Jewel Journal of Scientific Research (JJSR) 10(1): 112–119, 2025
©Federal University of Kashere-Nigeria (Print ISSN: 2384 – 6267, Online ISSN 2756-651X)
https://journals.fukashere.edu.ng/index.php/jjsr

Economic Analysis of *Corchorus olitorius* Production in Ebonyi State, Nigeria

***[1]Anugwo S. C. and [2]Egwue O. L.**
[1]Department of Agricultural Economics and Farm Management. Federal University Oye-Ekiti
[2]Department of Agricultural Economics. University of Nigeria, Nsukka.
***Corresponding Author**: anugstan4@gmail.com; +2348094189899

Abstract
The study analyzed the cost and returns of *Corchorus olitorius* L., vegetable production within three local government areas in Ebonyi State, which were Ezza South, Izzi and Ohaozara LGAs. Multi-stage sampling technique was adopted for data collection to select the respondents used for the study. A total number of 72 respondents were interviewed. The result revealed that the age range of 31 to 40 had the highest percentage with 34.7% suggesting that the farmers are experienced and young in the study area, females 65.3% were major producers while majority of the respondents were married 41.7% and households with 6 to 10 persons 43.1% having the highest sizes. Education-wise, a few percentage possess tertiary qualifications 19.4%, and just 29.2% lack formal education, implying they`ve had a relatively high level of basic education. Approximately 37.5% have 6 to 11 years of farming experience. Profitability analysis revealed that the total revenue generated by the vegetable farmers in the study area was ₦48,240,000 with a net revenue of ₦15,476,000 and a gross margin of ₦23,760,000. The rate of return was 47.23% implying its production was profitable. For factors affecting vegetables production in the study area, most of the variables were all positive and significant with R^2 value of 0.820 implying that the model accounted for 82.0% of the variability in vegetable production. The major constraints faced by vegetable farmers were competition from other producers, lack of labor and invasion of farms by cattles.

Keywords: Vegetable, production, profitability, constraints
Received: 20th March, 2025 *Accepted:* 27th June, 2025 *Published Online:* 30th June, 2025

Introduction

The genus *Corchorus* consists of some 50-60 species, of which about 30 are found in Africa (Chweya and Eyzaguirre, 2019). *Corchorus* is mainly known for its fibre product jute and for its leafy vegetables (Samara *et al*, 2017). Jute is mainly extracted from *Corchorus olitorius* L. and *Corchorus capsularis* L., species from India. Several species of *Corchorus* are used as a vegetable, of which *Corchorus olitorius* L is most frequently cultivated. *Corchorus olitorius* L is basically self-pollinating, but levels of 10% - 13% outcrossing have been reported (Grubben, 2017, Van Epenhuijsen, 2014). Deliberate crossing by hand was found to be particularly difficult due to flower drop after emasculation. Natural crossings are found, but these are rather difficult to control. *Corchorus olitorius* L is one of the African indigenous leafy vegetables increasingly recognized as a possible contributor of micronutrients and bioactive compounds (Mavengahama *et al*, 2015). Nutritionally, *Corchorus olitorius* leaves are rich in beta-carotene, iron, calcium, fiber, vitamin C, A, E, proteins, sodium and folic acid (Maseko *et al*, 2019). Indigenous leafy vegetables contain ascorbic acid which enhances iron absorption and is compatible for use with starchy food (Nesammvuni, 2001). *Corchorus olitorius* L has been perceived as

a valuable source of nutrition in rural areas in addition to adding diversity to diet. Therefore, there should be inclusion of indigenous leafy vegetables in the diet to overcome various deficiencies. Interestingly, exotic vegetables such as cabbage are reported to have minerals and vitamins lower than those found in indigenous leafy vegetables (Maseko *et al*, 2019). African edible species of *Corchorus* are annual or short-lived perennial crops, up to 2 m high. Their stems are well developed with abundant fibers in the phloem tissue, which is why they are also used as fiber crops (Denton, 2017). It is an annual or biennial herb, erect, stout, strongly branched, that varies in height from 0.20 to approximately 2 m, depending on the genotype. The stems of *Corchorus olitorius* L are angular with simple oblong to lanceolate leaves measuring 5 to 15 cm in length. These leaves have a long, acuminate tip and a serrated or lobed margin. The flowers are small, 2 to 3 cm in diameter and yellow, with five petals. The flowers have both male and female organs and are pollinated by insects (Schippers, 2000). The fruit of *Corchorus olitorius* L is globular while some were reported to be long (Ngomuo, 2017; Arlette, 2019). *Corchorus olitorius* L is native to tropical and subtropical regions, the origin of *Corchorus olitorius* L is reportedly unknown, but has reportedly been cultivated for centuries, in Asia and Africa (Samara *et al*, 2017). It occurs in the wild on both continents but with much wider diversity within the species in Africa, therefore an African origin for *Corchorus olitorius* is more likely (Samara *et al*, 2017). Throughout the world *Corchorus olitorius* is a vegetable eaten in both dry and semi-arid regions and in the humid areas of Africa. It has been largely produced as a very important vegetable in arid regions of the Middle East and Africa. It is an important green leafy vegetable in many countries including Egypt, Southern Asia, Japan, India, China, Lebanon, Palestine, Syria, Jordan, Tunisia and Nigeria. It is a leading leafy vegetable in Côte d'Ivoire, Benin, Nigeria, Cameroon, Sudan, Kenya, Uganda and Zimbabwe. It is also cultivated as a leafy vegetable in the Caribbean, Brazil, India, Bangladesh, China and the Middle East (Fawosi and Ormrod, 2018, Samara *et al*, 2017). It is cultivated for fiber in Asia (India, Bangladesh and China).

Corchorus olitorius vegetable farming development in Nigeria has been constrained by the low level of production and utilization. Efficient use of farm resources is an important part of agricultural sustainability. Farmers can achieve sustainability in agricultural production by raising the productivity of their farms, by improving efficiency within the limit of existing resource base, so as to cope with the predominant menace of poverty and unemployment in the area. (Obinaju *et al*. 2015). *Corchorus olitorius* production can be said to be worthy when resources are timely and effectively used to maximize profit and minimize cost, avoiding wastage and also aims at satisfying the consumer. *Corchorus olitorius* vegetable production in the state is also widely known by inadequate use of corresponding production inputs, and inadequate adoption of improved technologies by farmers, this result causes a decline per capital production overtime which causes an increase in rural poverty, rising vegetable prices, widespread famines and increasing importation.

Corchorus olitorius is locally called Arira in Igbo language and Ewedu in Yoruba language, in English it`s called bush Okra. Its production in Ebonyi 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 *Corchorus olitorius* vegetable production in Ebonyi 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, identify 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 Method

Study Area

The study was conducted in Nigeria's Ebonyi State. According to a 2016 census, Ebonyi State had thirteen (13) local government areas and 2.9 million residents. It is situated between latitudes 6·2649 º North of the equator and longitudes 8·0137 º East of the Greenwich Meridian. Benue State borders it on the North and North East, Enugu State borders it on the East and South East by Cross River State, Abia State borders it on the South West. 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 28°C with high humidity. The State grows cassava, yam, and oil palm as crops. The primary language of the state is Igbo, and its citizens are of Igbo descent.

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 thirteen (13) local government areas based on the quantity of vegetables produced in the local government areas which were Ezza South, Izzi and Ohaozara LGAs. In the second stage, four (4) communities were purposively selected from each local government area based on the quantity of vegetables produced in these communities. The final stage involved the random selection of six (6) respondents each from the villages making a total sample size of seventy-two (72) respondents.

Sources of Data

Primary data was used for analysis in this study. The primary data was gathered by use of interviews and well-structured questionnaire which was administered to vegetable farmers in the study areas while secondary data was sourced from past projects, textbooks and the internet.

Method of Data Analysis

Analytical tools used for this research were descriptive statistics such as mean, frequency distribution and percentages which was used to describe the socio-economic characteristics of the vegetable farmers and analyze the constraints of vegetable production in the study area. 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) and also regression analysis was conducted to identify the factors affecting the vegetable production

Model specification

Budgetary analysis was used to examine the profitability of vegetable farmers and is 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

Regression analysis was used to determine the factors influencing vegetable production. The linear regression model was used to estimate the factors involved in vegetable production were specified as thus; $Y= X_0 + X_1 +X_2 + X_3 +X_4 +X_5 + X_6 + X_7 + X_8 + X_9 + X_{10 + e.}$ Where Y= Output.

X_1 = Age of respondents (years), X_2= Farming experience (years), X_3 = Household size (numbers), X_4= Level of education (years), X_5 =Cost of labor (naira), X_6= Cost of pesticides (naira), X_7 = Cost of transportation, (naira), X_8 = Quantity of seeds, X_9 = Farm size (hectares). 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 had the highest percentage with 34.7%. The sample comprised a majority of females (65.3%) and a smaller proportion of males (34.7%). A significant majority of the respondents were

married (41.7%), with the largest household sizes being those of 6 to 10 members (43.1%). The educational background of the respondents showed that 29.2% had no formal education, while 26.4% and 25.0% had received both primary and secondary education respectively with 19.4% having pursued tertiary education. Furthermore, 26.4% of the respondents had been engaged in vegetable farming for one to five years, while 37.5% have been on the farm cultivating this vegetable for between six to eleven years in the study area.

Table 1. Socio-economic Characteristics of Respondents

Socio-demographic variables	Frequency (n)	Percentage (%)
Age group		
<30	12	16.7
31-40	25	34.7
41-50	14	19.4
51-60	11	15.3
>61	10	13.9
Mean ±SD 30.22±10.93		
Sex		
Male	25	34.7
Female	47	65.3
Marital status		
Single	27	37.5
Married	30	41.7
Divorced	15	20.8
Household size		
1-5	20	27.8
6-10	31	43.1
11-15	13	18.0
>16	8	11.1
Mean ±SD 8.30±7.0		
Level of Education		
No formal education	21	29.2
Primary	19	26.4
Secondary	18	25.0
Tertiary	14	19.4
Years of farming activities		
1-5	19	26.4
6-10	27	37.5
11-15	14	19.4
>16	12	16.7
Mean ±SD 8.24±7.3		
Total	72	100

Source: Field Survey, 2025

Profitability of *Corchorus olitorius* Vegetables Production.

According to the findings of the profitability analysis in Table 2, the study area`s total variable costs (TVC) per hectare for vegetable output was ₦24,480,000. 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 per hectare, in the study area was ₦48,240,000, with net revenue of

₦15,476,000. Gross margin was ₦23,760,000 and rate of return on investment was 47.23% suggesting that farmers in the study area can go on with production of vegetable because the value obtained was relatively high indicating that in the study area, growing vegetables is a successful business. This finding is consistent with the research by Anugwo and Egwue (2025), suggesting that vegetable farming can be a profitable business, providing a significant source of income for farmers.

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

Variable Costs	**Unit Prices**	**No of items**	**Amount**
Cost of seedlings	₦50*1000	72	₦3,600,000
Cost of tilling/labour	₦15,000	72	₦1,080,000
Cost of weeding	₦15,000*4	72	₦4,320,,000
Cost of pesticides	₦7000*3	72	₦1,512,000
Cost of transport	₦800*180days	72	₦10,368,000
Cost of organic manure	50*N1000/bag	72	₦3,600,000
Total variable cost			**₦24,480,000**
Fixed Costs	Unit Prices	No of items	Amount
Hoe	₦4,000	72	₦288,000
Cutlass	₦5,000	72	₦360,000
Digger	₦4,500	72	₦324,000
Shovel	₦5,000	72	₦360,000
Wheelbarrow	₦26,000	72	₦1,872,000
Farmland	₦80,000	50	₦4,000,000
Ropes	₦150/yard*100	72	₦1,080,000
Total fixed cost			**₦8,284,000**
Total Revenue	Unit price of item	No of units*No of respondents	Amount
	₦300	900* 72	₦19,440,000
	₦500	800*72	₦28,800,000
Total Revenue			**₦48,240,000**

Source: Field Survey, 2025.

Total Cost (TC) = Total Variable Cost (TVC) + Total Fixed Cost (TFC)
₦32,764,000 = ₦24,480,000 + ₦8,284,000
Total Revenue (TR) = ₦48,240,000
Net Revenue (NR) =Total Revenue – Total Cost
₦15,476,000 = ₦48,240,000 – ₦32,764,000
Gross Margin (GM) = Total Revenue – Total Variable Cost
₦23,760,000 = ₦48,240,000 – ₦24,480,000
Net Margin (NM) = Gross Margin – Total Fixed Cost
₦15,476,000 = ₦23,760,000 – ₦8,284,000
Rate of Return on Investment (ROI) = Net Margin/Total Cost * 100
= ₦15,476,000/₦32,764,000*100 = 47.23%

Factors Affecting (*Corchorus olitorius*) 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, indicate that the independent variables included in the model accounted for 82% of the variability in vegetable production. Notably, age, farming experience, quantity of seeds and household size were all positive and significant. Implying that for every unit increase in these variables there is an increase in vegetable production in the study area. Age and farming experience were positive and significant at 10% level, and quantity of

seeds was positive and significant at 5% level while household size, level of education, and farm size were all positive and significant at 1% level. Implying that increase in these variables also will increase the output of vegetable production in the study area. This result is consistent with the works of (Anugwo and Egwue 2025), who worked on the Economic Evaluation of *Telfaira occidentalis* Cultivation in Enugu State, Nigeria. The results of this study are also in line with the theory of production economics, which suggests that input costs are a major determinant of output levels (Mwangi *et al*., 2018).

Table 3. Multiple Regression Analyses Showing the Factors affecting Vegetable Output

Variable	Estimated coefficient	Standard. error	t- value
Age of respondents	0.626	0.231	2.709***
Farming experience	0.718	0.262	2.740***
Household size	0.437	0.195	2.241*
Level of education	2.456	1.172	2.095*
Cost of labor	0.634	0.622	1.019
Cost of pesticides	0.341	0.252	1.353
Cost of transportation	0.532	0.430	1.237
Quantity of seeds	0.604	0.243	2.485**
Farm size	0.257	0.123	2.089*
R^2	0.820		
R^2 adjusted	0.713		

Source: Field Survey, 2025 * =1%, ** =5%, *** =10%

Constraints of *Corchorus olitorius* Vegetables Production

Table 4 presents a comprehensive analysis of the constraints faced by vegetable producers, revealing a hierarchical percentage ranking of constraints. The most significant constraints are lack of labor and climate variability, with percentage scores of 15.3% respectively and ranked 1st, closely followed by fluctuation in prices with percentage score of 13.9% and ranked 3rd. Lack of credit and destruction of farms by cattles were ranked 4th highest constraints respectively faced by the vegetable producers in the study area with percentage scores of 12.5% respectively, while pests and diseases ranked 6th with percentage score of 11.1%. Lack of nearness to market ranked 7th with 8.4% while lack of storage facilities and competition from other producers ranked the least constraints in the study area with percentage scores of 5.5% respectively. This implies that if these constraints are ameliorated in the study area vegetable production will be very profitable. This result is in line with recent studies which highlighted that fluctuation in prices, lack of credit are identified as major challenges facing vegetable producers (Tate *et al*., 2019) and also Lack of nearness to market, lack of labor constraints, impact of climate change on agricultural productivity also aligns with recent research highlighting the importance of logistics and supply chain management in agricultural development by (Mersha and Admasu, 2020). Climate variability has also been identified as a major constraint to vegetable production (Hobbs, 2017). Pests and diseases which was among the least significant constraints is consistent with the findings of Lambert *et al.* (2018), who emphasized the importance of integrated pest management in agricultural production. The result also conforms to the study of (Anugwo and Egwue, 2025).

Table 4. Constraints of *Corchorus olitorius* Vegetables Production

Constraint Variables	Frequency	Percentages	Ranking
Lack of Credit	9	12.5	4th
Pests/diseases	8	11.1	6th
Destruction by Cattles	9	12.5	4th
Lack of labour	11	15.3	1st
Climate variability	11	15.3	1st
Fluctuation in prices	10	13.9	3rd
Lack of storage equipment	4	5.5	8th
Lack of nearness to market	6	8.4	7th
Competition from other producers	4	5.5	8th
Total	72	100	

Source: Field Survey, 2025

Conclusion

The study looked at the economic analysis of *Corchorus olitorius* vegetable production in Ebonyi State, Nigeria, with three local governments that produces much of the vegetable purposively chosen, six respondents were chosen at random, from four communities in each LGA and a total of seventy-two (72) respondents were selected for this research. According to the results, the age range of 31-40 years had the highest percentage of respondents with 34.7% with majority being females (65.3%) and a smaller proportion of males (34.7%). Majority of the respondents were married (41.7%), with household sizes ranging from 6 to 10 members having the highest percentage of (43.1%). Educational background of the respondents showed that 29.2% had no formal education, while 26.4% and 25.0% had received both primary and secondary education respectively with 19.4% having pursued tertiary education. (37.5%) of the respondents had been on the farm for six to ten years. Rate of return on investment was 47.23% implying that *Corchorus olitorius* vegetable production was profitable in the study area.

Recommendation

To increase the amount of vegetable consumed in the study area, it is necessary to educate the local population about the nutritional benefits of *Corchorus olitorius* 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 *Corchorus olitorius* vegetable in the study area. To increase profitability in the study area, extension agents should inform the respondents about modern processing, storage methods and concepts of preserving *Corchorus olitorius* 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.

References

Anugwo, S.C and Egwue O.L (2025). Economic Evaluation of *Telfaira occidentalis* Cultivation in Enugu State, Nigeria. *Journal of Agriprenuership and Sustainable Development*, Vol.8 (2), Pp 122-130.

Arlette, A., Estelle, L.Y.L., Zaki, B., Donald, B., Tiburce, O., Hounnankpon, Y. and Alexandre, D. (2019). Agromorphological Characterization of Jute (*Corchorus olitorius* L.) Landraces in Central Region of Benin Republic. *International Journal of Advanced Research in Biological Sciences*, 6: 96-107.

Chweya, J.A. and Eyzaguirre, P.B. (2019). The Biodiversity of Traditional Leafy Vegetables. International Plant Genetic Resources Institute.

Denton, L. (2017) A Review of *Corchorus olitorius* in Nigeria. *Proceedings of a Workshop on African Indigenous Vegetables*, Limbe, 13-18 January 1997, 25-30

Fawusi, M.O.A. and Ormrod, D.P. (2018) Effects of Temperature on the Growth of *Corchorus olitorius*. *Journal of Horticultural Science*, 56: 353-356. https://doi.org/10.1080/00221589.1981.11515012

Grubben, G.J.H. (2017) Leaf Vegetables. Tropical Vegetables and Their Genetic Resources. International Plant Genetic Resources Institute.

Mavengahama, S., de Clercq, W.P. and McLachlan, M. (2015). Effect of Soil Amendments on Yield of Wild Okra (*Corchorus olitorius*) in Northern Kwazulu-Natal, South Africa. *South African Journal of Plant and Soil*, 33: 153-156. https://doi.org/10.1080/02571862.2015.1090023

Maseko, I., Ncube, B., Mabhaudhi, T., Tesfay, S., Chimonyo, V.G.P. and Araya, H.T. (2019). Nutritional Quality of Selected African Leafy Vegetables Cultivated under Varying Water Regimes and Different Harvests. *South African Journal of Botany*, 126: 78-84. https://doi.org/10.1016/j.sajb.2019.06.016

Mersha G, and Admasu T. (2020). Socio-Demographic Characteristics of Vegetable Farmers in Nepal. *Journal of Agricultural Science and Technology*, 20(3): 669-678.

Mwangi, E. M., Maseko A. I. and Sharma, S. (2018). Determinants of Farm Productivity among Small-Scale Farmers in Zimbabwe. *Journal of Agricultural Economics and Development*, 8(2): 1-12.

Nesammvuni, C., Steyn, N.P. and Potgierter, M.J. (2001). Nutritional Value of Wild Leafy Plants Consumed by the Vhavenda. *South African Journal of Science*, 97: 51-54.

Ngomuo, M., Stoilova, T.S., Olayinka, B.N., Lateeef, A.A., Garuba, T., Olahan, G.S., Tiamiyi, B.B. and Abdulrahman, A.A. (2017). Molecular Characterization of Some Accessions of *Corchrous olitorous* L. *Savanna Journal of Basic and Applied Sciences*, 1: 213-217.

Obinaju, G.S. (2015). Resource Use Efficiency in Urban Farming: An Application of Stochastic Frontier Production Function. *International Journal of Agriculture and Biology*. 8(1): 37-44.

Schippers, R.R. (2000). African Indigenous Vegetables: An Overview of the Cultivated Species. Natural Resources Institute/ACP-EU Technical Centre for Agricultural and Rural Cooperation, 214.

Samara, E., Piliz, A. and Ferdag, G. (2017). Antibacterial and Antifungal Activity of *Corchorus olitorius* L. (Molokhia) Extracts. *International Journal of Natural and Engineering Sciences*, 1: 59-61.

Van Epenhuijsen, C.W. (2014). Growing Native Vegetables in Nigeria. *International Journal of Agriculture and Biology*. 8(1): 37-44