STUDY OF HOME GARDENS IN THREE COMMUNITIES (EKOSODIN, OLUKU AND EKIADOLOR) IN OVIA NORTH EAST LOCAL GOVERNMENT AREA OF EDO STATE.

BY

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A PROJECT DISSERTATION SUBMITTED TO THE DEPARTMENT OF PLANT BIOLOGY AND BIOTECHNOLOGY, FACULTY OF LIFE SCIENCES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE (B.SC HONS) DEGREE IN PLANT BIOLOGY AND BIOTECHNOLOGY.

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CERTIFICATION

This is to certify that this work was carried out by **Akhere Osemuduyan AIMEBOELIMI**, in the Department of Plant Biology and Biotechnology, Faculty of Life Sciences, University of Benin, Benin City.

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DEDICATION

This report is dedicated to God Most High for His protection, love, wisdom and knowledge He provided me with throughout the compilation of my research project.

Also, to my loving parents for their undying love and care during the course of this project.

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To my parents; Mr. And Mrs. Aimeboelimi and my sister:Odion and my friends for their endless support and provision.

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ABSTRACT

Home gardens, whether in rural or urban areas, are structurally complex and multifunctional, providing numerous benefits to ecosystems and local communities. This study was carried out to investigate the diversity, ethnobotanical significance, and socio-economic impact of home gardens in Ovia North East Local Government Area, Edo State, Nigeria. The research focused on three communities Ekosodin, Oluku and Ekiadolor, selected for their active gardening practices and plant diversity. A total of fifteen (15) home gardens, five from each community, were purposively chosen based on species richness and community involvement. Data collection involved field observations, oral interviews, and structured questionnaires administered to gardeners and community elders. Focus group discussions were conducted to gather insights on plant types, gardening practices, and socio-economic benefits. A total of thirty-five (35) plant species were identified across the communities, with Ekiadolor exhibiting the highest diversity (33 species), followed by Oluku (27 species) and Ekosodin (22 species). Key plant species such as *Vernonia amygdalina, Dioscorea* spp*., Talinum triangulare, Ocimum gratissimum, Solanum lycopersicum* and *Capsicum annuum*were prevalent, indicating the significance of home gardens for food security and traditional medicine. The study revealed that home gardens play a critical role in providing medicinal plants used to treat common ailments, enhancing household nutrition, and serving as a source of income. Challenges such as pest infestations, poor soil fertility, and water scarcity were highlighted, with recommendations for integrated pest management. This study underscores the importance of home gardens in conserving biodiversity, promoting traditional health practices, and supporting sustainable livelihoods.

INTRODUCTION

CHAPTER ONE

1.1. BACKGROUND INFORMATION

Home gardening (Backyard farming/ Kitchen /Farmyard/Compound/Homestead gardens) has been described as the farming of a small area of land which may likely be very close to the household or within trekkable distance from the family home (Oladele *et al*., 2020). Home gardening is the cultivation of crops and rearing of animal with the motive of making food available for the households within the vicinity of farmers dwelling place; it is said to be a lifestyle of making food available and accessible at the home stead by tilling the land for crop production and domestication of some animal in or close to the farmers' compound. Backyard farming has been said to be one of the routes to sustainable food availability and accessibility for households in urban and rural communities (Osawaru and Dania-Ogbe, 2012).

According to the observation of (Banmeke and Ajayi, 2008) home gardening is one of the most convenient means to practice agriculture as the concept has come with a lot of ease in relation to space, time and finance among others. The act could be described as a conscious effort made by an individual to grow and harvest fruits (Orange, Guava, Mangoes, Cashew, Pear, African cherry, Pawpaw among others), food crops (Yam, Cassava, Maize, Cocoyam, Potatoes) and vegetables (Tomatoes, Pumpkin, Okra, Amaranthus, Bitter leaf, Garden egg, Cucumber, chocorous among others) even on available and accessible small area of land (Oladele *et al*, 2020)

Home gardens play a crucial role in enhancing food security by ensuring a steady supply of vegetables, fruits, and medicinal plants. During periods of food scarcity, they provide an immediate source of nutrition and income, especially for low-income households. Research by Okunlola *et al*. (2011) and Kehinde *et al*. (2015) highlights the capacity of home gardens to enhance biodiversity by hosting a wide array of plant and animal species. They are indispensable for

conserving indigenous plant varieties that are often neglected in commercial agriculture (Adekunle *et al*., 2015).

Beyond food production, home gardens contribute significantly to ecological services. They improve soil fertility through organic matter recycling, regulate microclimates by providing shade and reducing heat stress, and support natural pest management by attracting beneficial insects and birds. When integrated with agroforestry and permaculture practices, home gardens enhance productivity while promoting environmental sustainability (Agbogidi *et al*., 2013). Their role in carbon sequestration further underscores their importance in mitigating the effects of climate change.

Home gardens in Ovia North East are notable for their diversity, typically featuring a combination of food crops, vegetables, fruits, and medicinal plants. Common staple crops include cassava (*Manihot esculenta*), yam (*Dioscorea* spp.), and maize (*Zea mays*). Vegetables such as fluted pumpkin (*Telfairia occidentalis*), okra (*Abelmoschus esculentus*), and leafy greens are widely grown. Fruit trees, including orange (*Citrus sinensis*), guava (*Psidium guajava*), banana (*Musa* spp.), and pawpaw (*Carica papaya),* are frequently cultivated for household consumption and income generation (Osawaru and Dania-Ogbe, 2012; Banmeke and Ajayi, 2009).

Medicinal plants play a significant role in these gardens. Species such as bitter leaf (*Vernonia amygdalina*), scent leaf (*Ocimum gratissimum*), ginger (*Zingiber officinale*), and turmeric (Curcuma longa) are valued for their therapeutic properties and are integral to traditional healthcare practices (Aiyeloja and Bello, 2006; Okigbo and Ogbonnaya, 2006).

Management practices in home gardens are largely sustainable and resource-efficient. Farmers commonly use organic fertilizers like compost and animal manure, employ crop rotation and intercropping, and adopt integrated pest management techniques to minimize reliance on synthetic

chemicals (Agbogidi *et al*., 2013). Some households also incorporate livestock such as chickens, goats, and rabbits into their home gardens, providing additional sources of manure and income. This integrated system maximizes resource use and enhances overall productivity.

Home gardens are a cornerstone of rural socio-economic stability. They serve as a primary or supplementary source of income for many households in Ovia North East (Banmeke and Ajayi, 2009). Surplus produce, including vegetables, fruits, and herbs, is often sold in local markets, contributing to household earnings. Women, in particular, play a pivotal role in cultivating these gardens and participating in the marketing of their produce (Kehinde *et al*., 2015).

Culturally, home gardens reflect and preserve traditional practices. Specific plants are cultivated for ceremonial purposes, traditional medicine, or as markers of cultural heritage. For instance, kola nuts (*Cola* spp.) and alligator pepper (*Aframomum melegueta*) are significant in social and religious rituals. The selection of plants is often influenced by generational knowledge, highlighting the intergenerational transfer of agricultural expertise.

Socially, home gardens foster community cohesion. The exchange of seeds, plants, and gardening techniques strengthens neighborly ties and collective resilience. These gardens also serve as informal learning spaces where traditional knowledge is shared and preserved, promoting sustainable agricultural practices across generations (Adekunle *et al*., 2015).

Despite their numerous benefits, home gardens in Nigeria face several challenges that hinder their full potential, Gardeners often lack access to high-quality planting materials, organic inputs, and financial support. This limitation affects their ability to expand or improve their gardens. Changes in rainfall patterns, prolonged dry spells, and increased pest infestations due to climate change pose significant threats to garden productivity. The absence of robust agricultural extension

services limits farmers' access to modern techniques and innovations that could enhance garden management (Adewumi *et al*., 2017).

Home gardens in Nigeria, particularly in regions such as Ovia North East, are indispensable for achieving food security, conserving biodiversity, and promoting sustainable livelihoods. Their multifunctional nature not only supports household nutrition and income but also contributes to ecological and cultural sustainability. Addressing the challenges faced by home gardeners through improved resource access, land security, and climate adaptation strategies will ensure that these systems continue to thrive. Further research and policy support are needed to unlock the full potential of home gardens as resilient and sustainable agricultural systems in Nigeria.

1.2. HOME GARDENING

Home gardening involves the cultivation of small plots of land, typically located at the back of the home or within walking distance, and serves as a supplementary source of food and income. It is characterized by mixed cropping, integrating fruits, vegetables, arable crops, and shrubs (Olajide-Taiwo *et al*., 2010). In Nigeria, this traditional practice has become an integral part of many households, especially in rural and peri-urban areas, offering a means of food security, nutrition enhancement, and economic resilience.

Home gardens are versatile systems that include a variety of plant species such as vegetables, spices, herbs, fruits, ornamental and medicinal plants, and sometimes livestock. Kumar and Nair (2014) describe home gardens as intimate, multi-story combinations of trees and crops, often integrated with domestic animals, designed primarily for domestic consumption. These gardens may feature diverse plant arrangements, mimicking natural ecosystems, and serve as small-scale supplementary food production systems maintained by household members (Galhena *et al.,* 2013).

In the Nigerian context, home gardens often consist of multipurpose trees and shrubs growing in multi-layered associations with agricultural crops and livestock. Ajah *et al.,* (2013) note that these gardens are prevalent in rural and urban settings, functioning as subsistence agricultural systems. In urban areas, where land scarcity and overpopulation pose significant challenges, home gardens utilize otherwise neglected spaces such as overgrown plots and refuse dumps, transforming them into productive areas.

Beyond food security, home gardening also supports environmental sustainability. It reduces waste, promotes biodiversity, and enhances the aesthetic and ecological value of homesteads. Additionally, with increasing urbanization and western influences, home gardens are being adapted into modern housing designs, providing residents with convenient access to fresh produce.

Incorporating home gardening into Nigerian households has the potential to address critical issues such as malnutrition, poverty, and food insecurity. As studies like those by Olajide-Taiwo *et al*. (2010) suggest, promoting home gardening practices can significantly enhance the livelihoods of Nigerian households while fostering sustainable agricultural development.

1.3. TYPES OF TRADITIONAL HOME GARDENS

Traditional home gardens vary widely in layout, species composition, and are often associated with specific geographical areas or ethnic groups (Hamilton and Hamilton, 2006). Home gardens can be classified based on different criteria, such as size, structure, socioeconomic value, or dominant species (Kehlenbeck and Mass, 2004). Despite the existence of various classification systems, there is no universally accepted scheme, particularly for tropical home gardens , for which many types have been documented (Kehlenbeck and Mass, 2004).

Ninez (1987) proposed a classification of traditional home gardens into two main ecological types: tropical and temperate. Tropical home gardens are characterized by complex vertical structures and a high diversity of species, encompassing multiple life-forms. In contrast, temperate home gardens feature simpler vertical structures, with plants exposed to direct sunlight and dominated by annual species.

Additionally, Ninez (1987) suggested an alternative classification based on the economic contributions of home gardens , dividing them into subsistence gardens and budget gardens. Subsistence gardens primarily focus on providing food, fruits, and other daily household necessities, while budget gardens are mainly aimed at generating financial income.

In Vietnam, Trinh *et al*. (2003) identified four types of traditional home gardens based on their main functions and dominant species: "home gardens with fruit trees," "home gardens with pond and covered livestock area," "home gardens with vegetables," and "home gardens with forest trees."

Table 1.1: Differential Salient Characteristics of Home garden and Commercial Agriculture

Characteristics	**Home garden Agriculture**	**Commercial Agriculture**
Holding size	Extremely small, maximum < 1 ha	Larger
Major objective	Meeting home demand (food, fodder, fuel, timber, organic mulch, medicine)	Income generation by sale of produce
Resource use level	Intensive	Extensive
Labour use	Mostly family, supplemented by hired labour	Mostly hired
Species diversity	High	Low
Nature of cropping	Polyculture	Monoculture
Integration of farm	High	Low

enterprises		
Organic and nutrient cycling	High	Low
Dependence on market-purchased inputs	Low	High
Nutritional security of household members	High	Low
Environmental sustainability	High	Low
Market linkages	Poor	Well developed

Source: Salam et al. (1991).

1.4. STRUCTURE AND COMPOSITION OF HOME GARDENS

Home gardens are complex agroecosystems that are marked by high species diversity and multiple vertical canopy layers. These characteristics contribute to the intimate associations between different plant species, creating an environment that resembles natural forests (Kumar and Nair, 2004). While the arrangement of plants may appear haphazard, home gardens are, in fact, highly structured. Each component within these gardens is strategically placed, fulfilling specific ecological and functional roles (Kumar and Nair, 2004; Altieri, 1999).

In regions such as Java, Indonesia, home gardens are maintained in a tidy and organized manner around living spaces. They feature plants of various heights and architectural types, with vertical and horizontal space utilized efficiently. Although these gardens might not follow a strict layout, their design maximizes the available space, supporting an intricate blend of different plant life (Wiersum, 1997; Soemarwoto and Soemarwoto, 1984). This contrasts with home gardens in the Pacific Islands, where the organization of plant species is more defined, reflecting the physical

characteristics of the landscape, such as watershed orientation and topography (Nair, 1993; Ledesma, 2014).

West African home gardens , particularly in Nigeria, present another variation of this structure, with a typical four-layer canopy dominated by tall indigenous fruit trees. These systems have a higher percentage of canopy cover in the upper layers, contributing to microclimatic regulation and enhanced biodiversity (Okafor and Fernandes, 1987; Ajayi *et al*., 2021). Such arrangements support the cultivation of various crops and create a habitat for multiple species of wildlife, which in turn supports ecological balance.

A key feature of home gardens is their exceptional diversity, comprising life forms that range from ground-level crops, such as sweet potatoes and yams, to towering trees like coconut palms that can reach heights of ten meters or more. The vertical stratification of these life forms creates a multi-storey canopy that provides microclimatic benefits, such as temperature moderation and improved moisture retention (Nair, 1993; Altieri and Nicholls, 2005). Additionally, climbing plants, bamboo, and shrubs contribute to the complex structure of the garden, further enhancing its resilience and productivity.

Mohan *et al*. (2007) illustrated the structure of home gardens across different geographical regions, emphasizing that most home gardens feature canopies that are divided into two to five distinct layers. The crop arrangement often appears random or mixed, but it is managed with strategic awareness. Farmers adapt to specific site conditions, which include soil type, water availability, and sunlight, to optimize the growth and yield of various plant species (Jacobs and Alles, 1987; Ninez, 1987; Wahab *et al*., 2013). This adaptive management ensures the sustainability and productivity of the garden over time, making home gardens an effective model for integrated farming systems that combine food production with biodiversity conservation.

The multistrata design of home gardens provides numerous benefits. It promotes the conservation of soil and water, supports nutrient cycling, and reduces the risk of pests and diseases through natural regulation (Kumar and Nair, 2004; Altieri, 1999). Furthermore, these systems are essential for food security, as they provide a steady source of diverse food items, medicinal plants, and other non-timber forest products (Altieri and Nicholls, 2005; Marquez *et al*., 2018).

Home gardens embody a traditional yet highly sophisticated form of agricultural practice that blends ecological principles with local agricultural knowledge. Their diverse structure and thoughtful arrangement not only contribute to food production and nutritional security but also promote environmental sustainability and biodiversity conservation. This makes them invaluable in discussions about sustainable farming and ecological stewardship (Wiersum, 1997; Ajayi *et al*., 2021).

1.5. FUNCTIONS OF HOME GARDEN

Home gardens have long been an integral part of human life, providing multiple functions that contribute to individual well-being, community resilience, and environmental sustainability. These gardens, ranging from small urban plots to expansive rural homesteads, are more than mere spaces for growing food; they are vital for a myriad of ecological, social, and economic reasons. This document delves into the diverse functions of home gardens, highlighting their contributions to food security, health, biodiversity, economic stability, and social cohesion.

1.5.1. Enhancement of Food Security and Nutrition

Agricultural programs promote increased food production as a means to alleviate food insecurity (Bukusuba *et al.,* 2007). Increased food production has been shown to improve food security status through increased food availability (Ndaeyo, 2007). Home gardens offer the potential to improve

household food security by alleviating micronutrient deficiencies. Home gardening can enhance food security by providing direct access to a diversity of nutritionally rich foods, reducing pressure on household budgets. The majority of Nigerian households rely largely on purchased foods (Schmidt, 2005), which makes them more vulnerable to food price inflation (Schwabe, 2004). Household food production becomes a reasonable intervention to reduce the effects of high food prices while offering a fallback food provision during seasonal lean periods (FAO, 2009).

Home gardens can contribute to household food security by providing people with direct access to food that can be harvested, prepared and consumed (Faber *et al*., 2002). Home gardens require few inputs and have the potential to provide households with direct access to vegetable supplies year-round and additional income from the sale of surplus produce (Marsh, 1998). This has been shown in Swaziland, where home gardening has improved food security by increasing food, as well as income for households (Terry and Ryder, 2007).

Home gardens are often promoted as a way of promoting enterprise, optimizing nutrition, and encouraging self-sufficiency to strengthen food security (Kaschula and Arbuckle, 2007). A study on the contribution of household gardens on the nutritional status of pre-schoolers in Lesotho, found a significant association between the presence of home gardens and lower incidences of wasted and underweight children (Makhotla and Hendriks, 2004). This example concurs on the fact that home gardens can provide a significant contribution to household food security by improving direct access to food.

Gardening projects can also improve diet diversity of benefiting households (Faber *et al*., 2002). Increasing the intake of different vegetables is important in food security as it promotes food diversification – a common food security measure (Gunasena, 2007; Chadha, and Oluochi, 2007; Knisley and Nyomora, 2006). A study conducted in Nepal investigated whether home gardens were an option for improving dietary diversity of Chepang households (Regmi *et al.,* 2004). This

particular study adopted participatory and collaborative approaches in designing and implementing the project activities. A number of vegetables, fruit and fodder seeds and samplings were provided for home gardening. Furthermore, training and capacity development activities were initiated to increase awareness and strengthen the capacity of farmers. Findings indicated that participants had more choices of products and faced fewer problems with food shortages. It was also observed that the dietary diversity and nutritional status of households improved, which had a positive effect on the health of women and children. The study concluded that home gardens had potential to contribute to household food security and dietary diversity (Regmi *et al.,* 2004).

Labadarios *et al.* (2005) reported that the diets of children in South Africa consist mainly of staple starchy foods and lack dietary diversity. This has a negative effect on their nutrient or micronutrient consumption and results in micronutrient deficiencies (Labadarios *et al.,* 2005). Home gardens could make a significant contribution to better nutrition and health of children as they improve dietary diversity (Musotsi *et al.,* 2008).

Home gardens do not only have nutritional benefits, but financial benefits too. Increased vegetable production can improve food security and offer income opportunities to small farmers (Chadha and Oluoch, 2003; Morton *et al.,* 2008). A survey conducted in Ovia North East, Edo State, Nigeria, study the structure and benefits of home gardens (Egharevba *et al.,* 2004). Data was collected through surveys using questionnaires and direct contact followed by benchmark studies. Seven local government areas that constituted the district were visited. Among these, twelve home gardens per area were demarcated and garden size, food crops and vegetables grown, labour input, level of income and economic potentials were studied. Findings indicated that staple crop species (*Manihot, Zea mays, Musa and Dioscorea*) were commonly grown along with cash crops (cocoa, kola, and citrus). The findings showed that although home gardens were small, most household

food came from them. The study indicated that home gardens were very important for food security and can increase household income through savings or earnings (Egharevba *et al.,* 2004).

An assessment of the contribution of homestead farming in Southern Nigeria confirms that homestead farms contributed remarkably to food security and farm income (Ndaeyo, 2007). Morton *et al.* (2008) concur that having access to a garden can significantly improve the variety of fruit and vegetables in one's diet, increasing the chances of consuming recommended daily vegetable and fruit servings. Chadha and Oluoch (2003) also stated that vegetable production makes vegetables more affordable and accessible to families.

An evaluation of a two-year community garden project for people living with HIV/AIDS that promoted food gardens and particularly the use of traditional crops using organic farming techniques in the Umsunduzi area, Pietermaritzburg found that community nutrition, skills and overall food security were strengthened (Kaschula and Arbuckle, 2007). Even the amount of food available to the community itself was improved (Kaschula and Arbuckle, 2007; Faber *et al.,* 2002).

Home gardens may have many advantages, but not all studies show distinctly positive results. For example, a cross-sectional pre- and post-study comparison of the vitamin A intake of 100 children (50 from homes with gardens and a control of 50 children form households without gardens) aged 2–5 years in KwaZulu-Natal, South Africa evaluated the impact of a home-based food production programme targeting β-carotene-rich fruits and vegetables (Faber *et al.,* 2002). The findings showed an increase in vitamin A intake in children from households with project gardens as well as those from households without home gardens. The increase of vitamin A in children from nonparticipating households was attributed to the availability of vitamin A rich foods in the local shop. Furthermore, fruits and vegetables were also obtained by means of negotiation (Faber *et al*., 2002). However, this cannot be conclusively shown from the study.

A recent study by Selepe (2011) evaluated the impact of home gardens on the nutritional children were divided into three groups: 24-35 months (four boys and one girl), 36-47 months status of pre-school children in an informal settlement in Gauteng, South Africa. Forty (four boys and five girls) and 48-60 months (14 boys and 12 girls).The children's anthropometric measurements were taken and recorded. The results showed that home gardens had no statistically significant impact on anthropometric measurements of the children. A concerning, negative statistical difference was evident between pre- and post-study height-for-age z-scores for boys, showing significant deterioration of nutritional status among boys. The study concluded that home gardens alone does not have adequate impact on children's nutrition since carbohydrate and fat intake were not significantly improved through garden produce but are necessary to reduce malnutrition. It was discovered that agricultural activities contribute to household nutrition only when production leads to the sales of surplus produce (Selepe, 2011).

Some studies indicate that gardening is not as cost-effective as a nutrition intervention compared to fortification, supplementation and targeted subsidies (Marsh 1998). In addition, home gardening is only feasible for households with access to land, water and technical assistance, leaving out many of the food insecure (Marsh, 1998). A comparison of three African case studies from North West Province in South Africa, Eastern Cape in South Africa and Zimbabwe did not show substantial evidence about the relationship between home gardening or food cultivation and nutrition (Webb, 2000).

1.5.2. Promotion of Physical and Mental Health

The act of gardening itself is therapeutic, offering numerous physical and mental health benefits. Regular gardening can contribute to physical fitness, helping to combat sedentary lifestyles and associated health issues such as obesity and cardiovascular disease. Gardening activities involve activities such as digging, planting, weeding, and watering, which promote physical exercise and muscle development. According to research published in the journal *BMC Public Health*, engaging in gardening can significantly reduce stress levels, improve mood, and promote overall mental well-being (Van den Berg and Custers, 2011). The presence of plants and the act of nurturing them have been shown to reduce symptoms of anxiety and depression (Kaplan, 1995). Additionally, gardening can increase exposure to sunlight, facilitating the natural synthesis of vitamin D, which is vital for bone health and immune function.

1.5.3. Contribution to Biodiversity and Environmental Sustainability

Home gardens serve as microhabitats that support biodiversity, contributing to the conservation of local flora and fauna. Gardens can host pollinators such as bees, butterflies, and birds, which play essential roles in pollination and pest control. The introduction of native plants in home gardens helps maintain the ecological balance and can support threatened species by providing them with food and shelter (Gomez-Baggethun *et al*., 2013). The use of organic gardening practices, such as avoiding synthetic pesticides and fertilizers, promotes soil health and reduces chemical runoff, thereby protecting waterways and preventing water pollution (Lal, 2004). Furthermore, home gardens can aid in mitigating climate change by sequestering carbon dioxide and reducing the urban heat island effect, contributing to local and global environmental sustainability (Conway, 2016).

Traditional home gardens have been shown to be ecologically sustainable (Torquebiau, 1992; Jose and Sharimugaratnam,1993; Kehlenbeck and Maass, 2004). Their benefits include maintenance of

soil fertility and soil structure and maintaining nutrient cycling (Schroth *et al*., 2001). The complex vertical structures and high floristic diversity of tropical home gardens ensures an efficient use of sunlight, water, and nutrients. Even in tropical areas of low rainfall, shallow soils and low agricultural potential, home gardens have been shown to be agriculturally productive (Benjamin *et al*., 2001). Traditional home gardens contribute greatly to agrobiodiversity conservation (Trinh *et al*., 2003), including helping to maintain or increase both the phenotypic and genotypic diversities of cultivated plants (Casas *et al*.,2007; Carmona and Casas, 2005). They can also play an important role in (he conservation of indigenous and endemic plants, since such plants can be major components of home gardens in some cases (Albuquerque *et al*.,2005; Hemp, 2005).

1.5.4. Economic Benefits and Food Sovereignty

Economically, home gardens can be a source of supplementary income. Surplus produce from home gardens can be sold at local markets, contributing to household income and providing economic independence. In areas where formal employment opportunities are limited, this can be an important financial buffer (Amekawa, 2013). Additionally, the cultivation of medicinal plants and herbs can be particularly lucrative, as natural remedies continue to gain popularity for their health benefits (Rahman *et al*., 2020). Beyond direct income, home gardening also reduces household expenses by lowering grocery bills. This aspect is particularly vital for low-income families, enabling them to allocate funds to other essential needs (Sharma and Kaur, 2016).

1.5.5. Fostering Community and Social Bonds

Home gardens can play an essential role in community building and fostering social connections. In many neighborhoods, shared garden spaces act as communal hubs where people come together, exchange knowledge, and work collaboratively. These interactions strengthen social ties and contribute to a sense of belonging, which is crucial for mental health and resilience (Pretty *et al*., 2003). Community gardening initiatives have been associated with increased participation in local activities, cooperation among neighbors, and collective efforts to improve local food systems (Armstrong, 2000). According to the *Journal of Community Practice*, such initiatives can enhance social capital by creating networks of support and encouraging collective problem-solving (McGuire, 2012).

Home gardens encompass a wide range of functions that contribute to personal health, community well-being, environmental sustainability, and economic resilience. Their multifaceted roles make them indispensable to both individual households and wider communities. As urbanization and climate challenges continue to shape our world, promoting the practice of home gardening can play a critical part in enhancing food security, fostering social ties, and sustaining ecosystems. To fully realize these benefits, support from local governments, educational institutions, and community organizations is essential to encourage and facilitate home gardening initiatives.

1.5.6. Domestication sites of wild plants

Historically, traditional home gardens have served as major centers for the domestication of wild plants (Ninez, 1987;Blanckaert *et al*., 2004; Das and Das, 2005), a function which persists even to this day. For instance, many fruit trees and shrubs, such as *Diospyros lotus, Ficus carica, Malus oriental*, and *Prunus cerasifera*, are still collected from the wild in northern Iran for cultivation in home gardens (Khoshbakht and Hammer, 2005). Home gardens have played a very important role in the domestication of *Dacryodes edulis*, a traditional fruit tree with many usages in West and

Central Africa (Anegbeh *et al*., 2005). Although traditional home gardens are today being affected by many factors, some of their basic functions remain unchanged, as has been demonstrated, for example, in Vietnam (Trinh *et al*., 2003). The basic function of a traditional home garden anywhere in the world is still to provide the subsistence needs of households, even as the modern world changes so fast socially and physically.

1.6. ADVANTAGES OF HOME GARDENS

Okeke and Akachuku (2001), Marsh (1998), Torquebiau (1992) and Okigbo (1990) stated the advantages of home gardens as shown below.

a. Proximity to homesteads makes it easy to protect them from vermins, to deposit in them household refuse, kitchen ash and animal manure, which augment soil fertility and, subsequently, enhance crop productivity of home gardens.
b. Home gardens are usually very productive and provide a variety of household requirements including food, medicinal plants, fuelwood and timber, some of which are for sale.
c. The diversity of plants provides insurance against drought, pests and economic risks and contributes to the diversity of food and income available to the farmer.
d. Often, there is good ground cover that reduces soil erosion, and enhance nutrient cycling which makes the system quite sustainable. Organic matter addition improves some soil physical properties and moisture content.
e. Soil temperature may be moderated through solar radiation interception by plant and litter cover which also reduce soil moisture evaporation.
f. Farmers Eire able to harvest food and/or tree products almost throughout the year.

g. Home gardens have low labour requirements, although some home gardens can be improved with more labour input.
h. Provision of fuelwood in home gardens may reduce encroachment into forests for fuelwood collection.
i. Small home gardens are easy to manage intensively.
j. Economic returns to land and labour are higher in home gardens than in field/commercial agriculture.

1.7. BIODIVERSITY CONSERVATION AND MANAGEMENT IN HOME GARDENS

Biodiversity encompasses the vast variety of life forms, including genes, animal and plant species, ecosystems, and landscapes. It spans forests, freshwater and marine environments, soils, cultivated crops, domestic animals, wild species, and microorganisms. Preserving biodiversity is essential for humanity due to its socio-economic, recreational, cultural, and ecological benefits, as well as its role in regulating the biosphere (Council of Europe, 1998). However, human activities exert tremendous pressure on landscapes, ecosystems, and species, leading to significant biodiversity loss, depletion, and degradation. This loss poses one of the most severe challenges facing humanity (WCMC, 1999; McCalla and Revoredo, 2001; Council of Europe, 2003). The urgent need for effective conservation and management strategies has become apparent, as the decline of biodiversity affects crucial areas such as soil fertility and natural pest and disease control, ultimately impacting agricultural production and environmental sustainability (Commonwealth Current, 1992). Implementing sustainable biodiversity conservation practices is, therefore, vital for the health of global ecosystems, especially in areas where agroforestry production is prominent.

Home gardens are small, diversified ecosystems that provide significant species and genetic diversity within farming systems. They serve as vital tools for biodiversity conservation and can

play a crucial role in balancing conservation with food production. These gardens offer numerous features that make them suitable for in-situ conservation of various plant genetic resources. Historically, home gardens have been instrumental for studying the evolution of plant genetic diversity due to their complex mix of species and the interactions that occur within them. It is essential to understand the dynamics of home gardens to enhance their management and integration into biodiversity conservation strategies to strengthen agroforestry systems (Ellenberg *et al*., 1991).

Home gardens support a wide range of goods and services. They often nurture under-utilized plant species that may not have significant market demand outside of local communities. As noted by WCMC (1992), home gardens offer a conducive habitat for the conservation of germplasm, including wild varieties, primitive cultivars, and various crop plants. They can be particularly important for the germination and preservation of seeds from recalcitrant crops. Home gardens contribute to biodiversity by providing varied nutrient combinations for farmers, playing a role in local food culture, and holding religious or ceremonial significance. Family traditions often value different plant varieties for specific purposes, leading to the maintenance of diverse types of plants for uses such as construction materials, medicinal purposes, and food (Gessler *et al*., 1998; Owasu *et al*., 1993). This diversity can contribute to the development of new local plant varieties and sustainable agricultural practices.

Recently, home gardens have become recognized as concentrated reservoirs of biodiversity, representing the agro-ecological heritage of regions and providing essential ecosystem services. This diversity can enhance resilience and reduce vulnerability to diseases or unfavorable environmental conditions, making production systems more adaptable to changes in household needs or market demands. The unique micro-environment of home gardens, with its many niches

and dynamic interactions among species, supports increased stability and biodiversity conservation potential (WCMC, 1992).

Despite their numerous advantages and fundamental role in sustaining biodiversity, there is limited scientific research on the status, roles, and dynamics of home gardens and their potential as effective conservation units. Although home gardens are a key part of farming systems in many countries and play a crucial role in local livelihoods, they face increasing threats (Marten, 1990; Mendez *et al*., 2001; Hanstad, 2002). This underscores the importance of conducting periodic assessments of species diversity within home gardens to monitor biodiversity dynamics and explore strategies for sustainable conservation and management.

Globally, scientists have called for ongoing assessments of biodiversity in various ecosystems to understand species composition and changes over time, including in home gardens (Brownrigg, 1985; Ellenberg *et al*., 1991; Council of Europe, 1998; Nasi, 2001; Capobianco *et al*., 2001; Kravcik *et al*., 2001). According to Wong *et al*. (2001), biological resource assessments can help: (a) determine sustainable seasonal harvests, (b) monitor the state of biological resources, and (c) decide on the exportation of certain plant or animal species.

1.8. JUSTIFICATION OF THE STUDY

Home gardens are essential agroecosystems that contribute significantly to food security, biodiversity conservation, and socio-economic stability, particularly in rural communities. In Nigeria, where agricultural production faces challenges such as limited arable land, climate variability, and declining soil fertility, home gardens provide a sustainable and resource-efficient solution to these issues. The multifunctional nature of home gardens makes them a critical

component of rural livelihoods, offering a consistent supply of food, medicinal plants, and income-generating produce.

In Ovia North East Local Government Area, home gardens have a profound socio-economic and ecological impact. They act as safety nets during periods of food scarcity, reduce household expenditure on food, and serve as a primary or supplementary source of income, especially for women. However, there is limited empirical research documenting the specific contributions of home gardens to household food security and economic well-being in this region. Moreover, understanding the challenges faced by home gardeners, such as access to resources and climate change impacts, is crucial for developing targeted interventions that enhance their productivity and resilience.

This study is justified by the need to bridge the knowledge gap regarding the role of home gardens in rural household food security and economic sustainability in Ovia North East. By analyzing the socio-economic characteristics of gardeners, their crop choices, and the challenges they encounter, this research provides valuable insights for policymakers, agricultural extension services, and development practitioners. The findings will inform strategies to promote home gardening as a viable, low-cost agricultural system that supports rural livelihoods and contributes to sustainable development in Nigeria.

1.9. AIM AND SPECIFIC OBJECTIVES

1.9.1. Aim of the Experiment

The aim of this study is to assess the plant diversity, composition, and socio-economic significance of home gardens in selected communities within Ovia North-East Local Government Area, Edo State, Nigeria.

The specific objectives were to;

1. Evaluate the types of plants cultivated in home gardens within the selected communities.
2. To evaluate the abundance and distribution of different plant types (medicinal, fruits, vegetables, etc.) in the home gardens of the selected communities.
3. Analyze the various uses of these plants, including medicinal, nutritional, and cultural applications.
4. Propose sustainable strategies for preserving plant diversity in home gardens.

CHAPTER TWO

MATERIALS AND METHODS

2.1 Study Area

The study was conducted in Ovia North East Local Government Area (LGA), located in Edo State, Nigeria. The area lies between latitude 6° 20'N to 6° 21'N and longitude 5° and 7° 40' N and 5° and 6° 30' E. The region is characterized by a temperature range of 27°C to 30°C, It is a tropical rainforest area characterized by high rainfall, with an average annual precipitation of approximately 2,000 mm, and experiences double maxima rainfall peaks in July and September. The major communities in the Local Government Area are Okada, Uhen, Utese, Okokhuo, Uhiere, Isiuwa, Ekiadolor, Oluku, Iguoshodin, Utoka, Oghede, Egbeta, Ora, and Ogbese. The area has a total land area of approximately 2,301 km² with an estimated population of 153,849 (NPC, 2006).

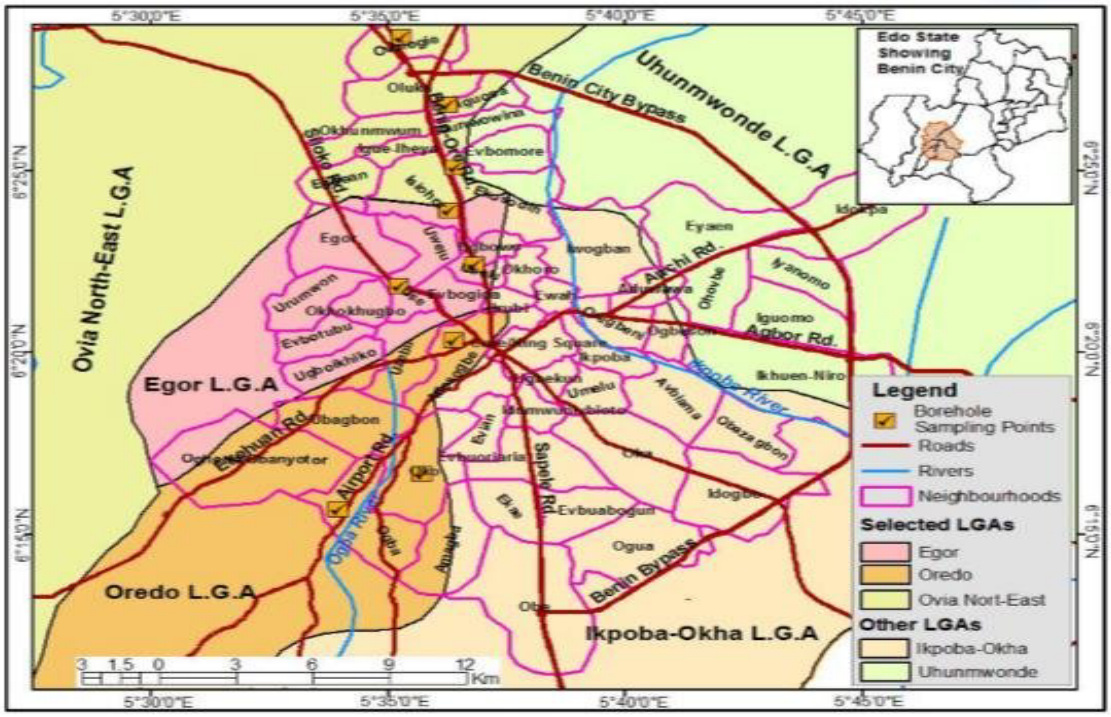


Figure 2.1. Map of Benin City showing the study Area.

2.2 Study Design

A quantitative survey design was adopted for this study, which involved collecting data through direct observation and interviews to understand the home garden practices in the selected communities. This design was chosen because it allows for detailed data collection on existing practices and socio-economic impacts of home gardens.

2.2.1 Sampling Procedure

A reconnaissance survey was conducted to familiarize with the study area. The study focused on three communities within Ovia North East LGA: Ekosodin**,** Oluku**,** and Ekiadolor. A total of five home gardens from each community were purposively selected for the study, resulting a total of 15 home gardens**.** The selection was based on the presence of diverse plant types and the active involvement of community members in gardening activities.

Information regarding the types of plants grown was collected through fieldwork, oral interviews with the indigenous people, and the distribution of well-structured questionnaires within the selected communities.

2.2.2. Focus Group Discussions (FGDs)

Focus Group Discussions (FGDs) were held with various groups, including elderly men, women, and herbalists from the three communities. Garden owners were interviewed to gather detailed information on the types of plants cultivated in their gardens. The information collected included:

- **Types of crops grown**: Vegetables, fruits, tubers, legumes, herbs, and other crops.
- **Garden size**: The area covered by the home garden (in square meters or hectares).

- **Gardening methods:** Traditional farming techniques, organic gardening, and the use of fertilizers and pesticides.
- **Socio-economic benefits:** Income from sale of crops, savings on household food expenses, and provision of food for the household.
- **Challenges faced:** Pest control, water availability, land availability, and access to farming inputs.

2.3 Data Analysis

The data collected was analyzed using descriptive statistics, including frequency distribution**,** percentages, and tables. The results were presented in a clear and concise manner to provide insights into the plant types, gardening practices, and challenges faced by gardeners in the three communities.

CHAPTER THREE

3.0. RESULTS

The results on the botanical survey of plants in Home gardens in Ovia North-East Local Government Area of Edo State, Benin City, Nigeria, are shown below in tables, figures and plates. The plants were categorized into different groups, including fruits, vegetables, herbs, medicinal plants, and ornamental plants. Botanical identification was conducted through a combination of field observations and references from literature.

Table 3.1. 'shows the various plants identified during the survey in the Home gardens with their common name.local name and family. A total of thirty five (35) plants were identified. Further enumeration was conducted to determine the species abundance and richness in the various Home gardens, so as to ascertain the gardens with the highest number of known medicinal plants been propagated and utilized by the household.

Table 3.2**.** shows the Distribution and Frequency of Plant Species across the three communities in Ovia North-East Local Government Area of Edo State, Nigeria. The table highlights the frequency of different plant species identified in Home gardens within Ekosodin, Oluku, and Ekiadolor communities. A total of 35 plant species were identified in the three communities of Ovia North-East Local Government Area, Edo State, Nigeria. Ekiadolor had the highest diversity with 33 species and 268 plant stands, showcasing enriched home gardens and greater plant cultivation. Oluku followed with 27 species and 174 plant stands, indicating moderate diversity. Ekosodin recorded the lowest diversity, with 22 species and 148 plant stands, suggesting less variety in plant cultivation compared to the other communities.

Table 3.3 presents a comparative distribution of various plant types across three locations: Ekosodin, Oluku, and Ekiadolor. The table categorizes plants into seven types: medicinal, fruit,

vegetable, root crop, herb, spice, ornamental, and cereal. The total count for each plant type is also provided, reflecting the combined occurrences in all three locations.

Table 3.4 provides an overview of the characteristics of home gardens across three communities: Ekosodin, Oluku, and Ekiadolor. Highlighting various factors such as garden size, dominant plant types, gardening purposes, challenges faced by gardeners, gender distribution, income use, and plant species diversity in each area.

Figure 3.1 shows the frequency of occurrence of the plant family. The plant family Solanaceae and Malvaceae had the highest occurrence, the least occurrence was recorded for the following plant family, including, **Asparagaceae**, Anacardiaceae, **Rubiaceae**, **Amaranthaceae**, Portulacaceae, Musaceae, Apocynaceae and **Araceae.**

Figure 3.2. shows the percentage distribution of plant types (%) in the three communities (Ekosodin, Oluku, and Ekiadolor).

Plate 3.1 displays the common plants found in the home gardens of the three communities studied. These plants represent a variety of species that are widely cultivated due to their importance for food, medicine, or ornamental purposes. The plate highlights the shared plant types across the communities, reflecting similarities in gardening practices.

Table 4.1. Checklist of Plants Found in the Three Communities (Oluku,Ekosodin,Ekiadolor)

S/N	COMMON NAME	SCIENTIFIC NAME	FAMILY	UTILITY
1	Bitter Leaf	*Vernonia amygdalina*	Asteraceae	Medicinal
2	Mango	*Mangifera indica*	Anacardiaceae	Fruit
3	Cassava	*Manihot esculenta*	Euphorbiaceae	Root crop
4	Okra	*Abelmoschus esculentus*	Malvaceae	Vegetable
5	African Basil	*Ocimum gratissimum*	Lamiaceae	Herb
6	Orange	*Citrus sinensis*	Rutaceae	Fruit
7	Fluted Pumpkin	*Telfairia occidentalis*	Cucurbitaceae	Vegetable
8	Neem	*Azadirachta indica*	Meliaceae	Medicinal
9	Pepper	*Capsicum annuum*	Solanaceae	Spice
10	Cocoa	*Theobroma cacao*	Malvaceae	Fruit
11	Tomato	*Solanum lycopersicum*	Solanaceae	Vegetable
12	Lemongrass	*Cymbopogon citratus*	Poaceae	Herb
13	Ixora	*Ixora coccinea*	Rubiaceae	Ornamental
14	Potato	*Solanum tuberosum*	Solanaceae	Root crop
15	African Spinach	*Amaranthus hybridus*	Amaranthaceae	Vegetable
16	Jute Leaf	*Corchorus olitorius*	Malvaceae	Vegetable
17	Scent Leaf	*Ocimum gratissimum*	Lamiaceae	Herb
18	Water Leaf	*Talinum triangulare*	Portulacaceae	Vegetable
19	Snake Plant	*Dracaena trifasciata*	Asparagaceae	Ornamental
20	Pawpaw	*Carica papaya*	Caricaceae	Fruit
21	Sugar Cane	*Saccharum officinarum*	Poaceae	Cereal
22	Yam	*Dioscorea spp.*	Dioscoreaceae	Root crop
23	Guava	*Psidium guajava*	Myrtaceae	Fruit
24	Jatropha Leaf	*Jatropha curcas*	Euphorbiaceae	Medicinal
25	Hibiscus	*Hibiscus sabdariffa*	Malvaceae	Medicinal
26	Lime Orange	*Citrus aurantiifolia*	Rutaceae	Fruit
27	Cocoyam	*Cococasia esculenta*	Araceae	Tuber
28	Plantain	*Musa paradisiaca*	Musaceae	Fruit
29	Banana	*Musa acuminate*	Musaceae	Fruit
30	Garden Egg	*Solanum aethiopicum*	Solanaceae	Vegetable
31	Pineapple	*Ananas comosus*	Bromeliaceae	Fruit
32	Banana Pepper	*Capsicum annuum var. annuum*	Solanaceae	Spice
33	Utazi	Gongronema latifolium	Apocynaceae	Medicinal
34	Avocado	*Persea Americana*	Lauraceae	Fruit
35	Grape fruit	Citrus paradise	Rutaceae	Medicinal

Table 4.2. Distribution and Frequency of Plant Species in Home Gardens Across Three Communities (Ekosodin, Oluku and Ekiadolor) in Ovia North-East Local Government Area, Edo State, Nigeria.

COMMON NAME	FAMILY	EKOSODIN	OLUKU	EKIADOLOR	TOTAL FREQUENCY
Bitter Leaf	Asteraceae	11	9	14	34
Mango	Anacardiaceae	0	5	4	9
Cassava	Euphorbiaceae	0	6	9	15
Okra	Malvaceae	5	6	8	19
African Basil	Lamiaceae	9	7	8	24
Orange	Rutaceae	6	4	10	20
Fluted Pumpkin	Cucurbitaceae	7	9	7	23
Neem	Meliaceae	8	0	5	13
Pepper	Solanaceae	7	8	9	24
Cocoa	Malvaceae	0	0	7	7
Tomato	Solanaceae	8	9	7	24
Lemongrass	Poaceae	6	7	5	18
Ixora	Rubiaceae	0	3	8	11
Potato	Solanaceae	0	0	4	4
African Spinach	Amaranthaceae	0	7	9	16
Jute Leaf	Malvaceae	8	7	6	21
Scent Leaf	Lamiaceae	14	10	12	36
Water Leaf	Portulacaceae	16	10	20	46
Snake Plant	Asparagaceae	1	3	3	7
Pawpaw	Caricaceae	8	11	15	34
Sugar Cane	Poaceae	5	4	7	16
Yam	Dioscoreaceae	12	15	19	46
Guava	Myrtaceae	4	5	3	12
Jatropha Leaf	Euphorbiaceae	3	4	5	12
Hibiscus	Malvaceae	0	2	4	6
Lime Orange	Rutaceae	3	0	8	11
Cocoyam	Araceae	0	7	11	18
Plantain	Musaceae	0	0	4	4
Banana	Musaceae	3	2	3	8
Garden Egg	Solanaceae	0	0	0	0
Pineapple	Bromeliaceae	0	2	8	10
Banana Pepper	Solanaceae	2	0	6	8
Avocado	Lauraceae	0	4	0	4
Grape fruit	Rutaceae	0	0	8	8
Utazi	Apocynaceae	5	8	12	25
TOTAL =		**148**	**174**	**268**	**593**

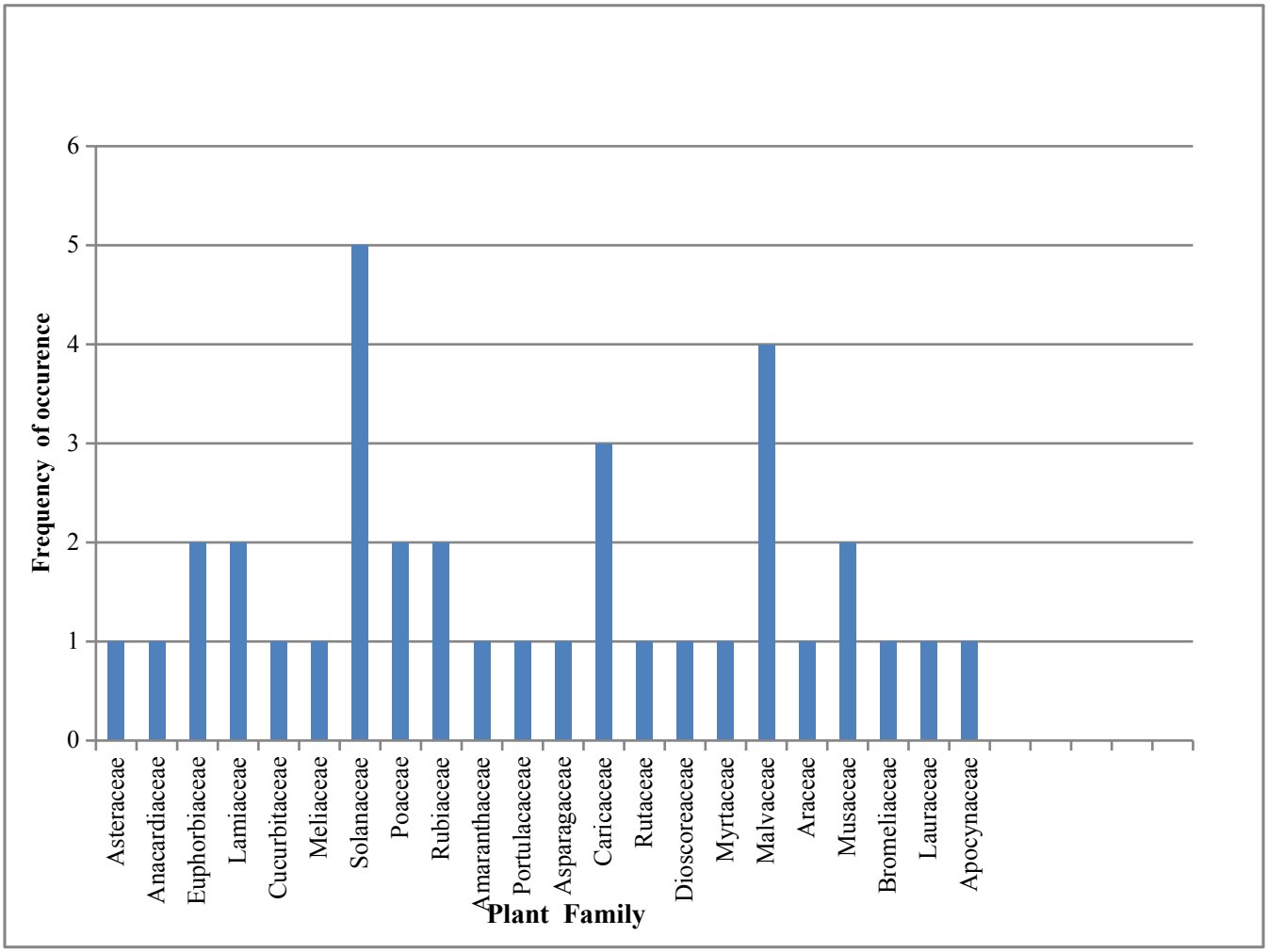


Figure 3.1 Frequency of occurrence of plant family

Plate 3.1. Some Common Plants Found In The Home Gardens in Oluku and Ekiadolor Communities

a. *Ananas comosus;* B= *Musa paradisiaca;C= Cococasia esculenta,*D= *Ocimum gratissimum;* E= *Musa acuminate;* F=*Citrus sinensis;* G= *Carica papaya;* H= *Jatropha curcus; I= Talinum triangulare*

Table 3.3: Comparative Distribution Of Plant Types Across Oluku,Ekosodin,Oluku

Plant Type	**Ekosodin**	**Oluku**	Ekiadolor	**Total Count**
Medicinal	4	4	6	14
Fruit	5	7	10	22
Vegetable	5	6	6	17
Root Crop	1	2	3	6
Herb	3	3	3	9
Spice	4	1	2	7
Ornamental	1	2	2	5
Cereal	1	1	1	3

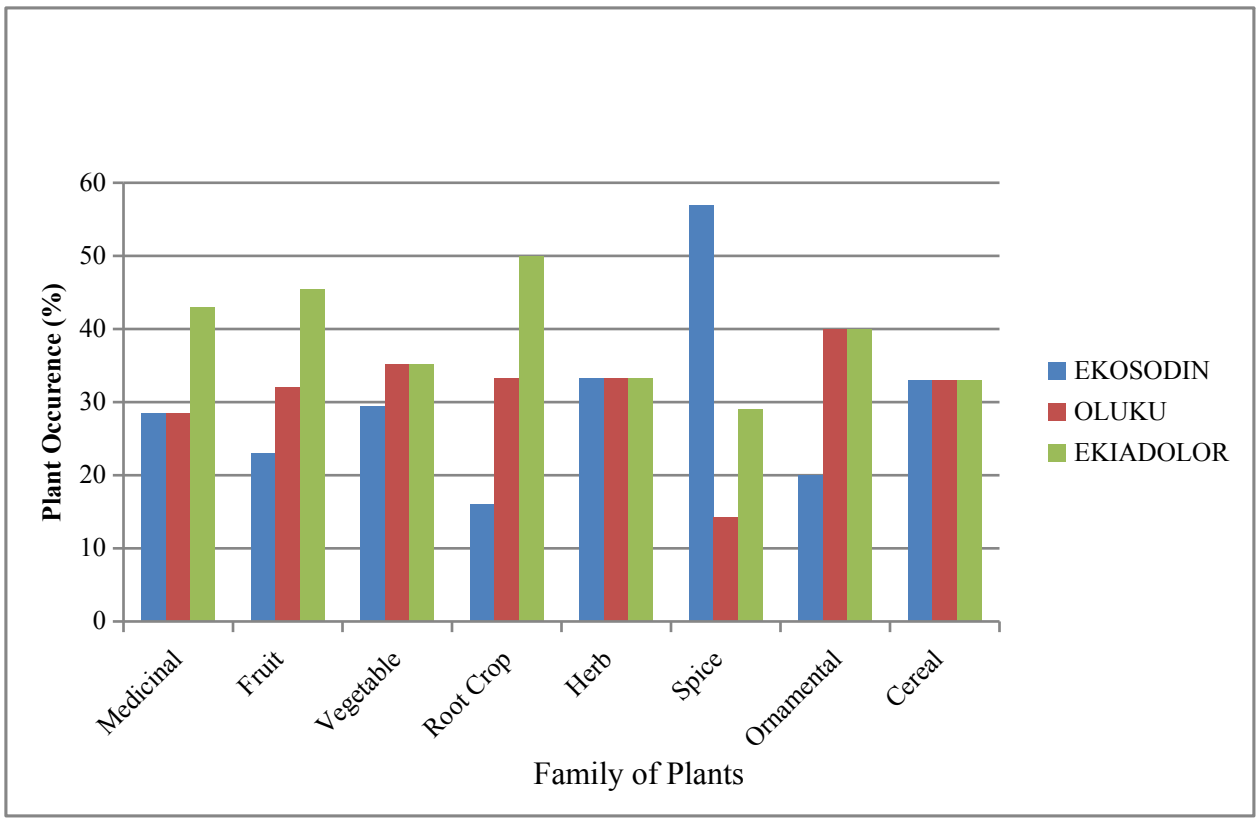
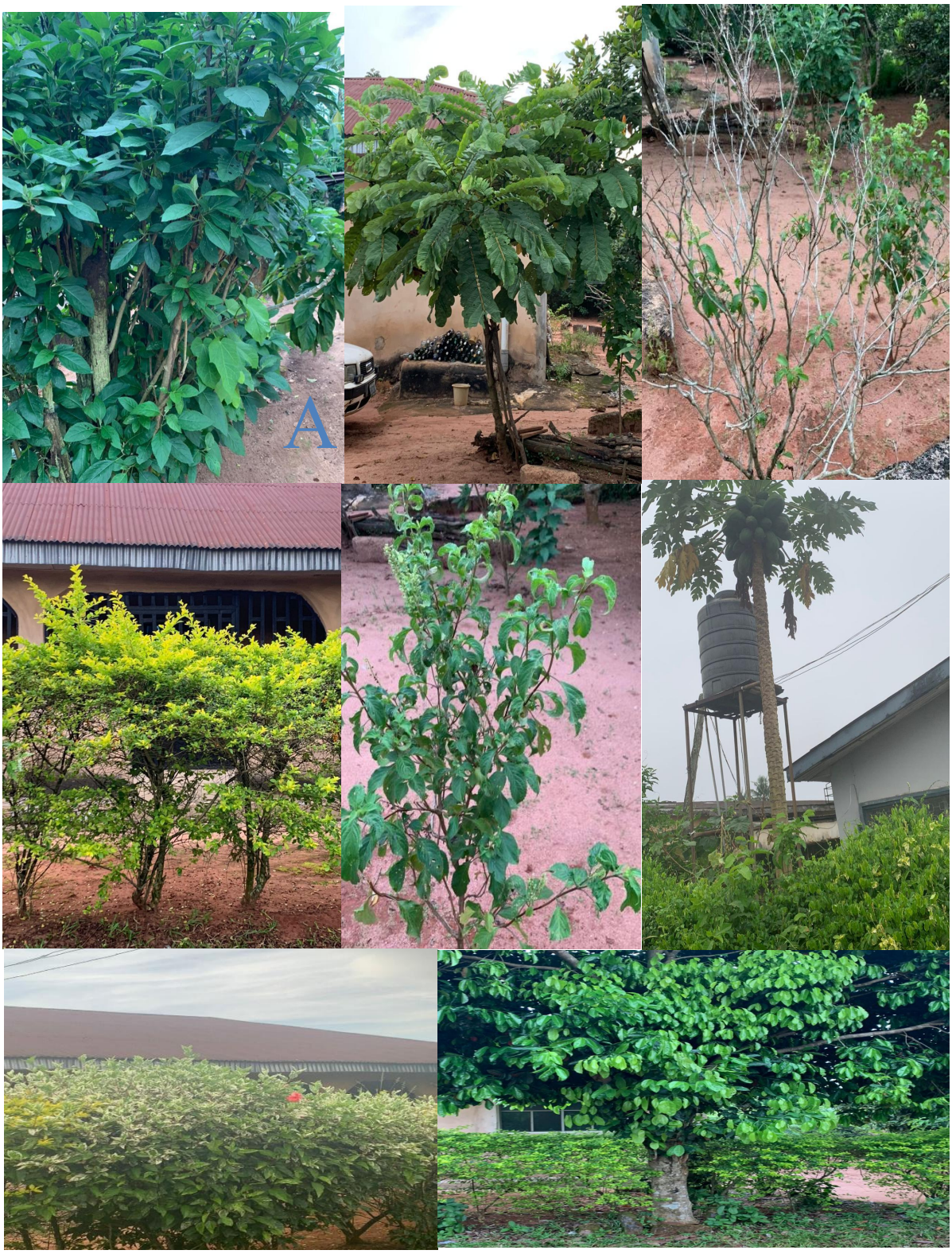


Figure 3.2. Occurrence of Plant Family in Oluku, Ekiadolor and Ekosodin (%)

Table 3.4: Characteristics of Home Gardens in the Three Communities (Ekosodin, Oluku and Ekiadolor) in Ovia North-East Local Government Area, Edo State, Nigeria.

Parameter	**Ekosodin**	**Oluku**	Ekiadolor	**General Observation**
Average Garden Size (m^2)	50–100	30–70	40–90	Medium-sized home gardens
Dominant Plant Type	Medicinal, Fruit	Vegetable, Fruit	Fruit, Medicinal	Varied across communities
Purpose of Gardening	Medicinal, Food	Food, Income	Medicinal, Income	Mostly food and medicine
Common Challenges	Pest, Low Fertility	Water Scarcity, Pest	Pest, Soil Erosion	Shared issues among areas
Gender of Gardeners (%)	60% Women, 40% Men	70% Women, 30% Men	50% Women, 50% Men	Women dominate gardening
Garden Use for Income (%)	40	60	50	Oluku leads in income use
Average Number of Plant Species	10–15	8–12	12–16	High diversity in Ekiadolor



Some common plants found in Oluku, Ekiadolor and Ekosodin

A= *Vernonia amygdalina*; B= *Cassia alata*; C= *Ocimum grastissimum*; D= *Duranta erecta*; E= *Ocimum tenuiflorum*; F= *Carica papaya*; G= *Malvaviscus arboreus*; H= *Garcinia xanthochymus*

CHAPTER FOUR

DISCUSSION

The botanical survey conducted in the home gardens of Ekosodin, Oluku, and Ekiadolor communities in Ovia North-East Local Government Area of Edo State provides a comprehensive analysis of plant diversity, abundance, and the integral role of home gardens in local livelihoods. The results from this survey underscore the multifaceted contributions of home gardens to biodiversity conservation, food security, medicinal plant use, and environmental sustainability, all of which are critical for enhancing the well-being of the communities.

The occurrence of 35 plant species across the three communities illustrates a rich diversity of flora within these home gardens. Ekiadolor, with 33 species and 268 plant stands, emerged as the community with the highest plant diversity, which can be attributed to its larger garden sizes, better environmental conditions, and the reliance of households on home gardening for a variety of purposes. Oluku, with 27 species and 174 plant stands, showed a moderate diversity, while Ekosodin had the lowest with 22 species and 148 plant stands. These patterns are consistent with studies in other rural communities, where garden size and local environmental factors influence plant diversity (Banmeke and Ajayi, 2009; Taylor and Lovell, 2014). Larger garden sizes allow for the cultivation of a greater number of plant species, which may be essential for fulfilling both food and medicinal needs.

A key feature of the home gardens across these communities is the prevalence of medicinal plants, fruits, and vegetables. The dominant presence of medicinal plants such as *Vernonia amygdalina* (bitter leaf), *Azadirachta indica* (neem), and *Hibiscus sabdariffa* (hibiscus) reflects the cultural

significance of home gardens in providing remedies for a wide range of ailments. This supports findings by Akinyemi *et al*. (2017), who highlighted the importance of home gardens in southern Nigeria as repositories of traditional medicine. The medicinal plant presence in the gardens also underscores the integration of health and food security, with many households relying on these plants not only for nourishment but also for treating common health conditions.

The families *Solanaceae* and *Malvaceae* dominated the plant composition, with species such as *Capsicum annuum* (pepper), *Solanum lycopersicum* (tomato), *Abelmoschus esculentus* (okra), and *Corchorus olitorius* (jute leaf) being extensively cultivated. These families are notable for their adaptability and high economic value, offering essential nutrients such as vitamins A and C. Their prevalence in home gardens suggests a focus on crops that contribute significantly to nutritional security. Similar observations have been made by Ojelel and Kakudidi (2015), who noted the prominence of *Solanaceae* and *Malvaceae* plants in gardens due to their versatility, ease of cultivation, and market demand.

The comparative distribution of plant types across the three communities further emphasizes the varying roles that home gardens play in each location. Ekiadolor had a higher number of medicinal and fruit plants, reflecting a focus on health and nutrition, whereas Oluku showed a greater emphasis on vegetables and fruits, indicating its role in providing daily sustenance and income generation. Ekosodin, with its balanced distribution of plant types, appears to have a more diversified approach to gardening, which may be reflective of its smaller garden sizes and more limited access to resources compared to the other communities. These differences in plant type distribution are important as they highlight how local factors such as garden size, environmental conditions, and socio-economic priorities shape gardening practices (Banmeke and Ajayi 2009).

Gender dynamics within home gardening were also explored, revealing that women predominantly manage the home gardens in all three communities. In Oluku, 70% of gardeners were women, while Ekosodin and Ekiadolor had 60% and 50%, respectively. This trend reflects the critical role that women play in sustaining household food security and managing the local food production system. The findings align with Banmeke and Ajayi (2009), who observed that women are key contributors to home gardening in rural Nigeria. Women's involvement in gardening activities not only ensures food provision for the household but also enables them to engage in income-generating activities, particularly through the sale of surplus produce. Empowering women in home gardening can, therefore, contribute to enhancing food security and economic stability in the region.

Challenges such as pest infestations, soil fertility degradation, water scarcity, and soil erosion were commonly reported across the communities. These challenges reflect broader agricultural constraints affecting Nigeria as a whole, as well as the global trends of climate change and unsustainable farming practices. Addressing these issues will require the implementation of sustainable agricultural practices, such as integrated pest management (IPM), organic composting, and the adoption of water-saving techniques like rainwater harvesting and drip irrigation. Such measures could improve the resilience of home gardens, thereby increasing crop yields and ensuring food security. As suggested by Ojaowhe and Oshio (2023), targeted interventions that focus on sustainable agricultural practices could be vital for mitigating these challenges and promoting long-term productivity in home gardens.

Economic benefits of home gardens were also evident from the study. Oluku had the highest proportion of gardens used for income generation (60%), followed by Ekiadolor (50%) and Ekosodin (40%). These findings suggest that home gardens serve not only as sources of food but also as important economic assets for the household. The sale of surplus crops provides

supplementary income, which can be used to support household expenses, thereby enhancing economic stability. This aligns with the work of Galhena *et al*. (2013), Adekunle (2013), and Maroyi (2009), who noted that home gardens are increasingly recognized as a vital component of rural economies.

Beyond food security and economic benefits, home gardens also contribute to environmental sustainability. By maintaining diverse plant species, home gardens play an essential role in preserving soil health, reducing erosion, and supporting biodiversity. The presence of native plant species, such as medicinal plants and fruit-bearing trees, contributes to maintaining local biodiversity, while the cultivation of trees and shrubs helps mitigate the effects of climate change through carbon sequestration. As noted by Agbogidi and Adolor (2013), the ecological benefits of home gardens are significant, especially in rural areas where they are crucial for maintaining environmental balance and resilience.

CONCLUSION

The study highlights the importance of home gardens in Ovia North-East Local Government Area as multifunctional systems that support biodiversity conservation, food security, health, and environmental sustainability. The variations observed across the three communities underscore the adaptability of home gardening practices to local conditions and the diverse roles that home gardens play in sustaining livelihoods. Moving forward, research should focus on developing strategies to overcome the challenges faced by home gardeners, enhancing cultivation practices, and promoting sustainable gardening methods. Maximizing the potential of home gardens can contribute to improved food security, economic development, and environmental conservation in the region.

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