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Estimation of Costs and Returns in Homestead Garden Egg Production in Ezza North Local Government Area of Ebonyi State, Nigeria

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ABSTRACT

The study estimated the cost and returns in homestead garden egg production in Ezza North Local Government Area of Ebonyi State, Nigeria. The specific objectives were to describe the socio-economic characteristics of the garden egg farmers, estimate the costs and returns and identify the basic problems faced by homestead garden egg farmers. A well-structured questionnaire was randomly administered to 90 garden egg farmers. The result showed that a good proportion (61.11%) were females within the age bracket of 31-50 and were of married category while fairly good proportion (50.00%) had household sizes of 4 to 6 persons while 75% of them were educated attaining various levels of education. Also, 41.11% had farm size of 0.1-0.5 indicating that the garden egg farmers engaged in small scale production as their major source of labour was both family and hired labour, 87.78% belonged to cooperative society or farmers' association. The result further showed that majority of the respondents (91.00%) do not have access to extension contacts while 72.27% of the respondents do not have access to credit facilities which resulted to reduction in the production level of garden egg. The result further showed that garden egg production is profitable among rural household farmers in the study area since in every ₦1.00 spent, a farmer stands a chance of gaining ₦2.25 while the perceived constraints include; lack of storage facilities, inadequate finance, scarcity of improved planting materials among others. The findings recommended the following: Farmers should be encouraged to form or join cooperative societies in order to have access to improved inputs from government at reduced rates, Government should subsidize inputs like planting materials of good varieties and agro chemicals to poor rural farmers for improved production of garden egg among others.

INTRODUCTION

Agriculture is the largest single sector in the Nigeria economy, providing food, income and employment for sustainable livelihood of both the rural and urban population (CBN, 2021). Nigeria's domestic economy is partly determined by agriculture which accounted for 30% of the Gross Domestic Product (GDP) in 2021 (CBN, 2021). Agriculture is the largest non-oil export earner and the largest employer of labour accounting for 88% of the non-oil foreign exchange earnings and 70% of the active labour force of the population. Nigeria is an agrarian economy with 70% of its people dependent on agriculture (Balogun, 2016). The Government of Nigeria has been trying to achieve food security at both house hold and national level through its mechanized approaches. Garden egg is among many crops which are important nutrient dietary crops that no much attention seems to have been given to them by researchers or neglected by governments and farmers in Nigeria. (Ahmed *et al*. 2016; Amoako & Yeboah–Gyan, 2017). Generally, home gardening refers to the cultivation of a small portion of land which may be around the household or within walking distance from the family home (Abu *et al*. 2017). Homestead gardens are also

called kitchen gardens, backyard gardens, compound gardens, rooftop gardens, it is a garden not far from the home that is owned and maintained by the household and kept mainly for household food supply (Balogun, 2016). Among common vegetable crops seen in a typical Nigeria homestead garden include, fluted pumpkin, bitter leaves, water leaves, garden egg, beans, curry, scent leaves among others. A homestead vegetable crop which is to be given priority under this study is garden egg. Garden egg or scarlet eggplant (*Solanum aethiopicum*) is one of the most important vegetable crops in tropical Africa. Garden eggplants are fruit vegetables of some varieties which are white and shaped like chicken eggs, hence the name 'eggplants' (Ahmed *et al*., 2016).

METHODOLOGY

The study was carried out in Ezza North Local Government Area of Ebonyi State, Nigeria. Ezza North shares boundaries with Ikwo in the East, North-East and Southeast with Ezza South and Abakaliki in the North and Onicha in the West and Southwest. The mean temperature range is 28^0C- 42^0C, having an annual rainfall of 1800mm - 2000mm, relative humidity of 65%. It is located between Latitude $6^0 49^l$ and $6^0 32^l$ North of Equator and Longitude $8^0 3^l$ and $7^0 98^l$ East of the Greenwich meridian. The people are mostly farmers who take advantage of the rich and abundant farm land to cultivate yam, rice, garden egg, cassava, cereals and vegetables, among others. It has an area of 324km^{2}and population of 133,625 (NPC, 2006). Multistage random sampling technique was employed in the selection of respondents for the study. Firstly, 2 communities; Umuezekaoha and Oshiegbe were randomly selected because of their massive involvement in the production of garden egg. Secondly, 3 villages (Okwuhieonu, Agbo and Izenyi) were randomly selected from Umuezekaoha community while 3 villages (Azomele, Azuda and Odeligbo) were randomly selected from Oshiegbe to give a total of 6 villages. Thirdly, 15 garden egg farmers were randomly selected from each of the villages to give 90 garden egg farmers. A semi-structured questionnaire was used in soliciting information from the garden egg farmers. Objective i. was addressed with descriptive statistics while objective ii was realized using analysis of Gross margin. Objective iii was captured using 5 point Likert Scale in terms of agree, strongly agree, disagree, strongly disagree, undecided was achieved. The explicit form of the model is specified thus;

G.M. = TR – TVC

i.e. G.M = $\sum_{1-1}^{n} P_i Q_i - \sum_{j-i}^{m} r_i x_i$

The net farm income can be calculated by gross margin less fixed input. The net farm income can be expressed thus:

$$\sum_{1=1}^{n} P_i Q_i - \left[\left(\sum_{j-i}^{m} r_i x_i\right) + k\right]$$

Where:
GM = Gross margin (₦)
NFI = Net farm income (₦)
P1 = Market (unit) price of output (₦)
Q = the total Quantity of output (kg)
ri = the Unit price of the variable input (kg)
xi = the quantity of the variable input (kg)
K = the Annual fixed cost (depreciation) (₦)

And Return Per Naira Invested is given by:

RNI = $\frac{GM}{TV}$

Where:

GM = Gross Margin (₦)

TVC = Total Variable Cost (₦).

OR

NFI = GFI - TC (TVC + TFC)

Were;

NFI = Net farm income (₦)

GFI = Gross farm income (₦)

TC = Total cost (₦)

TVC = Total variable cost (₦)

TFC = Total fixed cost (₦)

RESULTS AND DISCUSSION

Socio-economic Characteristics of Garden Egg Farmers in the Study Area

Table 1 showed the socio-economic characteristics of garden egg farmers. The result showed that 61.11% were females. This implies that most of the garden egg farmers in the area were females. The result also showed that 61.11% of the garden egg farmers were at the age bracket of 31-50. This implies that the farmers were young and very active to go into garden egg production. The findings also conformed to those of Nwaneri *et al.* (2021) that most farmers in Nigeria are above 40 years. The result further showed that 61.11% of the garden egg farmers were married. This implies that most of the garden egg farmers in the area were married. The involvement of married category in agriculture is in line with Nwaneri *et al.* (2021) whose report shows that married class are more involved in agriculture because of the need to supplement the families' means of livelihood. Majority (50.00%) of the garden egg farmers had household size of 4 to 6 persons while 75% of them were educated attaining various levels of education. According to Nwaneri *et al.* (2021), the level of education attained by a farmer enhances his ability to understand and evaluate new production technologies. Also, 41.11% had farm size of 0.1-0.5 indicating that the garden egg farmers engaged in small scale production as their major source of labour is both family and hired labour, while a good proportion (87.78%) belonged to cooperative society or farmers' association. This implies high innovativeness among the garden egg farmers due to influence of good dynamic effects. The involvement of farmers in association or cooperatives enabled them share ideas and work as a unifying force (Nwaneri *et al.* 2019). The result further showed that majority of the respondents (91.00%) do not have access to extension contacts while a large proportion (72.27%) of the respondents do not have access to credit facilities which contributed to their low production level of garden egg. This agrees with the findings of (Nwaneri *et al.*, 2019) who posited that having access to credit facility is opening a way for increase in productivity.

Table 1: Characteristics of Respondents in Ezza North L.G.A, Ebonyi State (N= 90)

Characteristics	Frequency	Percentage
Sex		
Males	35	38.89
Females	55	61.11
Age (years)		
<30	10	11.11
31 - 50	55	61.11
61 – Above	25	27.78
Marital Status		
Single	13	14.44
Married	55	61.11
Divorced	10	11.11
Widow	12	13.33
Household Size		
1 – 3	20	22.22
4 – 6	45	50.00
7 – 9	25	27.78
Level of Education		
No formal education	15	16.67
Primary school	45	50.00
Secondary school	25	27.78
Tertiary school	5	5.56
Farm size(ha)		
0.1 – 0.5	37	41.11
0.6 – 1.0	21	23.33
1.1 – 1.5	17	18.89
1.6 – 2.0	15	16.67
Source of Labour		
Family	6	6.67
Hired	25	27.78
Both	59	65.56
Cooperative Society		
Yes	79	87.78
No	11	12.22
Extension Contacts		
Yes	9	10.00
No	81	91.00
Access to Credit Facility		
Yes	9	10.00
No	81	91.00

Source: Field Survey,2022

Table 2 showed the cost and returns of homestead garden egg production among farmers in Ezza North LGA of Ebonyi State. The result showed that output per hectare was 292 baskets, the total gross margin was ₦256,500, the Net farm income was ₦223,500 and the benefit cost ratio was 2.252. The implication is that homestead garden egg production is a profitable venture because when a farmer invests ₦1 into the production he/she is sure of making ₦2.252 profit in return. This

is in line with the findings of Okoye *et al.* (2008) who reported that vegetable farming in Ebonyi State is profitable.

Table 2: Cost and Returns of Homestead Garden Egg Production

Item	**Unit**	**Quantity**	**Cost(₦) basket**	**Total (₦)**
Revenue				402,000
Output	Basket	292	1,500	402,000
Total				402,000
Labour cost (MD)				
Land clearing	Md	10	1000	10,000
Moulding of heaps	Md	17	1,500	25,500
Planting	Md	10	1000	10,000
Fertilizer application	Md	10	150	1,500
Weeding	Md	10	130	13,000
Harvesting	Md	15	1000	15,000
Bagging transportation		7	1000	7,000
Total				95,500
Variable inputs				
Garden egg seeds	Cup	20	500	10,000
Fertilizer	Kg	2	12,500	25,000
Pesticides	Liters	6	2,500	15,000
Total				50,000
Fixed inputs				
Land/land hiring	Hectare	1	20,000	20,000
Matchete	No	2	1,500	3,000
Hoe	No	10	400	4,000
Knapsack sprayer	No	1	6,000	6,000
Total				33,000

Total Revenue (TR)	₦402,000
Total Variable Cost (TVC)	₦145,500
Total Fixed Cost (TFC)	₦33,000
Total Cost (TC)	₦178,500
Gross Margin (GM)	₦256,500
Net Farm Income (NFI)	₦223,500
Output Per Hectare (Kg)	292 basket
Benefit Cost Ratio (BCR)	₦2.252

Source: Field Survey, 2022.

Applying the formula;

TR = ₦402,000

TVC = ₦95,500 + 50,000 = ₦45,500

TFC = ₦33,000

GM = TR – TVC

= 402,000 – 145,5000

GM - ₦256,500

NFI = GM – TFC = ₦256,500

TC = TVC + TFC = ₦145,500 + ₦33,000 = ₦178,500

$$BCR = \frac{TR}{TC}$$

$$BCR = \frac{402,000}{178,500}$$

$$BCR = \underline{2.252}$$

Table 4.3 showed the problems faced by garden egg farmers in the study area**,** the result showed that the major problems as perceived by the garden egg farmers in the area include; lack of storage facilities (3.92), inadequate finance (3.78), unavailability of markets (3.74), scarcity of improved planting material (3.69), lack of extension contacts and effect of pest and diseases (6.63) and unavailability of land (3.61) while they do not perceive high cost of agro-chemicals and fertilizer as a problem. The result implies that the garden egg farmers had inadequate storage facilities where they can store their products to increase the shelf life of the products. Inadequate finance was identified and perceived as the predominant constraint of garden egg farming in the area, it is a setback on the farmers' participation in garden egg production which results to the use of crude technology and practice small scale production in the area. Other constraints as perceived in the area affects farmers' involvement in garden egg production.

Table 4.3. Problems Encountered by Garden Egg Farmers in the Study Area (Threshold mean = 3.0)

Parameter	Mean score	Decision
Insufficiency of land	3.61	Accepted
High cost of improved seeds	3.33	Accepted
Inadequate finance	3.78	Accepted
Lack of extension contacts (agents)	3.63	Accepted
Infestation of pest and diseases	3.63	Accepted
Lack of storage facilities	3.92	Accepted
Scarcity of improved planting materials	3.69	Accepted
High cost of agro-chemicals and fertilizer	2.06	Rejected
Unavailability of market	3.74	Accepted

Source: Field Survey, 2022.

CONCLUSION AND RECOMMENDATIONS

The study estimated the cost and returns in homestead garden egg production in Ezza North Local Government Area of Ebonyi State, Nigeria. The result showed that garden egg production is profitable among rural household farmers in the study area since in every ₦1.00 spent, a farmer stands a chance of gaining N2.252 while the perceived constraints to garden egg production include; lack of storage facilities, inadequate finance, unavailability of markets, scarcity of improved planting material, lack of extension contacts and effect of pest and diseases and unavailability of land. Based on the findings of this study the following recommendations were made: Farmers should be encouraged to form or join cooperative societies in order to have access to improved productive inputs from government at reduced rates, Government should subsidize inputs like planting materials of good varieties and agro chemicals to poor rural farmers for proper production of garden egg, Government should encourage extension workers to mobilize farmers and organize training programmes, workshop, agricultural show and seminars for the farmers, in attempts to enhance their skills, knowledge and techniques in garden egg production and Government should promote the land use Act of 1978 to make lands available to genuine farmers at all time.

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