



Economic Impacts of Homegardens to Households in Mkpato Enin Local Government Area, Akwa Ibom State, Nigeria

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Abstract

This study examined the economics of homegardens and their contribution to household livelihoods in Mkpato Enin Local Government Area, Akwa Ibom State, Nigeria. A multistage sampling technique was used to select 260 households across four clans in the study area. Data were collected through structured questionnaires and analyzed using descriptive statistics (frequencies, percentages, and means) as well as farm budgetary tools, including gross margin, net farm income, and returns to family labor. The socio-economic analysis showed that homegarden production was dominated by economically active households with moderate family sizes and relatively high educational attainment, suggesting strong capacity for adoption of improved practices. The profitability results revealed that the enterprise generated a total revenue of ₦191,188,100 and an average revenue of ₦650,723.46 per farmer, while the gross margin stood at ₦118,625,500 (₦371,636.10 per farmer) and net farm income at ₦77,823,000 (₦214,703.40 per farmer), indicating that homegardens are economically viable and significantly contribute to household income. The cost structure further showed that variable costs constituted 64.01% of total production cost, with seeds, labor, and manure being the major drivers of expenditure. It was concluded that homegardens are profitable and play a vital role in enhancing household income, food security, and livelihood diversification in the study area, and it was recommended that farmers be supported with improved access to inputs, credit facilities, and extension services to further increase productivity and profitability.



Keywords: Homegardens, Economic Analysis, Household Income, Profitability, Gross Margin, Net Farm Income, Rural Livelihoods, Food Security, Mkpato Enin L.G.A, Akwa Ibom State, Nigeria

Introduction

Homegardens are an important form of agroforestry characterized by the deliberate integration of trees, crops, shrubs, and sometimes livestock within household compounds to meet the food, income, and livelihood needs of families. According to Nair (2011) and Kumar (2015), homegardens represent one of the oldest land-use systems and have served as a major subsistence strategy throughout human history. They provide a wide range of products, including fruits, vegetables, timber, fodder, fuelwood, and animal products, from relatively small areas of land. The diversity of species found in homegardens enhances food availability throughout the year, contributes to biodiversity conservation, improves soil fertility, and supports ecological sustainability through nutrient cycling and environmental protection. Studies by Udofia (2011) and Nair et al. (2021) further emphasized that homegardens play significant nutritional, social, and environmental roles in both developing and developed countries, making them an important component of sustainable agricultural systems. From an economic perspective, homegardens contribute substantially to household income and livelihood security. The diversity of crops and livestock ensures continuous production and repeated harvests, thereby reducing the risks associated with climate variability, pests, diseases, and market fluctuations. Okeke and Udofia (2015) reported that income from homegarden enterprises can account for more than 50 percent of total household income, particularly through the sale of fruits, vegetables, timber, nuts, and animal products. Home gardens also reduce household expenditure on food by providing direct access to nutritious foods and create opportunities for productive use of family labor (Santhoshkumar & Kauro, 2010). Furthermore, Dimelu and Odo (2013) observed that homegarden products contribute significantly to household food security, especially during periods when field crops are not yet harvested. Despite these economic benefits, Nair (2011) noted that most previous studies have concentrated on the biological and ecological dimensions of home gardens, leaving significant gaps in the quantitative assessment of their economic contributions, profitability, labor efficiency, and long-term financial impacts.

The study, therefore, seeks to bridge these gaps by assessing the economic impact of home gardens on households in the Mkpato Enin Local Government Area of Akwa Ibom State. The research problem stems from the limited empirical evidence on the profitability



and economic performance of homegarden enterprises despite their widespread adoption and acknowledged contributions to rural welfare. Specifically, the study aims to (i) determine the socioeconomic characteristics of households involved in home garden management; (ii) estimate income and compute the Time Concentration Index (TCI) of home gardens; (iii) evaluate the production costs and profitability of home garden enterprises; and (iv) identify the major constraints affecting home garden production in the study area. By addressing these objectives, the study is expected to provide valuable information for policymakers, extension services, and rural development practitioners on the role of homegardens in income generation, food security enhancement, and sustainable livelihood improvement.

Literature Review

Meaning and Definition of Home Garden

Homegarden is a traditional agroforestry system that integrates diverse plant species, including trees, shrubs, crops, herbs, and livestock, within or around the homestead for the purpose of meeting household needs. It is characterized by the deliberate arrangement of useful plant and animal species in a relatively small area to provide food, medicine, fuelwood, fodder, and income. According to Udofia (2011), homegardens are multistoried production systems that combine crops and domestic animals around homesteads, while Kumar (2015) described them as human-managed ecosystems that mimic natural forests through species diversity and structural complexity. Similarly, Eyzaguirre and Linares (2010) noted that homegardens involve the management of multipurpose trees, annual and perennial crops, medicinal plants, and animals within the same land unit. Therefore, homegardens serve as multifunctional systems that contribute to food security, environmental sustainability, and household welfare (Udofia, 2011; Kumar, 2015).

Structure and Functions of Homegardens

The structure of homegardens is distinguished by a multistoried arrangement of vegetation, consisting of several canopy layers that range from ground-cover crops to tall trees. Udofia (2011) observed that homegardens in Akwa Ibom State contain up to five floral layers, creating a forest-like ecosystem that efficiently utilizes available resources such as sunlight, water, and soil nutrients. The mixed and random planting pattern enhances biodiversity and allows different plant species to coexist harmoniously. Functionally, homegardens provide continuous harvests throughout the year, generate food and income,



conserve soil, and protect the environment. Their dense vegetation cover reduces soil erosion, improves nutrient cycling, and supports long-term agricultural sustainability (Udofia, 2010; Kumar, 2011). Consequently, homegardens are recognized as one of the most resilient and sustainable agroforestry systems globally.

Economic Benefits of Homegardens to Households

Homegardens contribute significantly to household economic welfare through income generation, cost savings, and livelihood diversification. The sale of fruits, vegetables, medicinal plants, timber, and livestock products provides households with a regular source of income, while consumption of home-produced food reduces expenditure on purchased food items. Calvet-Mir, Gómez-Baggethun, and Reyes-García (2012) reported that homegardens improve household livelihoods and support rural development by creating opportunities for entrepreneurship and small-scale cottage industries. Similarly, Eyzaguirre and Linares (2010) found that homegarden products can be marketed to generate additional income, while Das and Das (2015) noted that marginalized households often use homegarden products as emergency sources of cash. Evidence from Ethiopia and Indonesia further indicates that commercialization of homegarden production positively influences household income and economic resilience (Mellisse et al., 2018; Abdollah et al., 2020).

Features of Homegarden

One of the distinctive features of homegardens is their ability to support sustainable livelihoods through the efficient utilization of available resources. Homegardens provide access to natural, financial, and social assets that enhance household welfare and resilience. According to Udofia (2011), homegardens improve the living conditions of rural households by ensuring food availability, generating income, and promoting environmental sustainability. Kumar et al. (2022) further emphasized that homegardens strengthen the relationship between people and productive assets, thereby improving livelihood outcomes. In addition, homegardens contribute to gender equity, food security, and poverty reduction by enabling households to produce food for both consumption and sale. The multifunctional nature of homegardens makes them valuable tools for achieving sustainable rural development objectives (Galhena et al., 2012).

Economic Analysis of Homegarden

Economic analysis of homegardens focuses on assessing production costs, revenues, profitability, and investment returns. Production costs include all expenses incurred during



the cultivation and management of homegarden enterprises, while profitability reflects the ability of the enterprise to generate returns from the resources invested (Tulsion, 2014; Adam, 2015). Indicators such as net income, benefit-cost ratio (BCR), and net present value (NPV) are commonly used to evaluate the financial performance of homegardens. Empirical studies have shown that homegardens are generally profitable enterprises. For instance, Kassa (2014) reported positive net profits from homegarden agroforestry systems in Ethiopia, while Obasi, Okparadim, and Hanny-Ukoha (2015) recorded a BCR greater than one, indicating economic viability. Similarly, Ntakyo, et al. (2013) found positive net cash flows among farming households engaged in agroforestry production. These findings suggest that homegardens are economically sustainable and capable of improving household income and overall welfare.

Methodology

Study Area

Mkpat Enin is one of the Local Government Areas in Akwa Ibom State, Nigeria, and it lies on coordinates 4°44'1"N and 7°44'55"E, respectively. It has an area of 322.352 square kilometers (124.461 sq km) (AKS, 2024). The Local Government Area is located within the industrial belt extending from Eastern Obolo Local Government Area, Ikot Abasi, Oruk Anam, and Etinan to Onna Local Government Area. The people are traditionally Ibibio speakers; the population of the area was put at 178,036 (NPC, 2006). The area is rich in oil and natural gas. Oil was discovered in the area as early as 1953 at the Ikot Akpa Ekop forest reserve in the area, which harbors good timber trees and widely grown palm produce. It is rich in large-scale agricultural production, including fisheries, due to the several rivers and streams in the area. One of the major landmarks of the area is the Akwa Ibom State University main campus, situated at Ikot Akpaden. The area has four clans and 87 villages. It is under the Ikot Abasi/Mkapt Enin/Eastern Obolo Federal Constituency. (Mkapt Enin Local Council Town Planning Office).

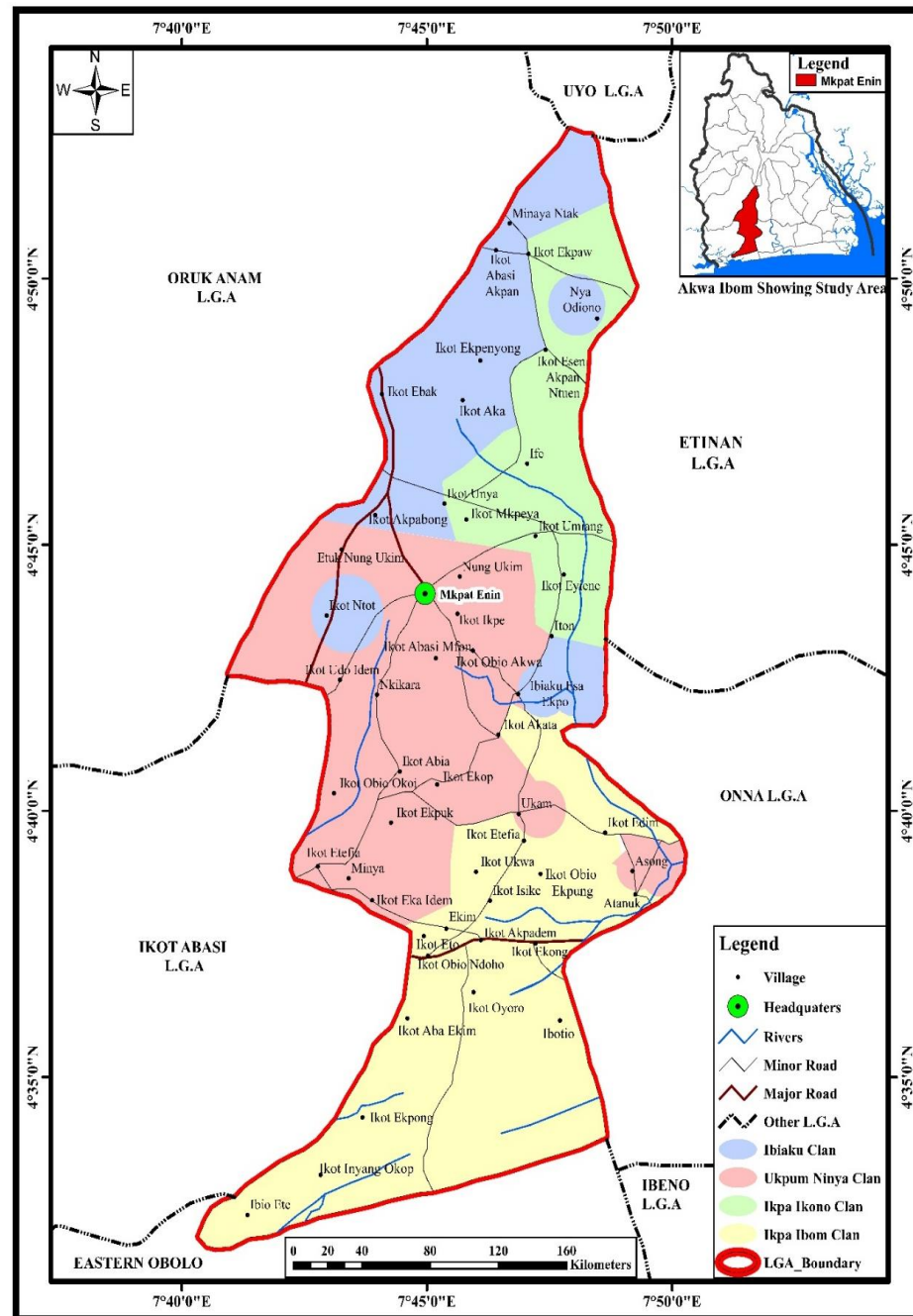


Figure 3.1: Map of Mkpato Enin L.G.A Showing Villages and Clans

Source: Produced at GIS Laboratory, Uniuyo, 2025



The study adopted a multistage sampling technique to ensure adequate representation of households practicing homegarden farming across Mkpato Enin Local Government Area of Akwa Ibom State. Multistage sampling was considered appropriate because the study area comprises several clans and villages with varying socio-economic and agricultural characteristics. According to Cochran (1977), multistage sampling is effective in large populations where direct sampling of all units is impractical, as it enhances representativeness while reducing cost and time. The technique enabled the researcher to systematically select respondents from different geographical locations within the study area.

The study adopted a multistage sampling technique to ensure adequate representation of households practicing homegarden farming in Mkpato Enin Local Government Area. In the first stage, the Local Government Area was stratified into its four major clans such as Ibiaku, Ikpa Ikono, Ikpa Ibom, and Ukpum Minya, to capture the socio-cultural and agricultural diversity of the area. In the second stage, 30% of the villages in each clan were selected through simple random sampling following the recommendation of Eckerberg (1990), resulting in the selection of 26 villages out of the 87 villages in the study area. Specifically, five villages were selected from Ibiaku Clan, five from Ikpa Ikono Clan, nine from Ikpa Ibom Clan, and seven from Ukpum Minya Clan. In the third stage, ten homegardens or households were randomly selected from each sampled village, giving a total sample size of 260 households comprising 50 respondents from Ibiaku Clan, 50 from Ikpa Ikono Clan, 90 from Ikpa Ibom Clan, and 70 from Ukpum Minya Clan. This combination of stratification and random sampling enhanced the representativeness, reliability, and validity of the study by ensuring proportional coverage of all clans and minimizing sampling bias.

Table 3.1 Table of Random Selection of (30%) of Villages and Homegardens/ Households of the four Clans of Mkpato Enin Local Government Area.

Clan	Total Number of Villages	Number of villages randomly selected (30%)	Number of households/homegardens selected for enumeration
Ibiaku	16	5	50
Ikpa	16	5	50
Ikono			
Ikpa	31	9	90
Ibom			
Ukpum	24	7	70
Minya			
Total	87	26	260

Data was analyzed using descriptive statistics such as percentages, means, and charts.

The socio-economic characteristic of households involved in homegarden practice in Mkpato Enin Local Government Area was analyzed using descriptive statistics such as percentages, frequency, and mean.

To evaluate the production cost and profitability of homegardens in Mkpato Enin Local Government Area, Net Farmers Income was employed.

The analysis focused on the returns on the farmer's labor and management (RLM). Firstly, the Gross Margin (GM) will be estimated thus;

Gross Margin (GM)

$$GM = TR - TVC$$

Where:

- **Total Revenue (TR)** = Price × Quantity of Output
- **Total Variable Cost (TVC)** = Sum of all variable costs (e.g., seeds, fertilizers, labor, pesticides, water, transportation)

Returns on Farmers' Labor (RFL)

$$RFL = \frac{\text{Gross Margin}}{\text{Family Labour Used}}$$



Where:

- **Family Labor Used** is the total labor input provided by the farmer and family members (measured in person on days or hours).

Net Farmers' Income (NFI)

$NFI = \text{Gross Margin} - \text{Total Fixed Cost (TFC)}$

Where:

- 1.0 Total Fixed Cost (TFC) includes expenses such as land, rent, depreciation on tools/equipment, and permanent structures.

The above will be obtained by adding the revenue from direct sales of homegarden produce e.g. (fruits, vegetables, tubers, plantain, banana, nuts etc, and livestock products) valued at the prevailing market prices in (Naira): TVC = Total Variable Cost. This will comprise cost (expenses) such as manure/fertilizer, seeds/cuttings/suckers, paid labor, agrochemicals, among other expenses including imputed cost of non-paid labor (family labor).

Result and Discussion

The socio-economic characteristics of households involved in homegarden management in Mkpato Enin Local Government Area indicate that homegardening is practiced by a diverse group of individuals, with males constituting the majority (55.4%) of respondents, suggesting a relatively higher involvement of men in homegarden management than women. The age distribution shows that most respondents were within the economically active and experienced age brackets of 41–60 years (31.9%) and 61–70 years (29.6%), implying that homegarden management is largely undertaken by mature individuals with considerable farming knowledge and experience. Regarding marital status, separated respondents constituted the highest proportion (30.0%), followed by married individuals (28.1%), indicating that homegardens may serve as an important livelihood and income source for households across different family structures. Educationally, the respondents were fairly literate, with 37.3% possessing bachelor's degrees and 36.9% having secondary education, suggesting that the majority have sufficient educational background to adopt improved homegarden management practices and innovations. Household size was predominantly moderate, with three-person households accounting for 38.5% and four-person households representing 30.4%, which may provide adequate family labor for



homegarden activities. In terms of occupation, retirees formed the largest group (32.3%), followed by respondents engaged in both trading and farming (26.9%), indicating that homegardening serves as an important supplementary livelihood activity and source of income, particularly for retired individuals and households combining agriculture with other economic activities. Overall, the findings suggest that homegarden management in the study area is influenced by demographic, educational, and occupational factors that could significantly affect its productivity and economic contribution to household welfare.

Table 4.1: Socio-economic characteristics of households involved in homegarden management

Categories	Frequency	Percentage
Gender		
Male	144	55.4
Female	116	44.6
Total	260	100
Age		
10-20Years	21	8.1
21-40Years	65	25.0
41-60Years	83	31.9
61-70Years	77	29.6
71 Above	14	5.4
Total	260	100
Marital Status		
Single	31	11.9
Married	73	28.1
Seperated	78	30.0
Divorce	63	24.2
Widow/Widower	15	5.8
Total	260	100
Educational Qualification		
No Formal Education	37	14.2
Primary Education	21	8.1
Secondary Education	96	36.9
Bachelor's Degree	97	37.3



Postgraduate Degree	9	3.5
Total	260	100
Household Size		
Single Person	30	11.5
Two-Persons	18	6.9
Three Persons	100	38.5
Four Persons	79	30.4
Five Persons	33	12.7
Total	260	100
Occupation		
Civil/Public Servant	51	19.6
Farming Only	52	20.0
Trading and Farming	70	26.9
Retire	84	32.3
Businessman	3	1.2
Total	260	100

Source: Field Survey (2024)

Cost of Production of Homegarden in the Study Area.

The analysis of production costs, gross margin, and net farm income indicates that homegarden enterprises in Mkpato Enin Local Government Area are economically viable and profitable. The total production cost of ₦113,365,100, with an average of ₦436,019.63 per farmer, reveals that substantial investment is required to sustain homegarden activities. Variable costs accounted for the largest share (64.01%) of total production costs, with seeds (14.35%), labor (11.77%), and manure (11.64%) being the major cost components. This suggests that homegarden production is highly dependent on recurrent expenditures associated with planting, maintenance, and harvesting activities. Fixed costs constituted 35.99% of total costs, with wheelbarrows, axes, and spades accounting for the largest proportions, reflecting the importance of farm tools and equipment in ensuring efficient management of homegardens. The dominance of variable costs implies that farmers must continuously invest in production inputs, making efficient resource utilization essential for improving profitability and sustainability.

The profitability analysis further demonstrates the economic significance of homegardens to household livelihoods. The total revenue generated from homegarden enterprises amounted to ₦191,188,100, with an average revenue of ₦650,723.46 per



farmer, indicating that homegardens serve as an important source of household income. The gross margin of ₦118,625,500 and mean gross margin of ₦371,636.10 per farmer show that farmers were able to generate substantial returns after covering their variable costs. Furthermore, the net farm income of ₦77,823,000, with an average of ₦214,703.40 per farmer, confirms that homegarden enterprises remain profitable even after accounting for fixed costs. The positive net income suggests that homegarden production contributes significantly to household welfare, income diversification, and economic stability. The findings imply that home gardens can serve as effective livelihood strategies capable of enhancing food security, reducing poverty, and providing opportunities for reinvestment in agricultural production and other household needs.

Table 4.2: Estimated Cost and Returns to Home garden Production

Items	Total Cost(₦)	Mean Cost(₦)	Percentage (%) Contribution of Mean Cost	Percentage (%) Contribution of Total Cost
Fixed Cost(FC) Items				
Machete	2541500	9775.00	2.24	2.24
Cutlass	1613500	6205.77	1.42	1.42
Knapsack	2359500	9075.00	2.08	2.08
Wheel barrow	10870000	41807.69	9.59	9.59
Hoe	2344500	9017.31	2.07	2.07
Axe	8501000	32696.15	7.50	7.50
Rake	2427500	9336.54	2.14	2.14
Shovel	1982000	7623.08	1.75	1.75
Head pan	2650000	10192.31	2.34	2.34



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Spade	5513000	21203.85		
			4.86	4.86
Total Fixed			35.99	35.99
Cost(TFC)	40,802,500	156,932.7		
Variable Cost(VC)				
Items				
Manure	13192000	50738.46		
			11.64	11.64
Seeds	16266800	62564.62		
			14.35	14.35
Pesticides	6476000	24907.69		
			5.71	5.71
Water	5852500	22509.62		
			5.16	5.16
Sticks	4409300	16958.85		
			3.89	3.89
Transport	10547000	40565.38		
			9.30	9.30
Labour	13348000	51338.46		
			11.77	11.77
Herbicides	2471000	9503.85		
			2.18	2.18
Total Variable Cost			64.01	64.01
(TVC)	72,562,600	279,086.9		
Total Cost (TC)			100	100
	113,365,100	436,019.63		
Revenue	191,188,100	650,723.4		
		6		
GM = TR –TVC	118,625,500	371,636.1		
		0		
NFI = GM –TFC	77,823,000	214,703.4		

Source: Field Survey (2024)



Conclusion and Recommendations

The study concluded that homegarden production in Mkpato Enin Local Government Area is a profitable and economically viable livelihood activity that contributes meaningfully to household income, food security, and livelihood diversification, as evidenced by the positive gross margin of ₦118,625,500 and net farm income of ₦77,823,000, indicating that households can generate substantial returns above production costs despite the dominance of variable inputs such as seeds, labor, and manure. It is therefore recommended that farmers be supported through improved access to affordable agricultural inputs, strengthened extension services, and credit facilities to ease the burden of production costs and enhance efficiency, while capacity-building programs should be promoted to encourage better resource management, adoption of improved technologies, and expansion of homegarden enterprises for increased productivity and sustained rural household welfare.

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