



PROFITABILITY ANALYSIS OF *TELFAIRA OCCIDENTALIS* VEGETABLE PRODUCTION IN THREE LOCAL GOVERNMENT AREAS OF ENUGU STATE

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ABSTRACT

The study analyzed the profitability of *Telfaira occidentalis* vegetable production in three local government areas in Enugu State namely Igbo Eze-North, Nsukka and Udenu LGAs. Multi-stage sampling technique was adopted for this research. A total number of 96 respondents were interviewed. Results revealed the age range of 31 to 40 had the highest percentage with 37.5% suggesting that the farmers are still experienced and young farmers, females 61.5% were major producers while majority of the respondents were married (47.9%), with those of 6 to 10 persons (38.5%) having the highest household sizes. Education-wise, a few percentage possess tertiary qualifications (12.5%), and just (21.9%) lack formal education, implying a relatively high level of basic education access. Approximately 30.2% have 1 to 5 years of farming experience. Profitability analysis revealed that the total revenue generated by the vegetable farmers was ₦247,680,000, net revenue was ₦82,848,000 and gross margin was ₦111,936,000. The Benefit Cost Ratio of ₦1.50k indicated that for everyone naira spent, ₦1.50k will be realized as revenue implying vegetable production was profitable. For the factors affecting vegetables production in the study area, most of the variables were all positive and significant with R^2 value of 0.756 implying that the model accounted for 75.6% of the variability in vegetable production. Major constraints encountered by vegetable farmers were destruction of farm by cattle, lack of available labor, lack of credit and fluctuation in prices and if all of these were taken care of, vegetable production will be profitable in the study area.

Keywords: Analysis, Constraints, Production, Profitability and Vegetable

INTRODUCTION

Vegetables are important protective foods, which are highly beneficial for the maintenance of good health and prevention of diseases. They contain valuable food nutrients, which can be successfully utilized to build up and repair the body. Many vegetable crops particularly the leafy vegetables are mainly consumed for their nutritional values for health and development of the human body. They are rich sources of carotene, ascorbic acid, riboflavin, folic acid and minerals like calcium, iron and phosphorous (Sheela *et al.*, 2004). In nature there are many underutilized traditional leafy vegetables of promising nutritive values, which can nourish the ever-increasing human population. Many of them are resilient, adaptive and tolerate adverse climates. Although, they can be raised comparatively at lower management cost even on poor marginal lands, they have remained underutilized due to lack of awareness and popularization of technologies for their proper utilization (Raghuvanshi and Singh, 2001). In time past, the average African rural dweller depended on subsistence farming in which he cultivated vegetable crops at least for his immediate family consumption. The era of civilization, had great influence on the choice of vegetables used as food and their cultivation. Increasing pressure caused by human activities is equally disrupting even the existence, balance and natural regeneration of these vegetables. The gradual loss of genetic diversity deprives man of the opportunity to meet his future needs and even present



challenges of vegetable production for the enhancement of the individuals' health (Ayodele, 1996). Currently there is a global attention on the conservation and sustainability of the rich biodiversity of the tropical rainforest. This is as a result of the vast resources derivable from the forest and the threat to these bio resources due to anthropogenic activities and their unsustainable uses (DaniaOgbe *et al.*, 2001).

Vegetable production in Enugu State faces various problems such as inadequate investment in agriculture, fluctuating input cost, unavailability of inputs such as fertilizers, improved seeds, inefficient markets, and changing climate conditions. In lieu of the above, this research was aimed at examining the economic analysis of *Telfaira occidentalis* vegetable production in Enugu State, Nigeria with the following research objectives; to describe the socioeconomic characteristics of vegetable farmers in the study area, examine the profitability of vegetable production in the study area, determine the factors that affect vegetable production in the study area and to identify the constraints militating against the production of vegetables in the study area.

MATERIALS AND METHODS

The Study Area

The study was conducted in Enugu State, Nigeria. Enugu State is bounded by Kogi State in the North and Abia State in the South, Anambra State in the East and Ebonyi State in the West. The State has a population of about 5.9 million people with total area of 6353km² and seventeen (17) Local Government Areas. The state has a tropical climate and lies in the rainforest zone with two distinct seasons. These are the rainy season (April-October) and the dry season (November-March). Temperature ranges between 21° and 38°C with high humidity.

Sampling Procedure and Sample Size

Multi-stage sampling technique was employed for this research. In the first stage, three (3) local government areas were purposively selected out of the seventeen (17) local government areas based on the quantity of vegetables produced in the local government areas which were Igbo Eze-North, Nsukka, and Udenu LGAs. In the second stage, four (4) communities were randomly selected from each local government area based on the quantity of vegetables produced in these communities. The final stage involved the simple random selection of eight (8) respondents each from the villages making a total sampling size of ninety-six (96) respondents.

Method of Data Collection

Data were collected by use of interviews and a well-structured questionnaire which were administered to vegetables farmers in the study areas.

Method of Data Analysis

Analytical tools used for this research were descriptive statistics such as mean, frequency distribution, percentages and likert scale, which was used to describe the socio-economic characteristics of the vegetable farmers. Budgetary analysis was also employed to examine the level of profitability of the vegetable farmers in the study area by deriving the following;

(TR, TC, TVC, TFC, GM, NR, ROI, BCR) and also regression analysis was conducted to determine the factors affecting vegetable production in the study area.

Model Specification

Budgetary analysis was used to examine the profitability of *Telfaira occidentalis* vegetable farmers and expressed as; Profit = Total Revenue – Total Cost.

Total Cost (TC) = Total Fixed Cost (TFC) + Total Variable Cost (TVC).

Total Revenue (TR) = Total Output (Q) * Price (P).

Gross Margin (GM) = Total Revenue (TR) – Total Variable Cost (TVC).

Net Revenue (NR) = Total Revenue – Total Variable Cost (TVC).

Return on investment = Gross Margin/ Total Variable Cost

Benefit Cost Ratio (BCR) = Total Revenue/Total Cost

Regression analysis was used to determine the factors influencing *Telfaira occidentalis* vegetable production. The linear regression model was used to estimate the factors involved in production were specified as; $Y = X_0 + X_1 + X_2 + X_3 + X_4 + X_5 + X_6 + X_7 + X_8 + X_9 + e$. Where Y= *Telfaira occidentalis* Vegetable output. X_1 = Age (years), X_2 = Household size (numbers), X_3 = Farming experience (years), X_4 = Level of education, X_5 = Cost of labour (naira), X_6 = Cost of pesticides (naira), X_7 = Cost of transportation (naira), X_8 = Quantity of seeds, (kg), X_9 = Farm size (ha), X_0 = Intercept, e= error term.

RESULTS AND DISCUSSION

Socio-demographic Characteristics

Table 1 illustrates the socio-demographic characteristics of the respondents, revealing that the age range of 31-40 years had the highest percentage of respondents with 37.5%. The sample comprised a majority of females (61.5%) and a smaller proportion of males (38.5%). A significant majority of the respondents were married (47.9%), with households of 6 to 10 members having the highest percentage (38.5%). The educational background of the respondents showed that 21.9% had no formal education, while 28.1% and 37.5% had received both primary and secondary education respectively with 12.5% having pursued tertiary education. Furthermore, 30.2% of the respondents had been engaged in farming for 1 to 5 years, while 16.7% have been on the farm for more than sixteen years. This finding is in line with Anugwo and Egwue, (2025), who asserted that majority of vegetable farmers are females with a small proportion of males and have been on the farm cultivating vegetables for close to six to eleven years.

Table 1. Socio-economic characteristics of respondents

Socio-demographic variables (n= 96)	Frequency	Percentage (%)
Age group		
<30	21	21.8
31-40	36	37.5
41-50	17	17.7
51-60	15	15.7
>61	7	7.3
Mean \pmSD 28.22\pm10.93		
Sex		
Male	37	38.5
Female	59	61.5
Marital status		
Single	27	28.1
Married	46	47.9
Divorced	23	24.0
Household size		
1-5	32	33.3
6-10	37	38.5
11-15	16	16.7
>16	11	11.5
Mean \pmSD 8.30\pm6.9		
Highest education		
No formal education	21	21.9
Primary	27	28.1
Secondary	36	37.5
Tertiary	12	12.5
Years of farming activities		
1-5	29	30.2
6-10	27	28.1
11-15	24	25.0
>16	16	16.7
Mean \pmSD 9.24\pm7.36		
Total	96	100

Source: Field Survey, 2025

Profitability of *Telfaira occidentalis* vegetable production.

According to the findings of the profitability analysis shown in Table 2, the study area Total Variable Cost (TVC) per hectare for vegetable output was ₦135,744,000. The majority of the cost



incurred during production in the study area are comprised of the expenditure used in the production of vegetable in the study area. The result of the analysis further revealed that the total revenue generated by the vegetable farmers in the study area was ₦247,680,000, with net revenue of ₦82,848,000. The gross margin analysis revealed a value of ₦111,936,000 with a rate of return on investment of (50.26%) and a benefit cost ratio of ₦1.50K, indicating that for everyone naira spent, #1.50k will be realized as revenue and so, farmers in the study area can go on with production of vegetable because the values obtained were positive indicating that in the study area, growing vegetables is a successful business. This finding is consistent with research by Anugwo *et al.* (2024), who worked on Analysis of the Use of Organic Manure in Tomato (*Solanum lycopersicum*) Production in Ikole Local Government Area of Ekiti State, Nigeria.

Table 2. Estimated Cost and Return of Vegetable Production in the Study Area

Variable Costs	Unit Prices(₦)	n= 96*	
			Amount(₦)
Cost of seeds	3,000		480,000
Cost of seedlings	200*100		19,200,000
Cost of tilling/labour	15,000		1,440,000
Cost of weeding	18,000*12		20,736,000
Cost of pesticides	7000*4		2,688,000
Cost of transport	2000*300days		57,600,000
Cost of organic manure	350,000		33,600,000
Total variable cost			135,744,000
Fixed Costs	Unit Prices *n= 96		Amount
Hoe	4,000		384,000
Cutlass	5,000		480,000
Watering can	8,000		768,000
Shovel	6,000		576,000
Wheelbarrow	35,000		3,360,000
Farmland	125,000		12,000,000
Ropes for fencing	1,200/yard*100		11,520,000
Total fixed cost			29,088,000
Total Revenue	Unit price of item	No of units*No of respondents	Amount
	₦1,800	900* 96	₦155,520,000
	₦1,200	800*96	₦92,160,000
Total Revenue			₦247,680,000
Gross Margin (GM)			₦111,936,000
Net Revenue (NR)			₦82,848,000
Rate of Return on Investment (ROI)			50.21%
Benefit Cost Ratio (BCR)		₦1.50k	
Revenue/ respondents/day		₦2,580,000/365 = ₦7068.49K	

Source: Field Survey, 2025.

Factors that influence *Telfaira occidentalis* Vegetables Production

A multiple linear regression model was employed to examine the relationships between various predictors and vegetable production. The results, presented in Table 3, indicated that the independent variables included in the model accounted for 75.6% of the variability in vegetable production. The result in Table 3 further revealed that age, farming experience and farm size were all positive and significant at 10% level of significance, implying that increase in age, farming experience and farm size led to increase in output of *Telferia occidentalis* by 73.6% ,53.7% and 12.2% respectively in the study area. Furthermore, quantity of seeds was equally positive and significant at 10% implying that it also increased vegetable output in the study area. However, household size was positive and significant at 5% probability level. By implication this means that as the number of persons in the vegetable farmer`s households increased, output of *Telferia occidentalis* increased by 5% in the study area due to the availability of more hands on labour for *Telferia occidentalis* cultivation. Level of education was positive and significant at 1% level. Impling that increase in level of education in the study area led to increase of the ease of adoption of ideas and innovations of *Telferia occidentalis* cultivation which also increased its output in the study area. This result is consistent with the findings of (Olalekan, 2020, Khan *et al*, 2022, Anugwo *et al*. (2024) and Anugwo and Egwue, (2025), who worked on Assessment of Economic Returns of Green Amaranth (*Amaranthus viridis*) Production in Ekiti State, Nigeria

Table 3. Multiple regression analyses showing the factors affecting vegetable output

Variable	Estimated coefficient	Standard. error	t- value
Age of respondents	0.736***	0.233	3.153
Household size	0.426**	0.176	2.418
Farming Experience	0.537***	0.186	2.884
Level of education	2.379*	1.083	2.196
Cost of labour	0.861	0.663	1.298
Cost of pesticides	0.134	0.225	0.595
Cost of transportation	0.753	0.626	1.202
Quantity of seeds	1.823***	0.515	3.539
Farm size	0.122***	0.045	2.711
Model	R ² = 0.756	R ² adjusted = 0.642	

Source: Field Survey, 2025

Constraints of *Telfaira occidentalis* vegetable production

Table 4 presents the results of a comprehensive analysis of the constraints faced by vegetable producers, revealing a hierarchical ranking of constraints. The most significant constraint is destruction by cattles, with a percentage score of 14.6%, closely followed by lack of labor with percentage score of 13.5%. Fluctuation in prices and lack of nearness to market both ranked third with (12.5%) respectively, also lack of credit and climate variability both ranked fourth respectively with (11.5%). Pests and diseases with (9.4%) was among the least significant



constraints and the findings is consistent with Anugwo *et al.* (2024), who emphasized the importance of integrated pest management in agricultural production.

Table 4. Constraints of *Telfaira occidentalis* Vegetable Production

Constraint Variables	Frequency	Percentage	Ranking
Lack of Credit	11	11.5	4 th
Pests/Diseases	9	9.4	7 th
Destruction by Cattles	14	14.6	1 st
Lack of Labor	13	13.5	2 nd
Climate Variability	11	11.5	4 th
Fluctuations in Prices	12	12.5	3 rd
Lack of Storage Equipment	10	10.4	6 th
Lack of nearness to Market	12	12.5	3 rd
Competition from other Products	4	4.1	8 th
Total	96	100	

Source: Field Survey, 2025.

CONCLUSION AND RECOMMENDATION

The study concluded that *Telfaira occidentalis* vegetable production is profitable in the study area. However, 37.5% of farmers were within age range of 31-40 years. Majority (61.5%) of the farmers were females and 47.9% were married with household sizes ranging from 6 to 10 members (38.5%). The farmers had form of education or the other with 1 to 5 years farming experience. Based on findings, the study recommends

- To increase the amount of vegetable consumed in the study area, it is necessary to educate the local population about the nutritional benefits of *Telfaira occidentalis* vegetable.
- For more people to participate in the business and cease viewing it as a trade for underachievers, it is also necessary to educate the residents of the study area about the amount of money made from selling *Telfaira occidentalis* vegetable in the study area.
- To increase profitability in the study area, extension agents should inform the respondents about modern processing and storage methods and concepts of *Telfaira occidentalis* in the study area.
- In order to obtain any kind of government support, it is also suggested that the respondents should establish cooperative societies to help with the provision of credit and factors of production in the study area.

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