

ECONOMIC ANALYSIS OF GINGER PRODUCTION IN KACHIA LOCAL GOVERNMENT AREA, KADUNA STATE, NIGERIA

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Abstract

The study analyzed ginger production in Kachia Local Government Area, Kaduna State, Nigeria. The specific objectives were to determine profitability of and determine the resource-use efficiency in ginger production. Structured questionnaire and interview schedule were used to collect data from 50 respondents using multistage sampling procedure. The data were analyzed using gross margin and regression analysis. The result revealed that the total variable cost per hectare for ginger for ginger production was ₦ 84,300, whereas the gross revenue was ₦ 220,500 and the gross margin per hectare was found to be ₦ 136,200. The of the study also revealed that seed and fertilizer were under-utilized in the study area with resource use efficiency of 4.70 and 24.3 while rental land, chemical and labour were excessively utilized with resource-use efficiency of 0.0003, 0.11 and 0.285 respectively. The

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study however recommend that efforts should be made to provide farmers access to credit facility, fertilizer, improved seed variety, chemical as well as other supporting services in order to improve productivity.

Keywords: Ginger, Production, Resource-use, Kachia, Kaduna

1.0 INTRODUCTION

Ginger (*Zingiber officinale Roscoe*) is a member of the family Zingiberaceae family of plants. It is an herbaceous perennial plant grown as an annual crop for its spicy underground rhizomes or stems. Ginger derived its spiciness or pungency from the principal compound gingerol, shogaol and zingerone (United Nations, 2012).

Worldwide, over 25 varieties of ginger are grown. Most variety has not been properly characterized (Ezeagu, 2016). Varieties differ in size of rhizomes, flavor, and aroma, color and fiber content. In Nigeria, two varieties are dominant in ginger production which are 'tafin giwa' yellowish plump rhizomes and 'yatsun biri' black or darker smaller rhizomes. (United Nations, 2012).

Ginger was introduced into Nigeria in 1927. Nigeria is the fifth largest producer in the world. Production of ginger started in the northern parts of the country. Major producing towns include, kachia, kwoi, kubacha, kafanchan and kagarko areas of southern Kaduna state and parts of plateau state (Kaduna State Agricultural Development Programme, KADP, 2000). Ginger cultivation in recent times has been introduced into south eastern and south western agricultural zones of Nigeria. Several efforts have been made to improve ginger production in Nigeria since 1988. However, there has been high fluctuation of output and the little increase experienced since then is insignificant to make a meaningful change in the income and standard of living of farmers (Food and Agricultural Organization, 2004).

In Nigeria, farmers operate subsistence agriculture and use of local technology which are usually utilized by farmers. This lead to low output at the end of production. Nigeria has the largest area in the world under ginger cultivation but only ranks fifth for production (National Bureau of Statistics, 2007). Much of Nigeria ginger is used for distillation of essential oils and the extraction of oleoresin for flavoring and seasoning which makes

Nigerian ginger highly valued in the international market. Therefore there is need to improve ginger production by farmers from subsistence to commercial production which will enhance the living standard of farmers and the economic development thereby increasing the growth of the Gross Domestic Products (GDP). This study is therefore focused on analysis of ginger production with the aim of determining its cost and returns and resource–use efficiency associated with ginger production in the Kachia Local Government area, Kaduna State Nigeria.

2.0 METHODOLOGY

2.1 Study Area

Kachia Local Government Area (LGA) of Kaduna State (popularly called ‘the home of ginger’) was among the first set of LGA created in 1979. It has an area of about 4632km² and a projected population of 767509 in 2015 from the population figure of 244,274 in 2006 (NPC, 2006). Kachia LGA is located between latitude 9°33’N and 10°11’N and longitudes 7°10’E and 8°08’E. It is bordered to the north by Kajuru and Chukum LGAs, to the east by Zango kataf LGA, to the south by Jaba and Kagarko LGAs and to the west by Niger state (Kaduna State Agricultural Development Programme, KADP, 2000).

The LGA has a total of 20 districts namely Ankwa, Agunu, Kachia, Awon, Gumel, Ariko, Mazugu, Koro-tsoho, Doka, Bishini, Katari south, Katari north, Kurmin Musa, Sabon sarki, Gidan tagwa and Jaban kogo. The people of the area are of diverse tribes such as including; Kadara, Kuturmi, Jaba, Bajura and Fulani. The Local Government is marked with distinct dry and wet seasons. The dry season falls between April and October. The vegetation of the area of the study is Guinea savannah. The major occupation of the inhabitants is farming. Majority of the farmers practice small scale agriculture. Other occupations involved, include; fishing, hunting, weaving, trading and many others. Kachia Local Government Area is endowed with abundant natural resources such as the famous dam known as ‘the Gurara dam, Hills, rocks, streams, natural grass land and economic trees. Crops grown in the area include; sorghum, maize, millet, rice, ‘acha’, beni seed, ginger, yam, cassava, cocoyam, sweet potatoes, cowpea, Soya beans, and sugar cane. During the dry season

farmers in Kachia local government are involve in the production of vegetables such as spinach, tomatoes and pepper (Kaduna State Agricultural Development Programme, KADP, 2000 ; Patricia, 2014).

2.2 Sampling Procedure

Multi-stage sampling technique was used to select the ginger farmers for the study. In the first stage, 5 districts were known for ginger production was purposively selected for the study. The second stage involved the random selection of 10 farmers from each district giving a total of 50 ginger farmers for this study. The sampling frame was registered members of ginger farmers association obtained Kaduna State Agricultural Development Programme office.

2.3 Analytical Techniques

The analytical techniques used for this study were budgetary technique and regression analysis. The budgetary technique using gross margin was used to determine the profitability of ginger production in the study area. Gross margin of a production was determined by subtracting the variable cost of production from returns from sale of the produce. A profitable production had higher total revenue than the total cost of production (Omonona, 2012). This was expressed as:

$$GM = \sum P_i Q_i - \sum C_j X_j$$

Where:

GM = Gross Margin per hectare (₦)

P_i = Unit price of produce i (₦/kg/ha)

Q_i = Quantity produced of produce i (kg/ha)

C_j = Unit Cost of input j (₦/kg/ha)

X_j =Quantity of inputs j used (kg/ha)

A production is said to be profitable when the total revenue derived from the production of ginger is higher than the total cost of its production.

Linear regress which was selected as the lead equation was used to determine the resource used-efficiency in ginger production. This was explicitly express as;

$$Y = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 + B_5 X_5 + B_6 X_6 + B_7 X_7 + e$$

Where:

Y= Quantity of ginger produce (Kg)

X₁= Quantity of seed (Kg)

X_2 = Quantity of fertilizer (Kg)

X_3 = Quantity of chemical (Ltr)

X_4 = Rented Land (ha)

X_5 = Hired Labour (ha)

X_6 = Family Labour (Man/day)

X_7 = Mechanical Labour (ha)

The regression coefficients were used to calculate the Marginal Physical Product (MPP). The ratio of the marginal value product (MVP) to the marginal factor cost (MFC) was used to analyze the resource use-efficiency (r) of the ginger farmers. It was expressed as:

$$r = \text{MVP/MFC}$$

Where:

r = efficiency ratio

MVP = marginal value product

MFC = marginal factor cost

When $r > 1$, resource is under utilized

$r < 1$, resource is over utilized

$r = 1$, resource is efficiently utilized.

The marginal value product (MVP) and marginal factor cost (MFC) was estimated as follows;

MFC = Cost of one unit of a particular resource

$\text{MVP} = \text{MPP}x_i \cdot P_y$

$\text{MPP}x_i = dy/dx_i = d/x$ semi-log function

$\text{MPP}x_i = dy/dx_i = b_i y/x$ double - log function

$\text{MPP}x_i = dy/dx_i = b$ linear function.

Where; y = mean value of output

x = mean value of input

b_i = estimated regression coefficient of x

P_y = price of unit output (N)

MPP = Marginal physical product.

3.0 RESULTS AND DISCUSSION

3.1 Profitability of Ginger Production in the Study Area

The result of the cost and return in ginger production is presented in Table 1. The table shows that total variable cost per hectare for ginger production was ₦84,300.00 where labour, seed, fertilizer, rental land and chemical accounted for 49.9%, 27.5%, 13.0%, 5.9% and 3.5% respectively. The result implies that ginger production is labour intensive and seeds and land are very important and necessary inputs in ginger production. The table also indicates that the gross revenue per hectare was ₦220,500.00 and the gross margin per hectare was ₦136,200.00. This indicates that ginger production is profitable in the study area. This finding is in agreement with Ayuba (2007) who reported that a gross return of ₦162,796.50 was realized after his study and a gross margin of ₦311,578.50 per hectare.

Table 1: Estimate of Gross Margin per hectare of Ginger Production

Variables	Value (N/ha)	Percentage (%)	Total
Gross revenue			220,500
Variable costs			
Fertilizer (kg)	11,000	13	
Seeds (kg)	23,200	27.5	
Chemicals (ltr)	3,000	3.5	
Labour (₦)	42,100	49.9	
Rental land (₦)	5,000	5.9	
Total variable costs			84,300
Gross margin/ha			136,200

Source: Field survey, 2017.

3.2 Resource Use-efficiency

The result of the resource use efficiency of ginger production is presented in Table 2. The result shows that the resource use-efficiency of seed and fertilizer were 4.70 and 24.3 respectively. This indicates that both seed and fertilizer were under- utilized in production of ginger in the study area. This implies that there is need to make more efficient use of these inputs on the farm. The under- utilization of these inputs may be as a result of the type of ginger seed and fertilizer the farmers used for their production. The Table 2 also reveals that land rental, chemicals, hired labour, family labour and mechanical labour were excessively utilized with the resource use efficiency of 0.0003, 0.11, 0.05, 0.005 and 0.23 respectively. This implies that farmers in the study area were excessively utilizing chemical which can lead to soil acidity due to decrease in organic matter of the soil. The over-utilization of labour implies that there were excessive family members and laborers who spent too much time on the farm while the over-utilization of land rental means that there were excess land that were left uncultivated.

Table 2: Estimate of Resource Use-efficiency.

Variables	MPP	MPP	MFC	r (efficiency)
Land rental	0.015	1.66	500	0.0003
Seed	2.68	282.34	60	4.70
Chemical	1.06	111.46	1000	0.11
Fertilizer	25.50	2677.50	110	24.3
Hired labour	0.27	28.38	500	0.05
Family labour	0.01	0.93	200	0.005
Mechanical labour	2.21	233.00	1000	0.23

Source: field survey, 2017.

3.3 Conclusion and Recommendations

Based on the research conducted on the economic analysis of ginger production it is concluded that ginger production is a profitable venture which contributes to the livelihood of households in the study area. The research also conclude that there was under- utilization of seed and fertilizer and over utilization of land rented, chemicals, hired labour, family labour and mechanical labour. It is recommended that more seeds and fertilizers should efficiently to maximizes the output. There should be policy intervention to facilitate a lot farmer in the study area to have access to extension workers who will orient them on how to make good use of their resources and good management practices for optimum production.

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