



Research Article

Economics of Vegetable Production in Yewa North Local Government Area of Ogun State, Nigeria

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Abstract

This study was carried out to determine the economics of vegetable production in Yewa North Local Government Area of Ogun State, Nigeria. The specific objectives of the study were to describe the socio-economic characteristics of vegetable farmers, estimate the cost and return of vegetable production, determine the profitability of vegetable production. A multi stage sampling techniques was used to select 112 respondents. Information were collected through a well-structured questionnaire. Data obtained from the study were analyzed using descriptive statistics, Gross margin and Net Farm Income. Regression analysis was used to determine factors influencing the Net Farm Income. The result showed that 52.7% of the respondents were female, 44.6% were between the age range of 41-50 years with average of 40 years, 60.7% were married and 86.6% of the respondents were literate. The result of the resource use efficiency indicated that farm size and quantity of seed are under-utilized resources. The Net Farm Income realized accounted for ₦5,621,800 and the gross margin analysis revealed a value of ₦80, 437.95 per respondents. The result implies that vegetable production is a profitable enterprise in the study area. The result of regression analysis shows that household size (X_4) -1.447, farm size (X_5) 2.325, and years of experience (X_6) -1.118 were significant at 10% level. Major constraints affecting vegetable production were high cost of labour and poor transportation network. It was recommended that good road networks should be provided by the government to aid easy movement of farm produce to the designated location.

Keywords: Vegetable Production, Nutrients, Profitability and Yewa North

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Introduction

Nigeria is a typical agriculture-centered economy and the agricultural sector contributed about 63.8% to the country's GDP in 1960, which have significantly declined over the years to an average of about 24% during 2013-2019 (Oyaniran, 2020). According to Ukpe *et al.*, (2018) agriculture account for 65% employment opportunities for labour force in developing economies. In the same vein, Oboh and Adeleke (2016) reported that more than 75% of the poor citizens in most developing countries live in the rural areas working as subsistence farmers and earns their livelihood directly or indirectly from agricultural activities. Nigeria has a comparative advantage in many fruit and vegetable crops production due to the availability of cheap labor, proximity to the export market, favorable weather condition, and diverse agro-ecology which makes it suitable to produce a variety of horticultural crops (Sebeko, 2015).

The term 'vegetable' can be used to designate the tender edible shoots, leaves, fruits and roots of plants that are eaten whole or part raw or cooked as a supplement to starchy foods and meats (Oladimeji and Abdulsalam, 2014). In human nutrition, vegetables are an essential protective food containing vitamins and minerals, any balanced diet should include vegetables and fruits for this reason. The proportion of vegetables required in a balanced diet per capita meal is of the order of 45 % of the total volume of the food (Afodu, 2015).

Vegetable farming has been ongoing for decades in Nigeria, contributing to income and serving as means of employment for the growing population, especially dry season vegetable farming (Mukaila *et al.*, 2021; Sabo and Zira, 2009). Nigerian vegetable output in 2020 was 15.7 million tonnes (Knoema, 2021). This immensely increased from what the country produced (3.11 million tonnes) in 1970 (Knoema, 2021). Vegetables are easily grown, require little production input, rich in minerals and vitamins, have an anti-oxidant property and contain phytochemicals. Apart from the economic importance of vegetable crops, they form part of the daily human diet globally, supplying the body with nutrients necessary for a healthy life (Ngegba *et al.*, 2016). Due to its high nutritional components and health benefits, a minimum of 400g consumption per day in conjunction with fruits is recommended (FAO, 2020) Food and Agricultural Organization.

In developing countries, consumption of vegetables is generally lower than the Food and Agriculture Organisation (FAO, 2016) recommendation of 75kg per year in habitant, that is, 206g per day per capita. Vegetables supply most of the nutrients that are deficient in other food materials. These include supply of minerals, especially calcium and iron, acid neutralizers, e.g., okra, neutralizes the acid produced from some fruits. Vegetables are

generally needed to have balanced diets and overcome nutritional deficiencies and they make our staple food more palatable and enhance their intake (Leelananda *et al.*, 2021).

Amaranth (*Amaranthus spp*) is a leafy vegetable produced in almost all the states in Nigeria especially in the urban and peri-urban centres of the country (Owombo *et al.*, 2012). It is an annual, herbaceous plant that is produced all the year round, depending on the availability of water, and is produced and consumed all over Nigeria to supplement the nutritional requirements of Nigerian households. In terms of origin, Amaranth originated from South America (Law-Ogbomo and Ajayi, 2009). It is one of the leafy vegetables often relied upon as cheap and affordable source of protein, vitamin A and minerals to combat the menace of malnutrition and maintenance of good health and prevention of diseases (Owombo *et al.*, 2012). The leaves are often green or purple, normally alternate petiolate and entire tip often obtuse. Amaranthus responds to soil with high inorganic content, with adequate mineral reserve. It is tolerant to relatively high temperature range of 22-30°C. It is grown during both wet and dry season, through irrigation system or wetting device is normally required for dry season (Mustapha *et al.*, 2013).

Despite vegetable production potentials, vegetable farmers face some challenges which include lack of ready market, unavailable storage facilities, limited access to credit, lack of technical support, pest and disease attack and unreliable transport system. Also, there is no good storage facility, therefore the farmers are eager to sell off all produce to these middlemen (wholesalers and retailers) who know about their storage problem (Ayandiji *et al.*, 2011). The result is that the farmers make little or no profits from the sales and the cash earned from this enterprise cannot contribute significantly to food security at the household level and enable farmers to attain a degree of financial independence, and yet poverty still looms. Thus the probing question, are these farmers producing optimally and efficiently? This study therefore examines the economics of vegetable production in Yewa North Local Government Area of Ogun State.

Specifically the study sort to;

- i. describe the socio-economic characteristics of vegetable farmers in the study area;
- ii. estimate the cost and return of vegetable production in the study area;
- iii. determine the profitability of vegetable production among farmers in the study area;
- iv. ascertain the socio-economic factors affecting vegetable production in the study area;

Methodology

The study was carried out in Yewa North Local Government Area of Ogun State, Nigeria. The Local Government Areas (LGAs) has its headquarters in Ayetoro located on latitude 7°15 'N and longitude 3°3'E in the deciduous derived savannah zone of Ogun State (Ojiako *et al.*, 2014). Yewa North Local Government Area is one of the twenty Local Government Areas (LGAs) in Ogun State and it has an estimated population of 312,700 (Macrotrends, 2023) The average rainfall in the state ranges between 1250 mm and 1800 mm with rainfall distribution which starts in March and ends in October while the dry season stretches from mid-November to mid- March. Temperature ranges from 24°C to 32°C and average relative humidity of 80% to 90%. The major occupation of the people in these settlements is farming. The major crops grown include yam, tomato, beans, pepper, maize, vegetables, cassava among others.

Sampling Procedure

A multi stage sampling procedure was used to select respondents for this study. The first stage involved random selection of eight (8) communities from the Yewa North Local Government Area (LGA) using simple random sampling techniques. The second stage involved selection of fourteen (14) vegetables farmers from each of the selected communities (Ayetoro, Igbogila, Oja odan, Tata, Ajegunla, Owode, Akinfenwa, Kubejo) randomly. Thus, one hundred and twelve (112) respondents were selected for this study.

Data Collection

Primary data were collected with the aid of a well- structured questionnaire through the use of trained enumerators. Data collection centered on socio-economic characteristics of vegetable farmers, the cost and return of vegetable production, the profitability of vegetable production among farmers, the socio-economic factors affecting vegetable production and the resource use efficiency in vegetable production in the study area.

Analytical Techniques

The socio-economic characteristics of the respondents was analysed using descriptive statistics such as frequency distribution, mean and percentages.

The cost and return of vegetable production was analyzed using net farm income. The model used for estimating the net farm income is represented by:

$$NFI= TR-TC..... (1)$$

Where:

NFI= Net farm income (₦)

TR= Total revenue (₦)

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TC= Total cost of production (₦)

The return per naira invested (RNI) will be obtained by dividing the net farm income (NFI) by the total cost (TC). Therefore,

$$RNI = NFI \div TC \dots\dots\dots (2)$$

Where:

RNI = return per naira invested

NFI = net farm income

TC = total cost.

The profitability of vegetable production among farmers was analyzed using gross margin analysis.

Gross Margin Analysis

$$GM = TR - TC \dots\dots\dots (3)$$

Return/Naria invested = TR/TC

Where GM- Gross Margin

TR- Total Revenue

TVC-Total Variable Cost

GM- Gross Margin

TC = Total Cost

TR = Total Revenue

The factors influencing vegetable profitability was analysed with linear regression model. The specification of the linear regression model analysis is given below;

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 \dots\dots\dots (4)$$

Where;

Y = Net Farm Income

b₀ = Constant term

b₁- b₁₀ = regression coefficients of explanatory variables

X₁ = Age of Farmers

X₂ = Gender

X₃ = Marital Status

X₄ = Household Size

X₅ = Farm Size

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X₆ = Farming experience
X₇ = Extension Agent Visit
X₈ = Use of Agro-chemical.
X₉ = Use improved planting materials
X₁₀ = Educational Level

Results and Discussion

Table 1: socio-economic characteristics of the Respondents

Characteristics	Frequency	Percentage (%)	Mean
Gender			
Male	53	47.3	
Female	59	52.7	
Age (years)			
21-30	3	2.7	
31-40	33	29.5	40yrs
41-50	50	44.6	
51 and Above	26	23.2	
Marital Status			
Single	21	18.8	
Married	68	60.7	
Divorced	6	5.4	
Separated	11	9.8	
Widow/widower	6	5.4	
Education Level			
Never Attended	15	13.4	
Primary Education	12	10.7	
Secondary Education	40	35.7	
Tertiary Education	23	20.5	
Adult literacy class	22	19.6	
Years of Experience			
1-10	102	91.1	
11-20	9	8.0	5yrs
21-30	1	0.9	
Farm size			
1-5	99	88.4	
6-10	11	9.8	4ha
11 and above	2	1.8	
Total	112	100.0	

Source: Field Survey, 2024

Table 1 showed that 52.7% of the respondents were female and 47.3% were male. The result revealed that women were more involved in vegetable production in the study area than men. Vegetable production can be managed on small scale and be adapted to fit around other household responsibilities. This flexibility makes it a viable option for many women who have multiple commitments. This finding corroborates the study of Odiaka and Akorada (2008) as well as that of Nwosu *et al.*, (2012) who found out that women are more involved in vegetable production. Furthermore, 44.6% of the respondents were between the age range 41-50 years, 29.5% of the respondents are between 31-40 years, while 2.7% were between 21-30 years. The mean age was 40 years which shows that the respondents were young, able bodied male and female who engaged in livelihood activities. This result agrees with Barrett *et al.*, (2017) who reported that 52.0% of the farmers in Africa are within the age range of 40-60 years. Also, 60.7% of the respondents were married, 18.8% were single while those who are separated, divorced, and widow/widower accounted for 9.8%, 5.4%, 5.4% respectively. The result implies that majority of the respondents were married and this may be related to the fact that marriage comes with more responsibilities hence, the need for household head to provide sufficient income for the family up keep. This study agrees with the findings of Tsado (2015) who found that 74.74% of the vegetable farmers in Minna, Niger State, Nigeria, were married. The result also showed that 35.7% had secondary education, 20.5% of the vegetable farmers had tertiary education, 19.6% had adult literacy education. This implies that majority 86.6% of the respondents were literate. This means that the farmers had minimum level of education that could enable them to adopt and search for innovations and agricultural technologies in vegetable production. Education enhances farmer's ability to understand production techniques, which enhances yields/outputs. Also, 91.1% of the respondents had farming experience ranging between 1-10 years, 8% had farming experience of between 11-20 years with an average of 5 years of experience. The result showed that majority of the farmers had many years of farming experience in vegetable production business which would be an advantage for them to know all it takes to maximize profit. Years of farming experience will also enhance the management capability of the crop as well as reduce the fear of risk of failure. This result is in congruent to the findings of Anselm and Ubokudom. (2014) that showed that about 70% of the farmers had between 1 and 10 years of experience in waterleaf production and mean year of farming experience of 8.5 years, indicating that the majority of the farmers have been in the business for long. 88.4% of the respondents had farm size ranging between 1-5 hectares, 9.8% had farm size ranging from 6-10 hectares, this implies that majority of farmers in the study area cultivated small hectares of land. This implies that small scale vegetable farmer have the tendency for increased vegetable production when land is not a constraint to them. This finding reflects land as a useful resource in agricultural production such as vegetable (Nzeh and Eboh, 2010).

Cost, Return and Profitability Analysis of Vegetable Production

NET FARM INCOME

$$\text{NFI} = \text{TR} - \text{TCP}$$

Total Revenue = ₦11,877,000

TCP = ₦6,255,200

NFI = ₦11,877,000 - ₦6,255,200 = ₦5,621,800

NFI = ₦5,621,800

$$\text{RNI} = \frac{\text{NFI}}{\text{TCP}} = \frac{11,877,000}{6,255,200}$$

RNI = 0.89874

GM = TR - TVC

TR = ₦11,877,000

TVC = ₦2,867,950

GM = ₦9,009,050

$$\frac{\text{GM}}{R} = \frac{9,009,050}{112} = ₦80,437.95 \text{ per respondent}$$

From the results, the net farm income realized by a farmer accounted for ₦5,621,800 which was obtained by subtracting the total cost from the total revenue and the gross margin analysis revealed a value of ₦80,437.95 per respondents. The result implies that vegetable production is a profitable enterprise in the study area. This is line with the findings of Ajewole (2015) which noted that Gross Margin for vegetable production was ₦138,044.22 per hectare. Similarly, Ibrahim (2011), observed that gross margin for vegetable production was ₦105,002.95 per hectare. The Return per Naira (RNI) Invested was 0.89874 implying that for every one naira invested in vegetable production, there is a profit of 0.89874.

Table 2: The Result of the Regression Analysis

Model	Unstandardized B	Coefficients Error	Std	T(value)
Constant	-101621.505	98561.631		-1.031
Age (X ₁)	3660.346	1198.696		3.054
Gender (X ₂)	-14553.213	18478.327		-0.788
Marital Status (X ₃)	-1663.462	7365.530		-0.226
Household size (X ₄)	-7586.728	5243.076		-1.447*
Farm size (X ₅)	10363.644	4457.518		2.325*
Years of Experience (X ₆)	-3053.112	2731.254		-1.118*
Extension agent visit (X ₇)	-37534.518	22022.741		-1.704
Use of Agrochemicals (X ₈)	-5241.364	20339.982		-0.258
Use improved planting materials (X ₉)	53128.909	31177.333		1.704
Educational Level (X ₁₀)	2231.462	6694.481		0.333

Dependent Variable: Net Farm Income

$R^2 = 0.476$

$R^{-2} = 0.227$

F – Value = 1.993

*Significant at 10%

The result of the regression analysis for factors affecting vegetable production is presented in Table 2. The R^2 for the specified model is 0.476 implying that 47.6% variation in the dependent variable is being accounted for by the independent variables in the specified model. Household size (X₄), farm size (X₅), and years of experience (X₆) were significant at 10% level implying that they are important factors determining the net farm income. The positive sign associated with variables such as age (X₁), farm size (X₅), use of improved planting materials (X₉) educational status (X₁₀), implies a positive relationship that is, an increase in any of these variables will lead to an increase in the net farm income. The negative sign associated with variables such as gender (X₂), marital status (X₃), household size (X₄), years of experience (X₆), extension agent visit (X₇), and use of agrochemicals (X₈), implies that there is an inverse relationship between the variables and the net farm income.

Conclusion

Findings from the study reveals the following, women were more involved in vegetable production in the study area than men. It can be established from this study that vegetable production was profitable. The major socio economic characteristics that positively influenced net farm income of vegetable production in the study area were: age, farm size, use of improved planting materials, and educational status.

Recommendations

Based on the findings, the following recommendations were made:

- i. The extension agent should provide training on value addition in order to avoid waste of vegetables product in the study area.
- ii. The government and relevant authorities should promote Integrated Pest Management (IPM) that combine physical, cultural, biological, and chemical controls to reduce agrochemical usage.
- iii. Good road networks should be provided by the government (State or Federal, where applicable) to aid easy movement of farm produce to the designated location.

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