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Assessment of the Productivity of Home Gardens in Enugu State, Nigeria

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Abstract **Original Research Article**

This study aimed at determining the productivity of home gardens in Enugu State, Southeastern Nigeria in the second quarter of 2025. Specifically, it determined the socio-economic characteristics of home gardeners, identified dominant crop species, assessed crop densities, and evaluated the costs and returns of home garden production. A multi-stage sampling technique was employed to select 60 home gardens across three Local Government Areas. Data were collected using structured questionnaires and analyzed using descriptive statistics and cost–return analysis. Results showed that the mean age of farmers was 42 years, with a higher proportion of females (51.5%) and married individuals (63.6%), Most respondents (74.2%) depended primarily on farming, with an average household size of five people and a modest mean monthly income of ₦118,742.42. Cassava and pepper (17.4% each) emerged as the dominant crops, followed by maize (16.6%) and okra (7.1%), reflecting a preference for staple and adaptable crops. Crop density analysis revealed high intensification of cassava (956 stands), pepper (945 stands), and cocoyam (732 stands), while crops like banana and turmeric were minimally cultivated. The average home garden size was 5,747.7 m². Cost and return analysis indicated that home gardening is profitable, with a total cost of ₦247,690, gross margin of ₦290,810, and net income of ₦186,810, yielding a return on investment of 75%. The findings highlighted the significant role of home gardens in enhancing food availability, income generation, and household resilience. The study recommended that improving access to input, promoting crop diversification, and implementing gender-sensitive and youth-inclusive interventions are essential for home garden productivity.

Keywords: Assessment, Productivity, Home Gardens, Enugu State.

INTRODUCTION

The home garden is an integral part of the family farming and local food systems (Helena, 2023). The most important characteristics of home gardens are their location adjacent to homes, close association with family activities and a wide diversity of crops and livestock species to meet family needs (FAO,2021). Home gardens have played a central role in household security for food, fuel, fiber, materials and even land ownership, as people changed from an exclusively hunting and gathering lifestyle and settled in small communities. Home gardening involves food production on small plots of land adjacent to human settlements. It provides food and income to households (Galhena *et al,* 2012). Home gardens are sustainable agri-food systems that meet several family needs such as food, medicine, ornamental purposes and so on (Musotsi *et al* 2008; Oritz-Sanchez *et al*, 2015; Aworinde and Erinoso, 2020). Home gardens are of vital importance for the socioeconomic development of subsistent and resource poor communities (Uzokwe *et al*., 2016). Home gardening provides a diversity of fresh foods that improve the quantity and quality of nutrients available to the family (Zerihun *et al*, 2011; Bird *et al*., 2019; Castañeda-Navarrete, 2021).

The current state of home garden in Nigeria is not appealing and is being threatened by urbanization and population pressure, thus reducing the desired supplemental food supply from home gardens. Home gardening is a common feature in Southeastern agro-ecology. Southeastern Nigeria is being threatened by food insecurity (Agu, 2021). There is need therefore to assess the productivity of the existing home gardens. It is believed that if home gardens are acknowledged, supported and enhanced by every household, the food system will become sustainable. The household garden was neglected by macroeconomics over time (Seyida, 2021). With the increasing human population, coupled with scarcity of land associated with land degradation

and rapid urbanization, Nigeria needs to urgently ensure the production of quality diets, of which agroforestry technique employed in home gardens can play a crucial role in this transformation (Otiwa *et al.*, 2023).

Previous studies have examined the role of home gardens on smallholders' household-level nutritional outcomes (Baliki *et al*., 2022; Castañeda-Navarrete, 2021; Depenbusch *et al.*, 2021,2022; Schreinemachers *et al.*, 2016). The studies showed that home garden interventions can increase the quantity and diversity of food produced and consumed at the household level. However, concrete evidence on the productivity of home gardens hardly exists. A severe lack of in-field data has hindered our understanding of the form and function of home food gardens which in turn may hinder innovation and improvement (Csortan, Ward, and Roetman, 2020).

Enugu state is one of the states in the Southeastern Nigeria that is densely populated and having an agrarian culture. Research have shown that some individuals who possess home gardens leave it unattended as they lack information on its benefits and that some individuals who practice home gardening do it to pass out time, not getting the maximum benefits that can be obtained from these home gardens, (Adeosun *et al,* 2020). Hence, this study aims to fill these gaps in knowledge. Therefore, there is a need to survey the productivity of the home gardens in the Enugu State.

Objectives of the study

The main objective was to assess the productivity of home gardens in Enugu State, Southeastern Nigeria.

Specifically, the study determined:

1. The socio-economic characteristics of home garden farmers in Enugu State,
2. Crop species that are dominant in-home gardens in Enugu State.
3. Crop densities in home gardens in Enugu State
4. The costs and returns of home gardens crop production in Enugu State.

METHODOLOGY

Research Design

The study adopted a survey research design. The survey research design was useful in eliciting information used to classify or categorize the home garden farmers.

Area of Study

The study was conducted in Enugu State in Southeastern Nigeria between April and June 2025, Enugu State is one of the states in the South-east geo-political zone in Nigeria. Enugu State is bordered to the north by the states of Benue and Kogi, with Ebonyi State to the east and Abia State to the south, and Anambra State to the west.

Population of the study

The population of the study comprised all the Local Government Areas in Enugu State. Enugu State is made up of 17 Local Government Areas.

Sample for the study

Three Local Government Areas were purposively selected. Four council wards from each of the Local Government Areas were purposively selected based on the size of the home gardens (0.5-1ha), giving a total of twelve (12) council wards. In each council wards five (5) compounds with home gardens were visited given a total of 60 home gardens.

Instrument for Data Collection

Structured questionnaires were used to elicit information from the respondents on their socio-economic characteristics, crops produced and utilized from their gardens as well as the economic implications of the home gardens.

Data Collection Method

Data was collected by administering the well-structured questionnaires and structured oral interview schedule.

Data Analysis Techniques

Data collected were analyzed using descriptive statistics such as mean, frequency and percentages. Objectives 1, 2 and 4 were achieved using descriptive statistics. Objective 3 was analyzed using the Cost and returns analysis model. The analysis of cost and return of home garden crop production is to find out production profitability. It is specified as follows:

Profit = $TR - TC$ ……(1)

Net Return (NR) = Total Revenue – Total Costs

$NR = TR - TC$ ……(2)

$NR_i = \sum_{j=1}^{n} TVP_j - \sum_{k=1}^{n} TVC_k + FC_k$ …… (3)

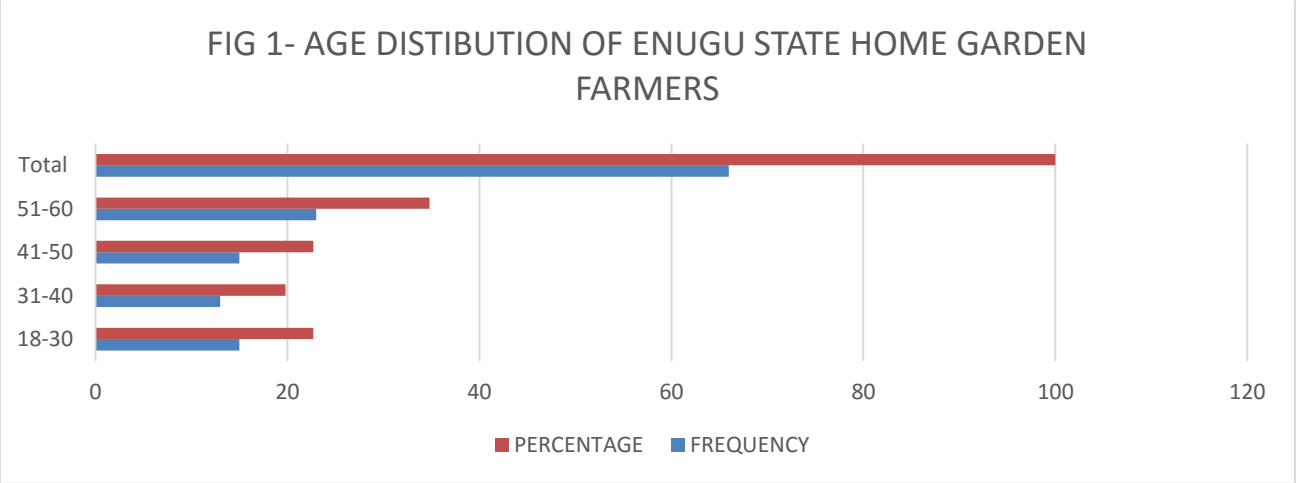
Where:

i = 1to n home gardeners; **j** = the j^{th} produce of home gardeners; **k** = the k^{th} input cost of home gardeners; **n** = number of home gardeners; TVP= Total value of Production (or gross output)

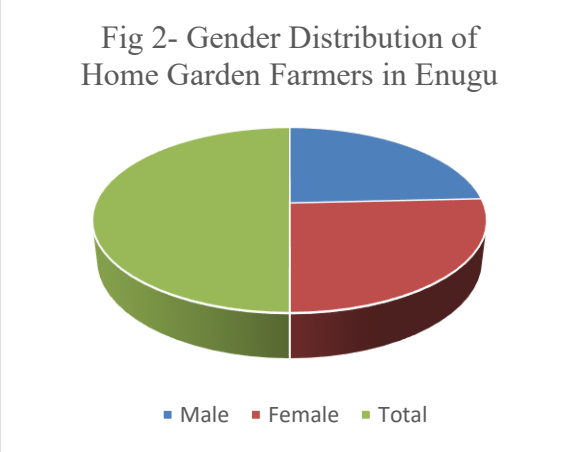
TVC = Total variable Costs; **FC** = Fixed Costs

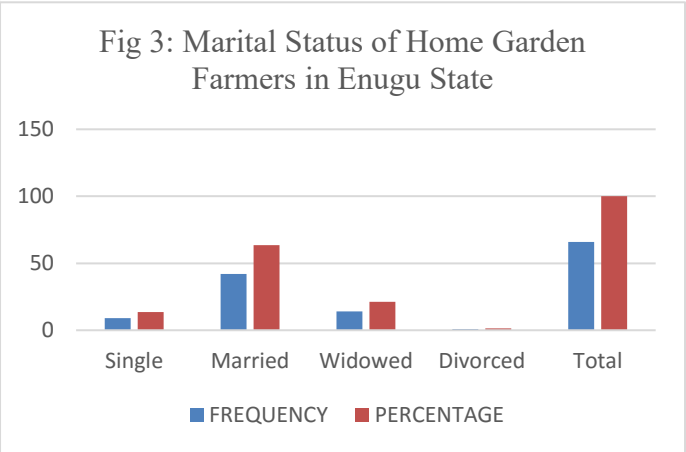
RESULTS

Objective 1: Identify the socio-economic characteristics of home garden farmers in Enugu, southeastern Nigeria

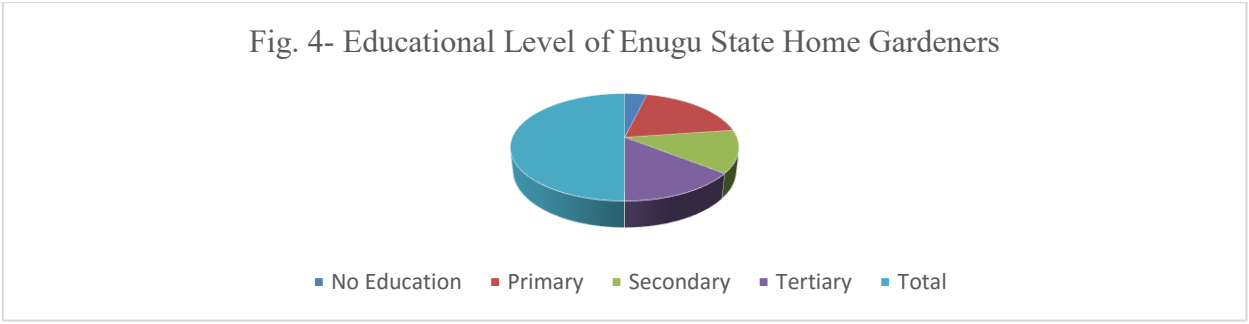


The result of the socio-economic characteristics of home garden farmers in Enugu State showed that the mean age of home garden farmers was 42years (Fig 1). The results showed that farmers aged 51–60 years constitute the largest proportion (34.8%), followed by those in the age groups 18–30 years (22.7%) and 41–50 years (22.7%), while farmers aged 31–40 years account for the least proportion (19.8%).

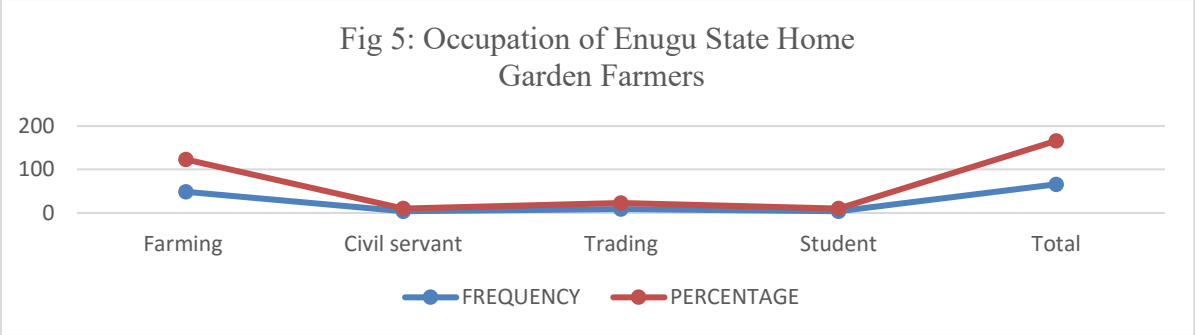




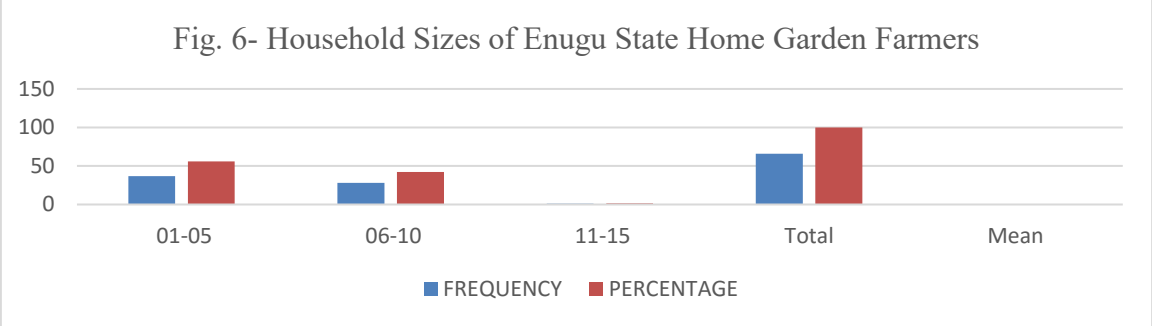
Results obtained on the gender distribution and marital status of the home garden farmers in Enugu State showed that majority (51.5%) of the home gardeners were females (Fig 2) while 63.6% were married (Fig 3).



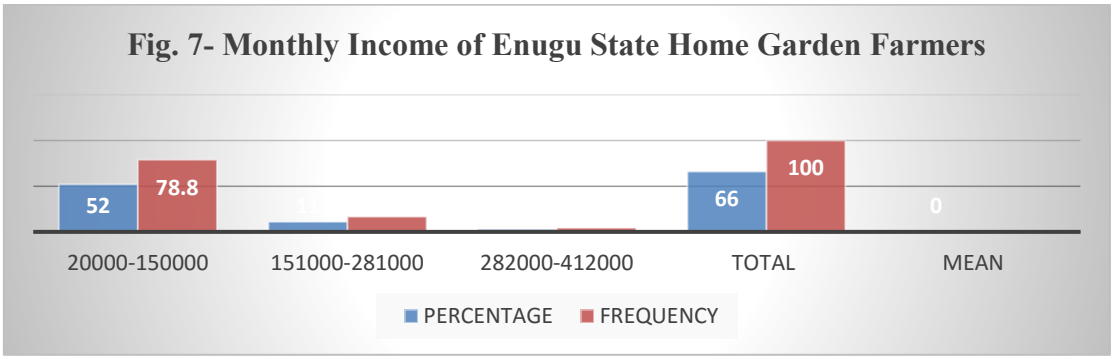
Results on the educational status of the home gardeners in Enugu State above (Fig 4) showed that many of the home garden farmers (37.9%) attained primary education which indicates that home gardening remains an accessible livelihood activity that does not require advanced formal education, relying instead on indigenous knowledge and practical experience.



Many home garden farmers in Enugu State (74.2%) had farming as their major occupation as shown in Fig 5 above.



Findings also showed that the home garden farmers in Enugu State had mean household size of 5 people (Fig 6).



Results of the study revealed the mean monthly income of ₦118,742.42 which suggests a modest economic status of the farmers (Fig. 7).

Objective 2: To identify crop species dominant in the Enugu State home gardens

Table 1: Crop Species Dominant in Enugu State Home Gardens

Crops	Freq	%	Crops	Freq	%
Cassava	64	17.4	Utazi	11	3.0
Maize	61	16.6	Cocoyam	22	6.0
Yam	18	4.9	Water leaf	6	1.6
Pumpkin	8	2.2	Pineapple	3	0.8
African spinach (Green)	36	9.8	Banana	3	0.8
Okra	26	7.1	Paw-paw	7	1.9
Pepper	64	17.4	Ginger	3	0.8
Plantain	5	1.4	Coconut	2	0.5
Tomato	10	2.7	Avocado pear	1	0.3
Bitter leaf	9	2.5	Turmeric	1	0.3
Curry leaf	4	1.2	**TOTAL**	**367**	**100**
Scent leaf	3	0.8			

Field Survey Data, 2025

Results on the dominant crop species in Enugu home gardens (Table 1) are cassava and pepper (17.4%), followed by maize (16.6%) and okra (7.1%).

Objective 3: To determine crop densities in Enugu State home gardens.

Table 2: Crop Density (Number of Stands) in Enugu State Home Gardens

Crops	Crop Density	Crops	Crop Density
Cassava	956	Bitter leaf	27
Maize	882	Curry leaf	14
Yam	244	Scent leaf	17
Pumpkin	35	Utazi	16
African spinach	167	Cocoyam	732
Okra	362	Water leaf	12
Pepper	945	Pineapple	8
Plantain	5	Coconut	5
Banana	4	Avocado pear	5
Pawpaw	12	Turmeric	3
Ginger	4	Mean Farm Size	5747.7M^2
Tomato	15		

Field Survey Data, 2025.

The crop density results indicate that cassava (956 stands), pepper (945 stands), and cocoyam (732 stands) are the most intensively cultivated crops in home gardens in Enugu State (Table 2).

Objective 4: To determine the costs and returns of home gardens crop production in Enugu State.

Table 3: Input Cost of Home Garden Crop Production in Enugu State

Name Of Crop (Variable Cost)	Quantity	Unit Cost (₦)	Total Amount (₦)
Cassava Stem (bundle)	3	3000	9,000
Maize seed (pack)	2	500	1,000
Cocoyam Sett	37	300	11,100
Pumpkin Seed	8	200	1,600
Tomato Seed (pack)	1	100	100
Pepper Seed (sachet)	6	100	600
Spinach Seed (sachet)	3	100	300
Avocado Pear Seedling	3	800	2,400
Coconut Seedling	1	3,000	3,000
Pineapple Sucker	2	400	800
Plantain Sucker	4	2,000	8,000
Banana Sucker	3	1,100	3,300
Ginger Rhizome	1	100	100
Turmeric Rhizome	1	100	100
Pawpaw Seedling	4	150	600
Fertilizer	1	47,000	47,000
Organic manure	9	800	7,200
Insecticide	2	10,000	10,000
Herbicide	2	10,000	10,000
Pesticide	1	8,000	8,000
Yam Setts/Seedling	5	700	3,500
Okra Seed	11	90	990
Transportation			15,000
Total Variable Cost (TVC)			**143,690**
Fixed Inputs			
Wheelbarrow	1	53,000	53,000
Hoe	2	4,500	4,500
Cutlass/machetes	3	3,000	9,000
Spade	1	7,000	7,000
Shovel	1	7,000	7,000
Garden fork	1	3,500	3,500
Watering can	**1**	20,000	20,000
Total Fixed Cost (TFC)			**104,000**
Total Cost (TC)			**247,690**

Table 3 above shows the result of the cost analysis of home garden crop production in Enugu State with a total cost of ₦247,690, and fertilizer cost being the highest (₦47,000).

Table 4- Revenue obtained from Home Garden Crop Production in Enugu State

Name of Crop (Revenue Cost)	Quantity	Unit Cost (₦)	Total Amount (₦)
Cassava (50kg bag)	3	11000	330,000
Maize (50kg bag)	2	8,000	16,000
Yam (50kg bag)	1	9,000	9,000
Cocoyam (50kg bag)	3	3,000	9,000
Coconut (heads)	8	800	6,400
Avocado pear (basket)	1	3,000	3,000
Pineapple (heads)	2	800	1,600
Tomato (5kg painter)	1	2,000	2,000
Bitter leaf (bundle)	6	500	3,000
Curry leaf (bundle)	5	200	1,000
Scent leaf (bundle)	6	100	600
Utazi (bundle)	5	500	2,500
Pumpkin (bundle)	11	1,500	16,500
Water leaf (bundle)	9	300	2,700
African Spinach (bundle)	16	200	3,200
Pepper (5kg painter)	20	1,000	20,000
Okro (5kg painter)	4	2,000	8,000
Turmeric (5kg painter)	0	0	0
Ginger (5kg painter)	0	0	0
Total Revenue (TR)			**434,500**
Gross Margin (GM) = (TR-TVC)			**290,810**
Net Income (NI) = (GM-TFC)			**186,810**
Return on Investment (ROI) = NI/TC X 100			**0.75 (75%)**

Table 4 above revealed a Gross margin of ₦290,810 with a net income of ₦186,810 and return on investment of 0.75 (75%). This shows that the production of home garden crops is profitable in Enugu State because for every ₦1 spent by the home garden farmers in the state, they get a profit of ₦75.

DISCUSSION

Objective 1: Identify the socio-economic characteristics of home garden farmers in Enugu, Southeastern Nigeria

The age distribution of home garden farmers in Enugu State as observed in Fig 1 reveals important insights into the human capital driving household food production. Home gardening in the study area is largely dominated by older adults, particularly those approaching retirement age. This contradicts the findings of Ovharhe *et al.,* (2020) which stated that majority of the home garden farmers in Enugu State are relatively young, energetic and can easily adapt to emerging techniques associated with home garden production.

The observed more number of females in home gardening in Enugu State tallies with the findings of Odebode, Adeniyi and Adetunji, (2023). The implication of this finding is that any intervention aimed at increasing home garden productivity in Enugu State must be gender responsive.

Results obtained on the educational level of the home gardeners in Enugu State suggest a relatively low level of formal education among the farmers. This has important implications for the adoption of improved home gardening technologies and practices, as lower educational attainment may limit farmers' access to information, technical knowledge, and innovation uptake. This aligns with Saaka et al. (2024) and reinforces the need for simplified, practical, and well-targeted extension services to enhance productivity.

The fact that a large majority (74.2%) of respondents identified farming as their major occupation indicates a strong dependence on agriculture for livelihood. This underscores the strategic importance of home gardens as a component of household food systems, not merely as a supplementary activity but as a core source of food and income. It implies that improvements in home garden productivity could have a direct and substantial impact on food security, income stability, and overall household welfare in Enugu State.

The mean household size of five people reflects moderate family sizes typical of the region. This has dual implications: on one hand, larger households can provide family labour for home gardening, potentially enhancing productivity; on the other hand, they increase the demand for food, thereby placing pressure on household food

systems. Thus, improving the efficiency and output of home gardens becomes essential to meet the nutritional needs of these households.

The observed income level of ₦118,742.42 can contribute to household sustenance and may be supplemented by home garden produce, it is relatively lower than the ₦145,000 reported by Odebode, Adeniyi, and Adetunji (2023). This discrepancy may be due to differences in study location, scale of farming activities, market access, or economic conditions. The lower income level highlights the need to enhance the productivity and profitability of home gardens through improved inputs, value addition, and better market linkages**.**

Objective 2: To identify crop species dominant in the Enugu State home gardens

The dominance of Cassava and pepper followed by maize and okro indicates that home garden farmers in Enugu State prioritize crops that are well adapted to local conditions, easy to cultivate, and essential to household diets. These crops are staples in the region and contribute significantly to food availability, dietary diversity, and income generation. The finding, consistent with Olajide-Taiwo, Adeoye, Adebisi-Adelani, Odeleye, Fabiyi and Olajide-Taiwo (2010). suggests a reliance on familiar and resilient crop species that require relatively low inputs.

Objective 3: To determine crop densities in Enugu State home gardens.

The results on crop densities in Enugu State home gardens reflect farmers' preference for staple and high-demand crops that contribute directly to household food security and income. Their high stand counts suggest efficient land use focused on reliable and adaptable species. The mean farm size of 5747.7 m² suggests that home gardens in the area are moderately sized and capable of supporting a mix of crops.

The result of cost and return analysis of home garden crops in Enugu State revealed that the production of home garden crops is profitable in Enugu State because for every ₦1 spent by the home garden farmers in the state, they get a profit of ₦75. This finding is similar to the findings of Ebua, Azibo and Tambi (2025).

Objective 4: To determine the costs and returns of home gardens crop production in Enugu State.

The findings show that home garden is a profitable venture in Enugu State Nigeria. The values in the cost and returns table, shows that the production of home garden crops is profitable in Enugu State because for every ₦1 spent by the home garden farmers in the state, they get a profit of ₦75. This finding is similar to the findings of Ebua, Azibo and Tambi (2025). Several researches show high profitability in home garden. Anugwo, and Egwue, (2025). Asserted that vegetable production in South East Nigeria is highly profitable, with studies showing a benefit-cost ratio of 1.50 to 4.50, meaning for every ₦1 spent, farmers can generate between ₦1.50 and ₦4.50 in revenue. Tropical leafy vegetables (e.g., pumpkin leaves) offer fast returns, particularly for smallholder farmers using high-yield methods in areas like Enugu and Imo states.

CONCLUSION

The findings of the study showed that the productivity of home gardens presents a viable pathway for improving food security, nutrition, and economic resilience among households in the state. .

Recommendations

Based on the findings of the research, the following recommendations are made to optimize the productivity of home gardens in Enugu State:

i. access to farm inputs must be given priority by relevant agencies. This will enable farmers good improved seeds and seedlings, fertilizers etc.
ii. youth engagement should continually be encouraged in the state.
iii. crop diversification needs to be enhanced.
iv. Effective extension services are needed by farmers in the area.
v. There is need for sensitization on the need to diversify income sources as a means of poverty alleviation.

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