

(RESEARCH ARTICLE)



## Profitability analysis of vegetable production in Yenagoa Local Government Area, Bayelsa State, Nigeria

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### Abstract

The study investigated the Profitability Analysis of selected vegetable farmers in Yenagoa Local Government Area, Bayelsa State. Multi stage sampling techniques was adopted. First stage involves a simple random selection of 13 communities from the 20 communities present in YELGA. The second stage involves the selection of five (5) vegetable (bitter leaf) farmers each from the selected communities summing up to One hundred (100) farmers (bitter leaf). Sixty-nine (69) questionnaires were retrieved out of one hundred (100) copies and used for the analysis. The result indicates that 58.0% of the respondents fall between ages ranged of 20-39. Majority of the vegetable farmers were married (44.9%), females (69.1%) dominated vegetable production in the study area, 50.7% had family size of 1-4 people in their households, 82.6% had one form of education or the other. Total Fixed Cost (TFC) was ₦820,000.00 while Total Variable Cost (TVC) was ₦270,500.00 with Net Farm Income (NFI) of ₦377,800.00 during production period. Return on investment was ₦0.35 which implies profitability of vegetable production in the study area. The study identified inadequate storage facilities, lack of organized market, inadequate planting materials, inadequate finance, high cost of transportation, lack of land, high spread of pest and disease, high cost of labor, inadequate water supply and lack of modern technologies as the major problems of vegetable farmers in the study area. It was therefore recommended that Government should provide vegetable farmers with storage facilities organized market structure in order to encourage them increase their scale of production.

**Keywords:** Vegetable; Production; Profitability; Budgetary model

### 1. Introduction

Vegetables are important source of micronutrients for human nutrition. When taken in sufficient quantities, vegetables help to prevent cardiovascular diseases such as diabetes and cancer [1]. Given the nutritional importance of vegetables, the World Health Organization (WHO) and the Food and Agriculture Organization (FAO) recommend the consumption of fruits and vegetables at least 400 grams per capita per day (excluding starchy root crops) to avoid micronutrient deficiencies, heart and cancer related diseases [2].

Vegetables are also highly perishable as they start to lose their quality after harvest and continued throughout the process until it is consumed [3]. Hence, vegetable productions are risky investment activities. Riskiness of vegetable production may be attributed to the enormous supply demand gap in Yenagoa metropolis and the high cost. Biological processes of plant growth and climatic conditions inherent in agricultural production causes random production shocks [4], [5] such as harvest failure as a result of drought, floods and other adverse climatic factors; policy shocks [6]. Due to perishable nature and biological nature of production process, there is a difficulty of scheduling the supply of vegetables to market demands and production conditions. Unusual production or harvesting weather or a major crop disease can influence badly the marketing arrangements like contract farming provide stability [3]. Hence, Knowledge of small-scale

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crop producer's perception towards risk is important in designing strategies and formulating policies for agricultural development [7].

On the other hand, lack of market infrastructure is one of the limiting factors causing low returns in vegetable cultivation. Profitability is not only determined by the use of input resources but it is also dependent on the availability of proper logistic for transporting the farm produce from the farm gate to the market. Vegetable production is also influenced by the location of the farms due to the fact that the farms near to input market are in a better position to purchase different inputs such as seeds, fertilizers etc. at the appropriate time.

It is known that economics is an important concept which is the main focus of this study, because it relates to the financial feasibility of expansion, or indeed starting up of an enterprise and contains information of the efficiency of the technical and managerial process. Profitability in common usage means the ability to earn profit. The profitability of any enterprise is measured in relation to the size of the business [8]. Different forms of business produce goods and services for sale in order to earn income. If the income earned does not exceed cost of production in turn, the firm cannot stay in business for a long time therefore the aim of any enterprise is to minimize cost and maximize output in order to maximize net revenue.

Therefore, the study analyzes the costs and returns of vegetable (bitter leaf) farmers and identify the constraints associated with vegetable (bitter leaf) farmers in Yenagoa Local Government Area, Bayelsa State, Nigeria.

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## 2. Material and methods

The study area was Yenagoa Local Government Area, Bayelsa State of Nigeria. Yenagoa is geographically located within Latitude 04° 45' North, 05° 23' South and longitude 05° 15' West and 06° 45' East. The Area constitutes a population of 353, 344 [9] and lies within the rainforest zone, with a humid equatorial climate and mean annual rainfall ranging from 2,000 to 4,000mm and alternating rainy (March-November) and dry (December to February) seasons, featuring a short dry period between July and September (August break). Maximum average temperature is 30°C with a relative humidity between 55 and 90 percent, depending on season and location. It shares boundaries with Delta State on the North, Rivers State on the East and the Atlantic Ocean on the West and South, National Bureau of Statistics, [10]. The major occupation of the people is fishing, farming and trading. Other means of livelihood include hunting, lumbering, distillation, palm oil milling, building, and weaving [11]. Bayelsa State is a major oil and gas producing area and it contributes over 30% of Nigeria's oil production [10].

Multi stage sampling technique was adopted in the selection of respondents for this study. First, twenty communities were randomly selected from the existing communities. Secondly, from each community, five vegetable (bitter leaf) farmers were randomly selected making the sample size for this study a total of one hundred farmers. Out of the 100 questionnaires, 69 was retrieved and used to analyze the costs and returns associated with vegetable (bitter leaf) and identify the constraints associated with vegetable (bitter leaf) farmers in Yenagoa Local Government Area, Bayelsa State, Nigeria.

The ratio used to measure the profitability is stated as follows;

$$\begin{aligned} \text{NFI} &= \text{GR} - \text{TC} \\ \text{NROI} &= \text{NFI} / \text{TC} \end{aligned}$$

Where:

NFI = Net Farm Income

NROI = Net returns on investment

TC = (TVC + TFC) =  $P_x \cdot X$

GR =  $P_y \cdot Y$

GR = Gross Return

$P_y$  = Unit Price of Output

Y = Quantity of Output

$P_x$  = Unit Price of Input

X = Quantity of Input

TC = Total Cost (N)

TFC = Total Fixed Cost (N)

TVC = Total Variable Cost (N)

### 3. Results and discussion

#### 3.1. Socioeconomic Characteristics of the Vegetable (bitter leaf) Farmers

Table 1 show that 22% of the farmers were male while 47% were female indicating that females who are home builders/caretakers know more of vegetable (bitter leaf) health benefits, help promote its production and usage. This result shows the domination of female gender in vegetable (bitter leaf) production and suggests that sex increases technical efficiency of vegetable (bitter leaf) farmers in the study area. This result agrees with [12] findings, that majority of vegetable farmers are women. The highest percentage of the farmers' marital status were married (44.9%) indicating that with marriage there will be increase in family size which mean increase in family labour, which will bring about increase in output and increase in standard of living. Majority (76.8%) of the farmers were 20-49 years of age. This implies that most of the farmers are young and energetic since they are in their active age. The result also showed that 82.6% of the farmers had some form of formal education while only 17.4% had no education. This indicates that most of the farmers were literate, with reading and writing skills. All of the farmers reported to have their planting material source from the market. Also, 78.3% of the farmers had farm sizes of less than 1 hectare which implies that the farm holdings of the farmers are mostly small scale. Family Labor (81.2%) was mostly used as the household sizes were effectively involved in the production process to minimum input and income generation. The farmers' status shows that 85.5% engage in vegetable (bitter leaf) production as a part-time business which implies that they engaged in occupation and source of income.

**Table 1** Socioeconomic Characteristic of Vegetable (bitter leaf) Farmers

Variable	Frequency	Percentage
<b>Sex</b>		
Male	22	31.9
Female	47	68.1
Total	69	100
<b>Age</b>		
20-29	20	29.0
30-39	20	29.0
40-49	13	18.8
50-59	8	11.6
≥60	8	11.6
Total	69	100
<b>Educational Level</b>		
No formal education	12	17.4
Primary education	13	18.8
Secondary education	24	34.8
Tertiary education	20	29.0
Total	69	100
<b>Marital Status</b>		
Single	25	36.2
Married	31	44.9
Divorced	2	2.9
Widowed	11	15.9
Total	69	100
<b>Household size</b>		
1-4	35	50.7
5-9	20	29.0
10-14	13	18.8

>15	1	1.4
Total	69	100
<b>Farming experience (Years)</b>		
1-5	40	58.0
6-10	21	30.4
11-15	4	5.8
16-20	3	4.3
>21	1	1.5
Total	69	100
<b>Farm size (Hectares)</b>		
≤0.5	54	78.3
0.6-1.0	10	14.5
1.1-1.5	5	7.2
Total	69	100
<b>Labour type</b>		
Family labour	56	81.2
Hired labour	10	14.5
Both	3	4.3
Total	69	100
<b>Farmers' status</b>		
Part time	59	85.5
Full time	10	14.5
Total	69	100

Average farm experience 9 years, Average farm size is 0.5 hectare.

Source: Field Survey Data, 2021.

### 3.2. Estimation of Costs and Return of Vegetable (bitter leaf) Farmers

Table 2 shows the profitability of vegetable farming, ascertained using cost and returns analysis. Fixed cost constituted 75.20% which represents expenses on planting materials (2.8%), labour (5.5%), Fertilizer (7.3%), Pesticide (4.6%), Transportation (3.7%), and cost of water (0.9%), of the total cost of vegetable production while the variable cost constituted 25.80%. Rent on land was the major fixed cost incurred by the respondents while the cost of labour, and fertilizer constituted the major variable costs. The net farm income is estimated at ₦377,800.00 during the production period. Therefore, the analysis indicated that vegetable production was profitable.

The returns on investment was 0.35 for the vegetable farmers, indicating that vegetable farmers in the study area returned on the ₦0.35kobo for every ₦1.00 naira invested in the business, thus further confirming the profitability of vegetable production in the study area.

**Table 2** Cost and Returns of Vegetable (Bitter leaf) Farmers

Variable	Total cost of the Production period (₦)	Percentage
<b>Fixed cost</b>		
Land (ha)	754,500.00	69.2
Cutlass	15,000.00	1.4
Hoes	10,000.00	0.9
Basket	15,000.00	1.4
Watering Can	15,500.00	1.4

Bags	10,000.00	0.9
Total Fixed Cost (TFC)	820,000.00	75.2
<b>Variable cost</b>		
Planting Material	30,500.00	2.8
Labour (man/day)	60,500.00	5.5
Fertilizer (kg)	80,000.00	7.3
Pesticide (litres)	50,000.00	4.6
Transportation	40,000.00	3.7
Cost of water	10,000.00	0.9
Total Variable Cost (TVC)	270,500.00	24.8
Total Cost = TFC + TVC	1,090,500.00	100
Total Revenue	1,468,300.00	
<b>Net Farm Income</b>		
NFI = TR - (TFC + TVC)	377,800.00	
ROI = (NFI/TC)	0.35	

#### 4. Constraints of Vegetable (bitter leaf) Farmers

Table 3 indicates the constraints of vegetable (bitter leaf) production which could be seen from the highest to the least. High cost of labour could be seen as a major constraint in vegetable (bitter leaf) production with 25.4%, it gives rise to reduction in profitability and also causes increase in price to the consumer. High cost of transportation followed suit with 22.9%, it causes a reduction in the income of the farmer/middlemen and an increase in the price of vegetable (bitter leaf) to buyers / consumers. However, high cost of transportation is caused by lack of infrastructure such as bad or no roads, also high price of fuel, which the farmer has little or no power over. Scarcity of planting materials is the third serious problem having 21.1% such as stems, hoe, cutlass, etc, the mentioned plantings materials are the most seen around but its efficiency and viability to production are not ascertained and therefore are considered scarce. Available materials which are not viable to production causes low output and as such cause a decline in production. Lack of organised market alongside lack of land followed next with 15.3%, lack of land has confined farmers into small scale farming, therefore, not letting them give their best [both in manpower and intellect] in production, they tend to have wastage of inputs because there is no space for the production of available inputs. However, land is rented but it also adds to the cost of production and reduces income. Whereas, after harvesting due to lack of organized markets vegetable (bitter leaf) as a perishable commodity is carried around from place to place in search of buyers and the longer the delay, the less nutritious it becomes and lesser the price.

**Table 3** Constraint of Vegetable (Bitter leaf) Farmers

S/N	Constraints	Frequency	Percentage (%)	Rank
1	High cost of labour	30	25.4	1 <sup>st</sup>
2	High cost of transportation	27	22.9	2 <sup>nd</sup>
3	Scarcity of planting materials	25	21.1	3 <sup>rd</sup>
4	Lack of organized market	18	15.3	4 <sup>th</sup>
5	Lack of land	18	15.3	5 <sup>th</sup>
	Total	118*		

\*Multiple Responses; Source: Field Survey Data, 2021.

## 5. Conclusion

Bitter leaf farmers in the study area depend basically on hand tools. This explains why labor accounted for the highest cost of production. Labor saving equipment and low-cost technologies should be developed through research and made available to farmers for use. Despite these challenges, bitter leaf farming was still highly profitable

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## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest.

### *Statement of informed consent*

Every respondent consented to every information for the study by voluntarily supplying the appropriate information through the questionnaire.

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