginger cultivation has gone to the south eastern agricultural zones of Nigeria, and the varieties produced are mainly 'TaffinGiwa' and 'YatsunBiri' which is higher in oil (Folorunso and Adenuga, 2013). In Isiala-Ngwa North, ginger is used as spice or fresh herb in cooking and in range of other value added products like beverages. It is also used in traditional medicine to treat sicknesses.

There has been high fluctuation in output of ginger production and the increase experienced is too low to make meaningful change in the income and standard of living of farmers (FAO, 2010). Ginger production is under taken by smallholder and traditional farmers with rudimentary production techniques and low yields. In addition, the small holder farmers are constrained by many problems including production and post-production challenges ranging from non-use of improved varieties, manual land preparation. Inadequate inputs, local processing/ha and poor ginger quality. The farmers do not see it as a business enterprise, thus, are not adequately focused on profit maximizing motive of the enterprise (Federal Ministry of Agriculture, 1993 in Goni and Baba, 2007).

The broad objective of this study is to analyze determinants of ginger output in Isiala-Ngwa North local government area of Abia State, Nigeria. While the specific objectives are to: describe the socio-economic characteristics of ginger producing farmers in the study area, ascertain factor determinants of ginger output, determine cost and returns of ginger production, and examine challenges of ginger production in the study area.

METHODOLOGY

The study was carried out in Isiala-North which is one of the local government areas in Abia state, Nigeria. Its headquarter is in the town of Okpuala-Ngwa, and it has an area of 283km² (NPC, 2016). Agriculture is the major occupation of the people of Isiala-Ngwa in Abia State, Nigeria and subsistence agriculture is prevalent and about 70% of the population engages in it. They produce crops like ginger, cassava, yam, cocoyam, maize, banana, etc. and various types of fruits due to how fertile their land is. They also rear animals like pig, goat, sheep and several types of domesticated birds (Agwu, 2014).

A multi stage random sampling technique was used to select the farmers. In the first stage, three communities were randomly selected from Isiala-Ngwa North. The second stage involved the selection of two villages each from the selected communities to give a total of six villages for the study. The third stage included the random selection of seven ginger farmers from each of the selected villages to give a sample size of forty-two respondents for the study.

Primary data only was used for the study. The primary information was generated by the selected ginger farmers with the aid of well-structured questionnaire distributed to them. The questionnaire was designed to elicit relevant information necessary to enable the stated objectives to be achieved. To describe the socio-economic characteristics of ginger producing farmers as well as to examine challenges to ginger production were realized using descriptive statistic. Ordinary least squares estimators were used in ascertaining factor determinants of ginger output, while Gross Margin analysis was adopted in determining costs and returns of ginger production in the study area.

Models Specifications

Ordinary least squares estimators (Linear regression)

The Multiple regression model was specified as follows implicitly:

$$Y = F (X_1, X_2, X_3, X_4, X_5, X_6, X_7, e)$$

Where;

Y = ginger output (kg)

X₁ = Age (years)

X₂ = Cost of weeding (Naira)

X₃ = Cost of planting material (Naira)

X₄ = Fertilizer used (kg)

X₅ = Initial Capital (Naira)

X₆ = cost of land preparation (Naira)

X₇ = Production Experience (years)

e = Stochastic variables

Gross Margin

$$GM = TR - TVC$$

Where

GM= Gross Margin

TR= Total Revenue

TVC = Total Variable Cost

RESULTS AND DISCUSSION

Distribution of Socio-economic Characteristics of Ginger Producing Farmers

Variables	Frequency	Percentage
Age(years)		
Below 31	4	9.5
31 – 60	34	81.0
61 and above	4	9.5
Educational Qualification(years)		
FSLC		
SSCE	24	57.2
GCE	14	33.3

Socio-economic Characteristics of Ginger Producing Farmers in Isiala Ngwa North local government area of Abia State, Nigeria

The socio-economic variables examined were age, educational qualification, sex, production experience, farm size, start-up capital and variety produced, as shown in table 1. The table showed that majority (81.0%) of the ginger producing farmers in the study area were of the age range of 31-60 years. These categories of farmers could be said to be the economically active population which is able to tackle hunger issues of the Nation through farming. The age of a farmer dictates and affects the type of farming a farmer could positively engage in as reported by Food and Agricultural Organization(2009). 100% of the respondents acquired one form of education or the other. According to Nze (2016_b) western education facilitates the adoption of modern technologies and improved farm practices. These farmers are likely to have adopted much improved knowledge on ginger production. The results also indicated that more than half of the respondents (57.1%) were female. This suggests that most ginger farm works and decision making in the area were undertaken by women. Women are generally known to be good in handling hunger matters. This agrees with the claims of Nze (2016_a) who stated that some farm decisions making were dominated by women. The table also revealed that 100.0% of the farmers cultivated on 0-2 hectare of land, and none cultivated on more than 2 hectares of land. This means that the farmers might not be producing in large scales, rather, they focused more on household consumption in order to eliminate household hidden hunger. 59.5% of the respondents needed a little start-up capital of ₦2001 and above. This could be appropriate for the sizes of their farms. It also suggests that ginger production does not require much capital, thus, is ideal for low start-up capital possessor; while 100% of local variety of ginger is been produced in the study area. The implication of this result is that the more educated a farmer is the readily adaptive modern farming technologies and improved practices, but 100% of the respondents producing the local varieties of ginger could be of the fact that the local varieties are more nutritious, readily available or are cheaper to acquire than the improved varieties.

B.Sc./PG	4	9.5
	NIL	NIL
Sex		
Female	24	57.1
Male	18	42.9
Production Experience(years)		
1 - 4		
5 - 8	19	45.2
9 and above	22	52.4
	1	2.4
Farm Size (Hectares)		
0 - 2	42	100.0
3 and above	NIL	NIL
Start-up Capital (Naira)		
Below 2001	17	40.5
2001 - 4000	18	42.8
4001 and above	7	16.7
Variety Produced		
Local Variety	42	100.0
Improved Variety	NIL	NIL
Total	42	100.0

Source: Field Survey; 2017

Determinants of Ginger Output in the Study Area.

Table 2 revealed the determinants of ginger output in Isiala Ngwa North of Abia State, Nigeria. Age, cost of planting materials, cost of land preparation, initial capital, fertilizer used and cost of land preparation were highly statistically significant at 99.9% of confidence level of ginger production. Age was statistically significant at 1% level of significance with a negative sign, implying that as the farmers increased in age, their output in ginger production decreased. This does not conform to a priori expectation because increase in age is expected to increase ginger output. This might result in reduction in strength which is associated with age increase. Cost of planting materials and cost of land preparation were both statistically significant at 1%

level of significance with negative signs, implying that as cost of planting material and cost of land preparation increased, ginger output also decreased. This conformed to a priori expectation. Being a cost factors, their increase were expected to bring about reductions in output, because, more costs are likely to bring about some levels of discouragement. Initial capital and fertilizer used were both statistically significant at 1% level of significance with positive signs, implying that as quantity of fertilizer used is increased, ginger output also increased, and the more the initial capital the more the output as well. These conform to a priori expectation. High initial capital will result is increase in production and its activities which will lead to higher output. Again, more fertilizer application to crops will result in increased crop yield (Nze and Nzeakor, 2017).

Table 2. Linear Regression Result on determinants of Ginger Output.

Variables	Coefficient	Std. Error	T – values
Constant	1126.642	645.152	1.746*
Age	-56.294	8.968	-6.277***
Cost of weeding	-0.040	0.078	-0.516
Cost of planting Materials	-8.221	0.463	-17.787***
Fertilizer Used	8.279	0.415	19.938***
Initial Capital	10.798	0.566	19.085***
Cost of Land Preparation	-6.100	0.476	-12.803***
Production Experience	216.572	175.986	1.230
R- Squared	1.000		
Adjustment R-Square	0.997		
F.Ratio	376.624***		

Sources: Field Survey; 2017

Key: * and *** = statistically significant at 10.0% and 1.0% of risk levels respectively.

Costs and Returns of Ginger Production

The costs and returns associated with ginger production in the study area is shown in table 3. The

table revealed the total start-up capital for the crop production to be ₦85,200, meaning that each producer needed a start-up capital of about

₦2029. This amount was not really much for a business, but could be considered moderate for the type of crop. This means that ginger production does not require much capital and can easily be undertaken by low income earners in order to prevent food hunger.

The average monthly income of the production amounted to ₦272,800 for the 42 farmers and ₦5376 for each of them. This means that with the little initial capital of ₦2029, ginger production is bound

to give a considerable level of output that could generate ₦5376 per month. This business is recommendable.

Monthly total variable costs of ginger production amounted to ₦225,600, while gross margin of the production was ₦132,400. This means that ginger production is a profitable business in Isiala-Ngwa, Abia state, and can assist in transforming the National food system to prevent hunger.

Table 3: Presentation of Costs and Returns of Production of Ginger.

Variables	Amount (Naira)
Revenues:	
Start-up Capital	85,200
Average Monthly Income	272,800
Total Revenues	358,000
Cost:	
Cost of land preparation	35,700
Cost of planting Materials	82,200
Other Average Monthly Expenses	107,700
Total Variables Cost	225,600
Gross Margin	132,400

Sources: field Survey: 2017

Challenges to Ginger Production in the Study Area

The challenges confronting ginger farmers in the study area is shown in table 4, and it included used of crude implements being the first challenge, followed

by poor knowledge of improved ways of production, pests and diseases attack, unavailability of planting materials, perishability of the produce, with land inadequacy being the last constraint.

Table 4: Distribution of challenges to Ginger Production in the study area

Items	Frequency	Percentage	Rank
Used of crude implements	38	90.48*	1 st
Poor knowledge of improved ways of production	36	85.71*	2 nd
Pests and Diseases Attack	32	76.19*	3 rd
Unavailability of planting materials	31	73.81*	4 th
Perishability of produce	28	66.67*	5 th
Land Inadequacy	16	38.10*	6 th

Sources: Field Survey: 2017

* = Multiple Responses Recorded.

CONCLUSION AND RECOMMENDATIONS

Based on the findings of this study it could be concluded that ginger production does not require much capital and large farm size, rather, it requires little star-up capital in order to make a considerable revenue. This is ideal in fighting hidden hunger. Specific factors such as age, years of experience and the variety of ginger planted are the determinant of ginger output, while perishability of produce and Land Inadequacy are the least constraints to ginger production. It was recommended that the farmers in the study area should in-cooperate improved varieties with local varieties, access improved technological packages which includes improved pesticides, and use of modern technique in production. Ginger enterprise should be made more attractive to both the

old and young people since it generates an increased return.

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