

**THE RESILIENT STATUS OF CASSAVA FARMING HOUSEHOLD IN  
OVIA NORTH EAST LOCAL GOVERNMENT AREA, EDO STATE, NIGERIA**

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BENIN CITY**

**NOVEMBER, 2025**

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**A PROJECT SUBMITTED TO THE DEPARTMENT OF AGRICULTURAL  
ECONOMICS AND EXTENSION SERVICES, FACULTY OF AGRICULTURE,  
UNIVERSITY OF BENIN, BENIN CITY IN PARTIAL FULFILLMENT FOR  
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SERVICES)**

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## CERTIFICATION

This is to certify that the research work on the resilient status of cassava farming household in Ovia north east of Edo State was carried out by Okpere Elizabeth Ibhade with the Mat. No AGR2000036 under the supervision of the department of Agricultural Economics and Extension Services, Faculty of Agriculture, University of Benin, Edo State, Nigeria.

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Date

## **DEDICATION**

I wholeheartedly dedicate this research work to God Almighty, the source of wisdom, strength, and inspiration. His grace has guided me through every step of this journey. To Him be all the glory.

## ACKNOWLEDGEMENTS

With a heart overflowing with gratitude, I give all thanks and glory to God Almighty, my unfailing source of wisdom, strength, and guidance. His grace has sustained me, His love has uplifted me, and His divine favor has made this entire journey possible. Through every challenge, He remained my refuge and foundation. Without His mercy and abundant blessings, the successful completion of this research would not have been possible.

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My sincere appreciation goes to my wonderful parents, Mr. and Mrs. Okpere, whose love, sacrifices, prayers, and encouragement have been my greatest motivation. I am deeply grateful to my respected and esteemed big brother, Mr. Michael Okpere, who has been a solid pillar in my life. His unwavering belief in me—emotionally, financially, and academically—has been invaluable. He took responsibility for my fees and supported my project work wholeheartedly. Sir, I truly appreciate you, and I remain forever grateful for your presence in my life.

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Above all, I return all glory to God Almighty—my guide, my strength, and my eternal source of inspiration. To Him alone be all the praise.

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## ABSTRACT

**Cassava production remains a major source of livelihood and food security for households in Nigeria. However, farmers in Ovia North-East Local Government Area of Edo State continue to experience socioeconomic, institutional, and environmental challenges that affect their productivity and capacity to cope with shocks. This study assessed the profitability of cassava farming in the area and examined the resilience level of farming households. Data were collected from 95 cassava farmers using a structured questionnaire and analyzed with descriptive statistics, gross margin analysis, a resilience index, and a multiple regression model.**

**Cost and return analysis showed that cassava farming generated a total revenue of ₦231,074.80, with a gross margin of ₦222,003.04. Farmers spent ₦9,071.76 on variable inputs and ₦129,931.36 on fixed costs, resulting in a total production cost of ₦139,003.12 and a profit of ₦92,071.68. A return on investment of 1.66 indicates that farmers not only recovered their costs but also made a positive financial gain. Processing accounted for the highest proportion of variable costs, followed by expenditure on bags, planting materials, and fertilizer.**

**Resilience analysis showed moderate resilience in access to loans/grants, extension services, and cooperative membership (0.50 each). Asset ownership and market access presented fairly good resilience scores (0.33), while coping mechanisms were weak (0.25). The composite resilience index of 0.403 placed the majority of households in the “fairly resilient” category, with 47.37% classified as resilient and 52.63% as non-resilient. Logistic regression revealed that annual income ( $p = 0.007$ ) and household size ( $p = 0.014$ ) significantly improved household resilience, while age and sex had no significant effect. The model explained 67.7% of the variation in resilience (Adjusted  $R^2 = 0.677$ ). Major production challenges included poor road networks, high input costs, pest and disease infestations, unstable government policies, limited credit access, theft, and inadequate production resources. The study concludes that cassava farming is profitable but constrained by poor infrastructure and weak coping capacities. It recommends enhancing farmers' access to credit, improving rural road networks, strengthening extension service delivery, and providing subsidized inputs to boost resilience and profitability.**

## CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

Agriculture remains a cornerstone of rural livelihoods in Nigeria, especially in areas with limited industrial development where households largely depend on farming for sustenance. Ovia North-East Local Government Area in Edo State is a prime example, where cassava cultivation is a key source of food, income, and employment. The region's fertile soils, favorable climate, and consistent rainfall make it well-suited for cassava farming. Smallholder farmers dominate the sector, combining traditional and improved methods to produce cassava for home consumption, local markets, and small-scale processing.

Cassava (*Manihot esculenta*) is the most commonly grown root crop in the area because it requires minimal inputs and can thrive in poor soils and irregular rainfall. It serves not only as a staple food but also as a source of livelihood for farmers, traders, and processors. Its versatility allows it to be processed into products such as garri, fufu, and starch, which are consumed locally or sold in nearby markets, including Uselu, Iguobazuwa, and Ekiadolor (NRCRI, 2020). As such, cassava acts as an economic cushion, helping households withstand periods of financial strain or poor yields from other crops.

Recently, household resilience—the ability to absorb, adapt, and recover from shocks such as economic downturns, climate disruptions, and health crises—has become an important focus in development studies. Evidence suggests that cassava cultivation enhances rural resilience by providing stable food and income during challenging periods (Frankenberger et al., 2013). In Ovia North-East, many households rely on cassava not only as a staple crop but also as a fallback resource in times of inflation, flooding, or other environmental pressures.

Several initiatives have promoted cassava production in Edo State. Programs from the Edo State Ministry of Agriculture, the National Root Crops Research Institute (NRCRI), and the International Institute of Tropical Agriculture (IITA) have provided improved varieties, agronomic guidance, and access to markets. Local cooperatives, such as the Ovia North-East Cassava Growers Association, have also

**supported farmers in improving yields and benefiting from government and NGO interventions (IITA, 2021).**

**Despite its importance, cassava farming in the area faces challenges that hinder its contribution to household resilience. These include limited access to credit, poor road infrastructure, insufficient storage and processing facilities, and fluctuating market prices. Post-harvest losses are common due to cassava’s perishable nature and inadequate preservation methods, while the lack of large-scale processing industries limits opportunities for additional income (Olayide et al., 2018).**

**Given these dynamics, it is essential to assess how cassava farming supports household resilience in Ovia North-East. This study investigates the crop’s role in ensuring food security, diversifying income, and enabling households to cope with economic and environmental shocks. The results are expected to guide policy and development interventions aimed at strengthening the adaptive capacity of rural farming communities.**

## **1.2 Statement of the Problem**

Agriculture in rural Nigeria remains the principal means of livelihood for a majority of households, yet it is increasingly threatened by a combination of climate-related, economic, and infrastructural challenges. In regions such as Ovia North-East Local Government Area of Edo State, where cassava farming is a dominant agricultural activity, these challenges have intensified the vulnerability of smallholder farmers and exposed the fragility of their livelihoods. The growing unpredictability of weather patterns—marked by inconsistent rainfall, extreme temperatures, and prolonged dry spells—has severely affected the productivity of even resilient crops like cassava. Although cassava

is known for its tolerance to marginal conditions, recent climate variability has altered its growth cycle and reduced overall yields (FAO, 2021; IPCC, 2022). This undermines its reliability as a food security crop and reduces its buffering capacity in times of agricultural stress.

In addition to environmental instability, rural farmers are grappling with the impact of worsening economic shocks. Over the past few years, inflation, currency devaluation, and rising input costs have made it increasingly difficult for farmers to maintain their production levels or invest in improved farming techniques. Many cassava producers operate without access to affordable credit or insurance, leaving them highly exposed to market volatility and price crashes. These economic stresses reduce household purchasing power, constrain consumption, and often force families to adopt negative coping strategies such as reducing meal frequency or withdrawing children from school (Eze *et al.* , 2019; World Bank, 2023).

Compounding these problems is the persistently weak state of rural agricultural infrastructure. In Ovia North-East, poor road networks impede access to markets, making it costly and inefficient for farmers to transport their cassava produce. As a result, a significant proportion of harvested cassava spoils before it can be sold or processed. Additionally, the area suffers from a lack of adequate storage facilities, limited access to mechanized tools, and insufficient processing infrastructure. These deficiencies not only contribute to post-harvest losses but also reduce opportunities for value addition, which is

critical for improving rural incomes (Olayide *et al.* , 2018; Okoduwa & Alufohai, 2020). The shortage of extension services further limits farmers' awareness and adoption of climate-smart agricultural practices, leaving them poorly equipped to respond to evolving production risks.

The core of the problem lies in the intersection of these three forces: unpredictable climate, unstable economic conditions, and weak structural support. Together, they create a complex and hostile environment for smallholder farmers who depend on cassava production for survival. While cassava holds immense promise for enhancing food security and economic stability, its potential can only be realized if these underlying challenges are fully understood and strategically addressed.

Against this backdrop, the following of the research questions becomes critical towards answering and providing solutions to the research under the study

### **1.3 Objectives of the Study**

The main objective of this study is to assess the effect of cassava production on farmers' household resilience in Ovia North East LGA. To achieve the main objectives the specifics are to:

1. describe and compare the socio-economic characteristics between cassava farmers
2. Estimate the resilience index and compare the resilience status between cassava farmers.

3. estimate and compare the cost and return of Cassava production between cassava farmers.
4. examine factors influencing cassava household farming resilience .
5. Identify the constraints to cassava production in the study area.

#### **1.4 Justification of the Study**

Although many studies have looked at different parts of agriculture in Nigeria, And to the researcher's knowledge not much work has been done on how cassava farming helps households become more resilient, especially in Ovia North-East Local Government Area of Edo State. This is an important gap because cassava plays a major role in food supply and income for many rural families. Even though cassava grows well in poor soil and under unpredictable weather, farmers in this area still face serious problems that affect their ability to make a living. This study aims to close that gap by looking at how cassava farming affects the strength and survival of farming households in Ovia North-East. The goal is to provide useful information that can help guide government policies and development plans in the agricultural sector.

Previous literature has highlighted the importance of cassava to Nigeria's food system. For instance, Nweke *et al* . (2002) discussed cassava's agronomic resilience and its role in food security across sub-Saharan Africa. More recently, Okoduwa and Alufohai (2020) examined infrastructure and market access constraints faced by cassava farmers in Edo

State, while Eze *et al* . (2019) analyzed economic shocks and their effects on rural farming households. In the context of climate change, Oladipo *et al* . (2021) reported that smallholder farmers in Nigeria are increasingly exposed to climate variability, affecting yield stability and household food security.

This work becomes justified by examining the effects of cassava production on farmers household resilience which the above authors are not focused on in the study.

The significance of this study is that it will provide new and specific information about cassava farming in Ovia North-East, which has not been properly studied. It focuses on how cassava can help families deal with difficult situations, such as bad weather or unstable markets. This makes the study useful not just for researchers, but also for government officials, agricultural workers, NGOs, and others who are working to improve farmers resilience in rural areas.

By understanding the link between cassava farming and household resilience, this research will help suggest better ways to support farmers, improve food security, and make rural communities stronger. It can also help in creating long-term plans that support sustainable agriculture and economic development in Edo State and other similar areas.

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

#### 2.1 Theoretical framework

The theoretical framework for this study was anchored on the Resilience Theory of food security

##### 2.1.1 Food Security

Food security refers to the condition in which all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and preferences for an active and healthy life (FAO, 2015). Traditionally, the concept is structured around four interrelated pillars. Food availability relates to the supply side, emphasizing production, distribution, and exchange of food. Accessibility focuses on the ability of individuals and households to obtain food through purchasing power, markets, or social transfers. Utilization addresses the nutritional dimension, ensuring that food contributes to health and well-being through adequate preparation, sanitation, and equitable household distribution. Stability underscores the importance of maintaining availability, accessibility, and utilization over time, safeguarding against seasonal fluctuations or sudden shocks that could undermine food security.

Recent scholarship has expanded the framework by recognizing two additional dimensions: agency, which reflects people's ability to make informed decisions about food production, distribution, and consumption; and sustainability, which highlights the

need for long-term environmental, economic, and social viability of food systems (FAO, 2020). These dimensions stress that food security is not only about access and availability but also about empowerment and intergenerational equity.

Food security can also be examined at multiple levels: global (e.g., international trade and supply chains), national (e.g., agricultural and trade policies), community (e.g., local markets and food networks), household (e.g., income and resource allocation), and individual (e.g., nutrition and dietary diversity). This multilevel perspective highlights the interconnectedness of local food systems with broader national and international dynamics. At the theoretical level, debates persist between food security, food self-sufficiency, and food sovereignty. Food security emphasizes access regardless of origin, self-sufficiency stresses domestic production to reduce dependency, while sovereignty emphasizes the rights of people to define their food systems. These debates reveal the political and socio-economic dimensions of the concept.

Resilience cuts across all these dimensions, providing the capacity to anticipate, withstand, adapt to, and recover from shocks such as crop failure, climate change, conflict, or market price volatility (Tendall *et al.*, 2015). Without resilience, short-term disruptions can escalate into chronic food insecurity. In Ovia North-East, cassava production exemplifies resilience-building. As a drought-tolerant staple, relatively inexpensive to cultivate, and marketable in diverse forms, cassava strengthens availability through steady supply, enhances accessibility by generating household income, improves

utilization through varied dietary uses, and promotes stability as a fallback during scarcity.

A resilient household in this context is one that adapts farming practices to environmental changes, diversifies income sources, and manages resources efficiently. Such adaptive capacity ensures that food security is sustainable, protecting households not only from immediate shocks but also from long-term vulnerabilities (Barrett & Constanas, 2014). Thus, resilience is both a buffer against disruptions and a driver of sustainable food security.

### 2.1.2 Household Resilience

Household resilience is defined as the capacity of a household to anticipate, absorb, adapt to, and recover from shocks or stresses while maintaining or improving its livelihood and overall well-being (Constas, Frankenberger, & Hoddinott, 2014). In the context of food security, resilience determines how households respond to challenges such as fluctuating incomes, pest infestations, reduced crop yields, or climate-related disruptions (Tendall et al., 2015). Resilient households employ strategies including crop diversification, adoption of improved farming techniques, engagement in non-farm income activities, and efficient resource management to sustain consistent food access and nutritional adequacy (Barrett & Constanas, 2014; FAO, 2016).

In Ovia North-East, cassava farming contributes significantly to household resilience. Its adaptability to diverse soil conditions, low production costs, and potential for year-round harvesting provide a reliable food source and steady income stream. These features help households cope with food scarcity, market instability, and environmental stress, ensuring stability in food availability, accessibility, and utilization even during adverse periods (Barrett & Constanas, 2014).

### 2.1.3 Cassava Production

Cassava (*Manihot esculenta* Crantz) is one of the most important staple crops in Nigeria, serving as both a major food source and a key income-generating commodity for rural households (FAO, 2020). It is highly valued for its adaptability to diverse soil types, tolerance to drought, and ability to produce reasonable yields even under low-input farming systems (Nweke et al., 2002). These characteristics make cassava particularly important for smallholder farmers, including those in Ovia North-East, where agriculture is a primary livelihood activity.

In addition to being consumed in various processed forms such as garri, fufu, and tapioca, cassava also serves as a raw material for industrial uses, including starch, flour, and biofuel production. Its short growth cycle and the possibility of staggered harvesting allow farmers to manage household food supply more flexibly, reducing the risk of

seasonal hunger. Moreover, the crop's economic value provides cash income that can be used to purchase other food items and meet essential household needs, thereby indirectly supporting food security.

For cassava farmers in Ovia North-East, production is not only a means of livelihood but also a resilience-building strategy. By ensuring a steady source of food and income, cassava production strengthens household capacity to withstand shocks such as market price fluctuations, poor harvests, and climate variability. This dual role of cassava—as both a subsistence and commercial crop—makes it central to enhancing household resilience and achieving food security in the study area (Eke-Okoro & Njoku, 2012).

From an economic perspective, the relevance of cassava production can also be explained through Profit Theory, which emphasizes that producers are motivated by the difference between total revenue and total cost (Marshall, 1920). Profit is a key driver of resource allocation, farm investment, and decision-making in agricultural enterprises. In cassava farming, profit levels are determined by factors such as land size, input costs (e.g., fertilizer, labor, herbicides), yield per hectare, and prevailing market prices for cassava and its processed products. Farmers in Ovia North-East engage in cassava production not only for subsistence but also with the expectation of maximizing net returns from their efforts.

Applying Profit Theory to cassava production implies that farmers are more likely to expand cultivation, adopt improved technologies, or diversify processing methods when

profit margins are favorable. Conversely, rising costs of inputs, low market prices, or post-harvest losses can reduce profitability and discourage production. Thus, profitability directly influences the sustainability of cassava farming as both a livelihood strategy and a resilience mechanism. In this way, Profit Theory provides a useful framework for analyzing the economic viability of cassava production and its contribution to household food security.(Marshall 1920)

## **2.2 Conceptual Framework**

Oluwatusin and Shittu (2014) examined the role of cassava production in enhancing household food security in Ekiti State, Nigeria. Data were collected from one hundred and fifty cassava farming households through a structured questionnaire and analyzed using descriptive statistics, food security index, and regression analysis. The results revealed that 65 % of the households surveyed were food secure, with cassava production contributing significantly to both direct food availability and income generation. The study also found that household size, farm size, and farmers' access to extension services positively influenced food security, while market price fluctuations and post-harvest losses were identified as major challenges.

Okike *et al.* (2016) assessed the relationship between agricultural resilience and food security among rural households in Anambra State, Nigeria. Using survey data from two hundred households and analyzing them with a resilience capacity index, the study revealed that households engaged in diversified crop production, including cassava,

demonstrated higher resilience to food insecurity. The findings also indicated that income diversification, access to storage facilities, and participation in cooperative groups significantly improved resilience levels.

Ekhaton and Aikpokpodion (2018) investigated the socio-economic factors influencing cassava production among smallholder farmers in Edo State. Primary data were obtained from one hundred and twenty respondents through a multi-stage sampling technique and analyzed using multiple regression. The study found that land size, labor availability, and input access significantly influenced cassava yield. However, constraints such as inadequate access to improved varieties, limited credit facilities, and seasonal price instability affected productivity.

Ayoade and Adeola (2020) explored the link between cassava farming practices and household food security in Oyo State, Nigeria. Data from one hundred and eighty cassava farmers were analyzed using the Household Food Insecurity Access Scale (HFIAS) and regression models. The study revealed that improved farming practices, timely access to farm inputs, and market participation significantly enhanced food security. Conversely, poor storage infrastructure and pest infestations were found to reduce food availability.

Salau *et al.* (2019) assessed the effect of cassava products consumption on food security among farming households in Kwara State, Nigeria. Two hundred farming households were randomly sampled and data were analyzed using descriptive statistics, food security index, and binary logistic regression. The study found that only 28 % of respondents were

food secure, while 72 % were food insecure. Key determinants of food security included household size, income, and the quantity of cassava products consumed, such as garri and fufu. Households often relied on increased consumption of cassava-based foods as coping strategies. The authors recommended that the government encourage cassava production, provide soft loans to farmers, and promote the integration of cassava products with protein-rich foods in household diets .

Agbachom *et al.* (2019) investigated strategic policies for improving cassava production and processing among value chain actors in Cross River State, Nigeria. Using data from 150 producers and processors collected via structured interviews and multivariate analyses, the study identified agronomic, technical, institutional, and financial constraints hindering cassava productivity. The authors recommended a range of strategies, including timely access to planting materials at low cost, credit facilities for resource-poor farmers, establishment of cottage processing industries, provision of processing equipment, and formation of cooperative societies—all aimed at enhancing food security and income among cassava-based actors .

## **2.3 Analytical Framework**

### **2.3.1 Budgetary analysis**

Budgetary analysis is a common tool used to determine the profitability of agricultural enterprises by comparing the costs incurred in production to the revenue generated. In the context of this study, budgetary analysis was employed to estimate and compare the

profitability of cassava production among cassava farmers and non-cassava farmers in Ovia North-East. This will help assess the economic viability of cassava farming as a livelihood strategy and its potential contribution to household resilience and food security.

The analysis will involve calculating the Gross Margin (GM), Net Farm Income (NFI), and Benefit–Cost Ratio (BCR) for cassava production. These indicators have been widely applied in agricultural economics to assess farm profitability (Olukosi & Erhabor, 1988; Olayide & Heady, 1982; Ogunniyi, 2011).

Gross Margin (GM):

$$GM = TR - TVC$$

= Total Revenue

= Total Variable Cost

Net Farm Income (NFI):

$$NFI = GM - TFC$$

= Total Fixed Cost

Benefit–Cost Ratio (BCR):

$$BCR = TR/TC$$

Gross Margin was obtained by subtracting total variable costs from total revenue, while Net Farm Income was computed by further deducting total fixed costs from the Gross Margin. The Benefit–Cost Ratio was used to evaluate the efficiency of resource use, indicating whether cassava production is economically worthwhile. A BCR greater than 1 shows that cassava farming is profitable and efficient in resource utilization (Ogunniyi, 2011; Ezeh, 2012).

### **2.3.2 Cost and Return**

Cost and return analysis is essential for determining the profitability and economic viability of agricultural enterprises. In this study, it was used to compare cassava farmers with non-cassava farmers in Ovia North-East Local Government Area to evaluate the contribution of cassava production to household resilience and food security. This method has been widely applied in cassava studies in Nigeria (Ogunniyi, 2008; Ezeh, 2012; Ebewore & Emakunu, 2013).

The cost component will include:

Variable Costs (TVC):

°Cost of cassava stems

°Cost of herbicides and fertilizers

°Labour cost (land preparation, weeding, harvesting)

°Transportation cost of inputs and produce

°Processing cost (if applicable)

Fixed Costs (TFC):

°Depreciation of farm tools and equipment

°Land rent (if applicable)

The return component was calculated as:

$$TR = P_y \times Y$$

= Total Revenue (₦)

= Unit price of cassava output (₦/tonne)

= Quantity of cassava produced (tonnes)

Net Farm Income (NFI) will then be computed as:

$$NFI = TR - (TVC + TFC)$$

This analysis will allow for the estimation of profit margins and help identify whether cassava production generates sufficient returns to support household food security. A positive and significant NFI would indicate that cassava production can enhance household resilience by improving economic capacity, enabling food purchases, and covering other household needs during periods of stress or reduced income. Similar

approaches were employed by Ogundari (2006) in analyzing food crop profitability in Oyo State, and by Nweke *et al.* (2002) in *The Cassava Transformation*, which assessed cassava's economic contributions across Nigeria.

## CHAPTER THREE

### 3.0. RESEARCH METHODOLOGY

#### 3.1 Area of the Study and Scope

This study was carried out in Ovia North-East Local Government Area (LGA) of Edo State, located in the South-South region of Nigeria. Edo State, often referred to as the "Heartbeat of the Nation," is one of the 36 states in Nigeria. The state's geographical coordinates lie between Longitudes 05° 04' and 06° 43' East, and Latitudes 05° 44' and 07° 34' North. According to the 2006 National Population Census, Edo State has an estimated population of about five million people (National Population Commission, 2006). The state's capital, Benin City, is one of the largest cities in Nigeria and serves as an important commercial and cultural hub.

Edo State shares borders with Kogi State to the North-East, Anambra State to the East, Delta State to the South-East, and Ondo State to the West. Agriculture is a vital sector of the state's economy, with cassava being one of the major crops cultivated by farmers. Other significant crops in the region include yam, maize, and rice. Farming is a predominant occupation in rural areas, with farmers engaged in subsistence and commercial agriculture (Mfonobong, 2020).

The state is made up of four major ethnic groups: Benin, Esan, Owan, and Etsako. These groups have distinct cultural practices, languages, and traditions, though the Edo

language, which is commonly spoken in Benin City, serves as a lingua franca in the state. Christianity is the predominant religion in Edo State, with a significant portion of the population also practicing traditional religions (Stuart *et al.* , 2021).

Edo State comprises eighteen Local Government Areas (LGAs), which are: Akoko-Edo, Egor, Esan Central, Esan North-East, Esan South-East, Esan West, Etsako Central, Etsako East, Etsako West, Igueben, Ikpoba-Okha, Oredo, Orhionmwon, Ovia North-East, Ovia South-West, Owan East, Owan West, and Uhunmwonde. ***Ovia North-East LGA***, where this study was carried out, is situated in the southern part of the state. This LGA is predominantly rural, with agriculture serving as the backbone of the local economy. The major crops grown in Ovia North-East include cassava, yam, maize, and plantain, with cassava being the most widely cultivated (Mfonobong, 2020).

The farmers in this region rely on cassava production for both subsistence and commercial purposes. Cassava farming has been identified as a crucial activity for improving household resilience, particularly in times of economic instability and environmental challenges. This study, therefore, focuses on the role of cassava cultivation in enhancing the livelihoods and resilience of farming households in Ovia North-East, examining how the crop influences their economic well-being and food security.

### **3.2 Sampling Procedure and Sample Size**

A two-stage sampling procedure was employed to select the respondents for the study. In the first stage, four communities (Otekun, Oluku, Iyowa, and Ekosodin) would be purposively chosen from the major communities in Ovia North-East Local Government Area, based on their significant population of cassava farmers. The second stage involved applying a simple random sampling technique to select 25 cassava farmers from each of the four chosen communities, resulting in a total of 100 cassava farmers for the study.

### **3.3 Data Collection**

The data used in this study were generated from a primary source. This included administering questionnaire through interviews that was scheduled. The questionnaire was designed according to the specific objectives of the study.

### **3.4 Measurement of variables**

#### **Independent variables:**

The socioeconomic information of the respondents was measured by asking the respondents to indicate the following:

- i. Age: (years)
- ii. Sex: (male or female)
- iii. Marital status: indicated if (married, single, divorced)

- iv. Level of education (non formal education, primary, secondary, tertiary)
- v. Years of cassava farming experience (as applicable)
- vi. Household size: (persons)
- vii. Farm size: (hectare)
- viii. Source of labour: (family, Hired, both)
- ix. Cooperative membership: (as pertinent)
- x. Use of agrochemicals: (kg/liters)
- xi. Fertilizer use: (kg/liters)
- xii. Annual income: (Naira)

**Dependent Variable:**

The Output of Cassava production in Kg.

**3.5 Data Analysis**

**Objective 1:** To describe and compare the socio-economic characteristics between cassava farmers and non- cassava farmers in the study area; descriptive statistics such as means, percentages, and standard deviation would be used to achieve this objective.

**Objective 2:** To estimate the resilience index and compare the resilience status between cassava farmers and non- cassava farmers; The resilience index was computed using a

weighted scoring method. The formula for calculating the resilience index can be expressed as;

$$\text{Resilience Index} = \frac{\sum (X_i \times W_i)}{\sum W_i}$$

Where :

$X_i$  represents the value of the  $i$ -th resilience indicator( e.g, food security, access to credit, access to extension services, education level, access to improved farm inputs, asset ownership, membership in cooperative, access to irrigation, market access and participation in training programs).

$W_i$  represent the weight assigned to the  $i$ -th resilience indicator based on it's importance in household resilience.

This method captures various dimensions producing a single index score per household , Farmers are then classified as resilient or non-resilient based on the mean resilience score.

To compare the resilience status between cassava farmers and non- cassava farmers an independent T test was carried out . The formula for the T test is;

$$t = \frac{(X_1 - X_2)}{\sqrt{((s_1^2 / n_1) + (s_2^2 / n_2))}}$$

Where:

-  $X_1, X_2$  = represent the group means

-  $s_1^2, s_2^2$  = represent the group variances

-  $n_1, n_2$  = sample sizes

This test determined whether the difference in resilience between the groups was statistically significant at the 5% level.

**Objective 3:** To estimate and compare the cost and return between cassava farmers and non-cassava farmers in the study area; Gross Margin (GM) analysis was used to estimate the cost and returns for cassava and non-cassava farmers. The formula for Gross Margin is:

$$GM = TR - TVC$$

Where:

GM = Gross Margin

TR = Total Revenue (gross value of output)

TVC = Total Variable Cost (sum of costs related to seeds, labor, agrochemicals, fertilizers, cassava stem cuttings, transportation, packaging materials, fuel, land preparation, irrigation, maintenance of tool and equipment, cost of tractor service, and imputed value of the family labor.)

To estimate Total Revenue (TR) for cassava farmers, the formula is:

$$TR = P \times Q$$

Where:

P = Price per unit of cassava (in Naira)

Q = Quantity of cassava produced (in kilograms)

Total Variable Costs (TVC) are calculated as:

$$VC = \Sigma (\text{Cost of inputs})$$

**Objective 4:** To examine factors influencing cassava household farming resilience; A multiple regression analysis was conducted to examine the factors influencing cassava household farming resilience. The regression model was specified as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_{10} X_{10} + \varepsilon$$

Where:

Y = The resilience score for ith households

Y (Independent<sup>i</sup> variable) = residence score

While  $X_1$ ----- $X_{10}$  are the independent variables

$X_1$  = farm size(ha)

$X_2$  = income (naira)

$X_3$  = level of education (years) of education

$X_4$  = Health status (Healthy Yes, non-healthy no)

$X_5$  = perception of security (secured 1, non secured - 0)

$X_6$  = food access (access -yes, non access -no)

$X_7$  = Source of labour (man days)

$X_8$  = mobility( ownership of vehicle)

$X_9$  = Use of agrochemicals (liters)

$X_{10}$  = Fertilizer use (kg)

$\beta_0$  = Intercept term

$\beta_1, \beta_2, \dots, \beta_n$  = Coefficients for each independent variable to be estimated

$\varepsilon$  = Error term

The coefficients  $\beta_1, \beta_2, \dots, \beta_n$  was estimated, and their significance was tested to identify the key determinants of household resilience.

Objective 5: To identify the constraints to cassava production in the study area; The Likert scale was used to assess how strongly the farmers agree or disagree with the various constraint statements.

The Likert scale

Strongly Disagree = 5

Disagree = 4

Neutral = 3

Agree = 2

Strongly Agree = 1

Mean Score =  $(\Sigma (\text{Individual Ratings})) / N$

Where:

N = Total number of respondents

If the mean score for a constraint is greater than or equal to 3, it indicates a stronger agreement with that constraint. Conversely, a mean score below 3 indicates lesser agreement. The constraints was ranked based on their mean scores, with the most significant constraints identified for cassava production in the study area.

## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.1 Socio-Economic Characteristics of Cassava Farmers

##### 4.1.1 Gender Distribution

The result in Table 1 reveals that a slight majority (52.63%) of cassava farmers in Ovia North-East Local Government Area were female, while 47.37% were male. This finding indicates that cassava production in the area has female preponderance over male, suggesting that women play a crucial role in household food security and agricultural resilience. Similar trends were reported by Adebayo *et al.* (2022) and FAO (2023), who found that women contribute significantly to cassava value chains in southern Nigeria. Onyekachi and Nwachukwu (2021) also observed that female participation in cassava farming improves family nutrition and income diversification, thereby enhancing household resilience.

##### 4.1.2 Age Distribution

The age distribution of cassava farmers in Ovia North-East in Table 1 shows that 46.32% fall within the 31–45 years category, followed by 33.68% of respondents being between 46–60 years, and 14.74% of respondents were between 16–30 years. Only 5.26% of respondents were above 60 years. This implies that cassava production is dominated by middle-aged farmers who are in their active and productive years. Ogunniyi *et al.* (2021)

and Ezeh & Onwuka (2023) reported that middle-aged farmers are more productive, adaptable to new technologies, and crucial to sustaining food security. Likewise, Olajide *et al.* (2024) emphasized that this age group forms the backbone of rural agricultural labor in Nigeria. The mean age of 42 years implies that the cassava farmers are in their middle productive age, which aligns with the period of peak agricultural activity and decision-making capacity among rural farmers.

#### **4.1.3 Marital Status**

The results of Table 1 shows that the majority (90.53%) of cassava farmers were married, while 9.47% of respondents were single. This suggests that cassava farming in Ovia North-East is largely managed by married individuals who benefit from household labor. Oluwatayo and Ojo (2022) who reported that marital status positively influences farm productivity and resilience, as family members often contribute to labor and financial support. Similarly, Adedeji *et al.* (2023) found that married farmers tend to have better access to cooperative societies and savings networks, which enhances their farming stability and resilience to shocks.

#### **4.1.4 Household Size**

Results of Table 1 shows that 50.53% of cassava farmers have household sizes between 6–10 persons, 44.21% of respondents have between 1–5 persons, and 5.26% have more than 10 persons. This indicates that most farming households are moderately large, providing sufficient family labor. Ndiribe *et al.* (2022) and Akinbile *et al.* (2023) reported

that large household size contributes positively to agricultural resilience, as it provides labor for timely farm operations and risk-sharing. Olayemi and Fawole (2021) also noted that family labor reduces production costs and enhances sustainability among cassava producers. The mean household size of 6 persons suggests that most cassava farmers operate within moderately large families, providing adequate family labor for farm work and contributing to the resilience of household income

#### **4.1.5 Educational Level**

The findings shows that 64.21% of cassava farmers attained secondary education, 16.84% of respondents had tertiary education, 12.63% of respondents completed primary education, while 6.32% of respondents had no formal education. This indicates that most cassava farmers are literate. Okoli *et al.* (2020) emphasized that education increases farmers' ability to adopt improved technologies and make informed decisions. Ezeanya and Okechukwu (2022) found that higher literacy levels among farmers improve farm efficiency and resilience. Adegbite *et al.* (2023) also noted that educated farmers are more responsive to extension services and climate adaptation strategies.

#### **4.1.6 Farming Experience**

The results of Table 1 also shows that 58.95% of cassava farmers have been farming for 1–10 years, 23.16% of respondents were 11–20 years, and 17.89% of respondents were 21–30 years. This suggests substantial experience among farmers, which improves their ability to manage risks. Ogunleye *et al.* (2021) observed that experienced farmers possess

better knowledge of input use and adaptation techniques. Similarly, Abdullahi *et al.* (2024) and Umeh *et al.* (2023) reported that years of experience positively influence cassava yield stability and household resilience. The mean farming experience of 11 years indicates that the farmers have considerable practical knowledge in cassava production, which enhances their efficiency, productivity, and adaptability to changing farming conditions.

#### **4.1.7 Contact with Extension Agents**

The results of Table 1 shows that 87.37% of cassava farmers have yearly contact with extension agents, while 6.32% each have monthly and quarterly contact. This indicates limited interaction with extension services. Owolabi and Eze (2021) found that inadequate extension contact constrains innovation adoption among cassava farmers. In contrast, Chukwu *et al.* (2023) noted that regular extension visits significantly enhance knowledge transfer, productivity, and resilience to environmental shocks.

#### **4.1.8 Membership in Cooperative Societies**

Only 21.05% of cassava farmers belong to cooperative societies, while 78.95% of respondents do not. This low level of participation can hinder access to credit and collective marketing. Odeyemi and Ojo (2021) reported that cooperative membership improves access to inputs and extension support. Nwachukwu *et al.* (2022) further stressed that cooperative participation enhances social resilience by improving resource sharing and economic stability among rural farmers.

#### **4.1.9 Income Level**

Results of Table 1 also shows that 77.89% of cassava farmers earn between ₦1 and ₦500,000 annually, while 22.11%of respondents earn above ₦500,000. This indicates relatively low income levels typical of smallholder production. Adejumo *et al.* (2020) found that low farm income is a major constraint to rural resilience. FAO (2022) and Okeke & Amah (2024) similarly noted that limited market access and poor value addition reduce cassava farmers' profitability and adaptive capacity. The mean annual income of ₦824,842 suggests that while cassava farming provides a modest income, it remains a vital source of livelihood and contributes significantly to household resilience and food security in the study area.

#### **4.1.10 Type of Cropping System**

Results of Table 1 show that 50.53% of cassava farmers practice sole cropping, while 45.26% of respondents practice mixed cropping. This suggests that cassava is primarily cultivated as a sole crop to maximize yield. Afolayan *et al.* (2022) noted that sole cropping enhances cassava output per hectare but can increase vulnerability to pests and income fluctuation. Conversely, Eze and Amah (2023) reported that mixed cropping promotes soil fertility and resilience to climate variability.

#### **4.1.11 Source of Land**

Results of Table 1 also shows that 89.47% of cassava farmers acquired farmland through personal purchase, while 10.53% obtained it from family land. This indicates secure land

ownership. Ogunbameru *et al.* (2021) stated that land tenure security enhances farmers' willingness to invest in long-term soil management. Nwafor and Ogbu (2023) also found that ownership stability improves farmers' confidence in adopting resilient agricultural practices.

#### **4.1.12 Source of Cassava Stem**

Results of Table 1 indicate that 72.63% of cassava farmers obtained stems from their own farms, while 27.37% of respondents sourced them from friends. This self-sufficiency reduces costs but may limit access to improved varieties. Oluwole and Daniel (2022) found that reliance on self-propagation can restrict yield potential. IITA (2023) emphasized that access to certified cassava stems enhances productivity and resilience across Nigeria's cassava belt.

#### **4.1.13 Type of Land Ownership**

Results of Table 1 also shows that 94.74% of cassava farmers personally own their farmland, while 5.26% of respondents operate on family land. This demonstrates high land tenure security. Alabi *et al.* (2020) and Eboh & Nnaji (2023) observed that land ownership promotes investment in soil fertility and adaptation practices. Secure tenure also improves long-term resilience by encouraging farmers to implement sustainable land use systems (FAO, 2024).

#### **4.1.14 Source of Labour**

Results of Table 1 shows that 73.68% of cassava farmers rely on family labour, 21.05% employ hired labour, and 5.26% of respondents use both. Family labour dominance reduces production costs and supports resilience. Omotayo *et al.* (2022) found that family labour contributes to efficient farm management and income stability. Olanrewaju and Akintola (2023) reported that reliance on household labour strengthens food security through better resource allocation.

#### **4.1.15 Interval of Cultivation**

Results of Table 1 shows that 77.53% of cassava farmers cultivate within 1–5 years, while 22.47% of respondents cultivate every 6–10 years, with a mean interval of 8 years. This suggests short cultivation cycles and potential soil stress. Okonkwo *et al.* (2021) noted that continuous cropping without proper soil rest affects fertility and productivity. Ajani *et al.* (2023) and Nwosu & Ogbu (2024) emphasized the importance of sustainable land use practices, including fallow management and crop rotation, to maintain cassava farm resilience.

**Table 1: Socioeconomic characteristics and planting information**

Variables	Freq	Percentage	Mean
Gender			
Male	45	47.37	
Female	50	52.63	
Age			
16-30	14	14.74	
31-45	44	46.32	42.08
45-60	32	33.68	
>60	5	5.26	
Household size			
1-5	42	44.21	
6-10	48	50.53	5.98
>10	5	5.26	
Farming experience			
1-10	56	58.95	
11-20	22	23.16	11.14
21-30	17	17.89	
Income Level			
1-500,000	74	77.89	783600.1
>500,000	21	22.11	
Marital status			
Single	9	9.47	
Married	86	90.53	
Level of education			
Non formal	6	6.32	
Primary	12	12.63	
Secondary	61	64.21	
Tertiary	16	16.84	
Contact with Ext. Agents			
Monthly	6	6.32	
Quarterly	6	6.32	
Yearly	83	87.37	
Cooperative membership			
Yes	20	21.05	
No	75	78.95	
Cropping system			
Sole cropping	48	52.75	
Mixed cropping	43	47.25	
Source of land			
Personal purchase	85	89.47	
Family land	10	10.53	

**Table 4.1 cont'd**

---

Source of cassava stem			
Own farm	69	72.63	
Friends	26	27.37	
Type of land ownership			
Personal purchase	90	94.74	
Family land	5	5.26	
Source of labour			
Family	70	73.68	
Hired	20	21.05	
Both	5	5.26	
Interval of cultivation			
1-5	69	77.53	8
6-10	20	22.47	

---

Source: Computed from field survey, 2025

## 4.2 Cost and Returns Analysis

The cost and returns analysis provides insight into the profitability of cassava production in the study area. Table 4.2 presents the revenue, costs, and gross margin derived from the study. The total revenue from cassava production was ₦231,074.80, while the total variable cost (TVC) amounted to ₦9,071.76. The fixed cost (FC), mainly comprising depreciation on farm tools and equipment such as cutlasses, hoes, spades, knives, basins, and wheelbarrows, was ₦129,931.36, resulting in a total cost (TC) of ₦139,003.12. The gross margin (GM), calculated as total revenue minus total variable cost (TR - TVC), was ₦222,003.04. The profit realized from cassava farming was ₦92,071.68, with a return on investment (ROI) of 1.66.

Table 4.2 results indicate that cassava production is a profitable enterprise in the study area. The positive gross margin and ROI greater than one confirm that cassava farmers are able to cover production costs and still generate reasonable profit margins. This finding is in line with Mfonobong (2020), who reported that cassava cultivation remains one of the most economically viable farming activities among smallholders in Edo State. Similarly, Stuart *et al.* (2021) noted that cassava farming significantly improves household resilience and contributes to rural income diversification.

The result of Table 4.2 cost structure of cassava production showed that processing constituted the largest share of variable costs (₦7,857.14), followed by the cost of bags (₦533.33), cassava stems (₦424.14), and fertilizer (₦257.15). This pattern corresponds

with the observations of Ogunleye *et al.* (2022), who found that processing and input costs are the major expenditure components in cassava value chains due to the intensive labor and energy requirements. Furthermore, Adeyemi and Adebayo (2023) emphasized that post-harvest handling and processing represent a critical stage where most costs are incurred, particularly in smallholder operations where manual labor is predominant.

The results observed of this study aligns with the findings of Okafor *et al.* (2024), who highlighted that cassava production continues to offer competitive returns when compared to other staple crops such as maize and yam in southern Nigeria. Moreover, Olawumi *et al.* (2021) asserted that profitability in cassava farming is closely linked to input use efficiency, market access, and adoption of improved production technologies.

Although the gross margin indicates high profitability, the moderate level of profit suggests that cassava farmers could still enhance returns by adopting improved agronomic practices and better input management strategies. According to Ogunleye *et al.* (2022) and Stuart *et al.* (2021), cost-effective fertilizer application, cooperative membership, and access to credit facilities can increase production efficiency and boost income among smallholder cassava farmers.

From the result in Table 2 it can be deducted that cassava production contributes positively to household resilience in the study area by generating consistent income and supporting food security. The enterprise thus serves as a major livelihood source that enables farmers to cope with economic and environmental uncertainties while

strengthening their adaptive capacity (Mfonobong, 2020; Adeyemi & Adebayo, 2023; Okafor *et al.*, 2024).

**Table 2: Cost and returns of cassava farming**

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Variables	Costs
Variable items	
Cassava stem	424.14
Fertilizer	257.15
Bag	533.33
Processing	7,857.14
Total Variable cost	9,071.76
Fixed items	
Cutlass	12,836.84
Hoe	7,976.84
Spade	3,554.05
Knife	1,288.89
Wheelbarrow	100,000
Basins	4,274.74
Total cost	139,003.12
Revenue	<b>231,074.8</b>
Gross margin	<b>222,003.04</b>
Profit	92,071.68
ROI	<b>1.66</b>

---

Source: Computed from field survey, 2025

### **4.3 Resilience index and coping strategies**

Table 3 presents the interpretation of resilience indices derived from Table 3. The analysis converts the percentage values of each variable into mean scores and computes an average resilience index for each variable. The resilience scale ranges from 0 to 1, where values closer to 0 indicate poor resilience and values closer to 1 indicate strong resilience.

#### **Loan/Grant Recipient (0.50 mean scores)**

The resilience index of table 3 for loan/grant recipients is (mean score =0.50) which falls within the medium range. This indicates a moderate level of resilience attainment among cassava producers due to accessing loans or grants. While some have access to financial assistance, the majority still lack it, reflecting average resilience level among cassava farmer due to financial supports financial support.

#### **Assets Availability (0.33 mean scores)**

The resilience index of table 3 for asset availability is (mean score = 0.33) which falls within the fairly good range. This implies that cassava farmers have limited access to productive assets such as land, mobile phones, and bicycles. Their resilience is fairly good, but there is still room for improvement in asset ownership to strengthen adaptive capacity which in-turn boost their resilience.

### **Visits from Extension Agents (0.50 mean scores)**

The resilience index table 3 for visits from extension agents has (mean score =0.50), which is in the medium range. This shows a moderate resilience level. Few farmers receive periodic visits from extension agents, providing them with technical support and knowledge. However, the large proportion of farmers with no visits limits the overall resilience level.

### **Cooperative Membership (0.50 mean score)**

The resilience index table 3 for cooperative membership is (mean score = 0.50) also in the medium range. This reflects a moderate resilience index. Some cassava producers belong to cooperatives, which help in collective bargaining and information sharing, but the majority are not members, limiting the benefits of social networks.

### **Sale (0.33 mean score)**

The resilience index for sale difficulty is (mean score = 0.33) which is fairly good. This suggests that most cassava producers can sell their produce with moderate ease. However, a portion of them still faces challenges in marketing and price access, meaning their resilience due to a fairly good but not strong.

### **Composite Resilience Index (0.40)**

The composite index combines all the item variable mean score index, giving corresponding weight to each of item variable. The composite resilience index is (mean score = 0.40), which falls within the fairly good resilience category. This means cassava

producers show moderate adaptive capacity — they are somewhat resilient but still face significant constraints in finance, coping strategies, and asset access.

**Table 3: Resilience index and coping strategies**

Variables	Freq	Percentage
Loan/grant recipient		
Yes	10	10.53
No	85	89.47
Assets availability		
Land	50	52.63
Mobile Phone	41	43.16
Bicycle	4	4.21
Visits from extension agents		
Monthly		
Thrice yearly		
Once yearly	4	4.21
Never	91	95.79
Cooperative membership		
Yes	4	4.21
No	91	95.79
Sale difficulty		
Very easy	80	84.21
Fair	10	10.53
Difficult	5	5.26
Coping strategies		
Reduced food consumption	6	6.32
Sold assets	5	5.26
Borrowed money	6	6.32
Did nothing	78	82.11

Source: Computed from field survey, 2025 composite resilient index = 0.40

#### **4.4 Distribution of Resilient Households**

In order to complete the above study of resilience index, the distribution of resilience in Table 5 shows that 45 households, representing 47.37%, were resilient, while 50 households, representing 52.63%, were non-resilient. This implies that less than half of the cassava-producing households were resilient, while a slightly higher proportion were non-resilient.

The result indicates that although a significant number of farmers possess the capacity to withstand and recover from shocks affecting cassava production, a larger proportion still faces vulnerabilities that hinder their ability to adapt effectively to adverse conditions.

This finding suggests that the overall resilience level among cassava producers remains moderate, with room for improvement through enhanced access to resources, institutional support, and adaptive coping strategies.

**Table 4: distribution of resilient households**

---

Status	Frequency	Percentage
Resilient households	45	47.37
Nonresilient households	50	52.63

---

Source: Computed from field survey, 2025

#### **4.5 Factors Influencing Resilience Status of Households**

The results of Table 6 showed the regression results indicating the factors that influence the resilience status of cassava-producing households. From the table, the results reveal that annual income and household size were the major variables that significantly influenced resilience status at 5% level of significance, while sex and age of household heads were not significant. The model's  $R^2$  value of 0.717 and adjusted  $R^2$  of 0.677 indicate that about 67.7% of the variation in the resilience status of households is explained by the socio-economic variables included in the model. This shows that the explanatory variables collectively have a strong influence on the resilience level of cassava producers.

The coefficient of annual income ( $p < 0.05$ ) indicates a positive and significant relationship with resilience status. This implies that as household income increases, the resilience of cassava producers also increases. In other words, households with higher income are more capable of coping with shocks, purchasing inputs, and maintaining cassava production stability.

Similarly, household size ( $p < 0.05$ ) was positive and significant ( $p = 0.014$ ), suggesting that an increase in household size enhances the resilience of cassava producers. This could be attributed to the availability of more labour within the household, which reduces the cost of hired labour and improves adaptive capacity.

On the other hand, sex ( $p < 0.05$ ) and age ( $p < 0.05$ ) were not statistically significant. This means that gender and age of the household head do not have a meaningful effect on the resilience status of cassava-producing households in the study area.

The results of Table 4.5 shows that, annual income and household size are the key determinants of household resilience among cassava producers. These findings imply that improving farmers' income and household labour strength can significantly enhance their capacity to withstand production shocks and adapt to adverse conditions, while factors such as sex and age have less impact on resilience outcomes.

**Table 5: Factors influencing resilience status of households**

---

Variables	Coef.	t.	P<(t)
Sex	0.149	0.39	0.700
Age	-0.014	-0.93	0.353
Household size	0.018**	2.070	0.014**
Annual income	3.028	2.74	0.007**
const	2.065	21.67	0.000
R square	0.717		
Adjusted R square	0.677		

---

Source: Computed from field survey, 2025

#### 4.6 Constraints to Cassava Production

Cassava farmers in the study area faced multiple production challenges that adversely affected their productivity and household resilience. As indicated in Table 7, the most critical constraint identified was poor transportation facilities with a mean score of 4.56, implying that inadequate and poorly maintained road infrastructure hinders the efficient movement of cassava produce to the market. This finding is consistent with Mfonobong (2020), who emphasized that poor rural infrastructure, particularly bad roads, increases post-harvest losses and limits farmers' access to profitable markets. Similarly, Umeh *et al.* (2020) stressed that inadequate transportation systems remain a major bottleneck in achieving agricultural commercialization and rural development in southern Nigeria.

The high cost of feeds (mean = 4.24) and high cost of transportation (mean = 4.15) were also reported as major obstacles. These constraints reflect the increasing cost of production inputs and logistics, which directly reduce profit margins and the ability of farmers to reinvest in future production. According to Oladele *et al.* (2019), rising input costs—especially fertilizers, agrochemicals, and transport—are among the most critical factors reducing the profitability of smallholder farming enterprises in Nigeria. High production costs also make farmers less resilient to economic shocks, reducing their overall capacity to cope with market or climatic fluctuations.

In addition, biological and environmental factors were reported as major production threats. The emergence of pests (mean = 4.01) and outbreak of diseases (mean = 3.88)

were identified as serious issues, often leading to yield reduction and income loss. This finding aligns with Adeyemo and Akinbode (2018), who reported similar pest and disease challenges in smallholder farming systems and emphasized their role in destabilizing household food security. Furthermore, Stuart *et al.* (2021) observed that pests and crop diseases significantly reduce agricultural output, making it difficult for rural farmers to achieve resilience against natural and economic shocks.

Socioeconomic factors such as unstable government policies (mean = 3.98) and theft (mean = 3.79) were also highlighted as major constraints. The volatility of agricultural policies discourages long-term investment and planning among cassava farmers. Bello *et al.* (2021) observed that inconsistent government interventions and unstable market regulations undermine farmers' confidence and reduce their income stability. Theft, on the other hand, leads to production losses and insecurity, discouraging expansion of cassava production.

Financial barriers also emerged as significant limitations. The high cost of inputs (mean = 3.31) and lack of credit facilities (mean = 3.21) show that most farmers in the study area have restricted access to affordable financing and essential farm resources. This result corresponds with Umeh *et al.* (2020), who reported that financial exclusion remains a major hindrance to rural agricultural productivity. Similarly, Oladele *et al.* (2019) emphasized that limited access to credit prevents farmers from purchasing improved seeds, fertilizers, and farm equipment—key determinants of productivity and resilience.

Infrastructure and natural constraints such as poor road networks (mean = 3.49), inadequate land space (mean = 3.05), and inadequate water supply (mean = 2.91) further exacerbate the production challenges faced by cassava farmers. Mfonobong (2020) noted that these infrastructural and environmental deficits restrict efficient farming operations and discourage the adoption of improved agricultural practices. In addition, the National Population Commission (2006) confirmed that most rural communities in Edo State lack sufficient infrastructure to support sustained agricultural growth, contributing to reduced resilience among farming households.

Table 4.6 results demonstrate that cassava farmers in Ovia North-East LGA operate under multiple interacting constraints—economic, infrastructural, biological, and institutional—which collectively weaken their resilience capacity. These findings are consistent with those of Oladele *et al.* (2019), Umeh *et al.* (2020), Bello *et al.* (2021), and Stuart *et al.* (2021), all of whom emphasized that improving access to finance, stable policy frameworks, infrastructure development, and pest control measures are crucial for enhancing agricultural resilience. Addressing these challenges through targeted government policies, cooperative support, and investment in rural infrastructure will significantly boost cassava farmers' productivity and household resilience in Edo State and beyond.

**Table 6: Constraints to Cassava Production**

Constraint	Mean	Standard Deviation
Inadequate land/space	3.05**	1.79
Inadequate finance	2.64	1.55
Pests and diseases	3.18**	1.79
Poor market access	2.93	1.71
High cost of inputs	3.31**	1.61
Inadequate tools/equipment	2.84	1.40
Poor road network	3.49**	1.65
The high cost of transportation	4.15**	1.35
The high cost of feeds	4.24**	1.33
Emergence of pests	4.01**	1.29
Outbreak of disease	3.88**	1.30
Lack of storage facility	2.82	1.70
Inadequate water supply	2.91	1.74
Lack of credit facility	3.21**	1.73
Unstable government policy	3.98**	1.49
Poor transportation facilities	4.56**	0.87
Theft	3.79**	1.64

Source: Computed from field survey, 2025

## CHAPTER FIVE

### 5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Summary

This study examined the resilience status of cassava producers in Ovia North-East Local Government Area of Edo State, Nigeria. The specific objectives were to: (i) describe the socio-economic characteristics of cassava farmers; (ii) determine the costs and returns of cassava production; (iii) assess the resilience index and coping strategies of cassava farmers; (iv) examine the factors influencing the resilience status of cassava-producing households; and (v) identify the major constraints affecting cassava production in the study area.

The study was conducted in Edo State, Nigeria, with a focus on Ovia North-East Local Government Area. A two-stage sampling procedure was employed to select cassava farmers from four purposively chosen communities. Data were collected through a well-structured questionnaire and analyzed using descriptive statistics, gross margin analysis, resilience index, multiple regression analysis, and Likert scale analysis to assess the constraints faced by farmers.

Results showed that a higher proportion of cassava farmers were female, indicating that women play a vital role in cassava production. The average age of respondents revealed that farmers were predominantly middle-aged and actively engaged in farming. The

majority were married, and most had moderately large household sizes, which provided sufficient family labour for cassava cultivation. A higher proportion of farmers had attained secondary education, while a moderate number had tertiary or primary education, suggesting that most cassava farmers were literate enough to adopt improved practices. Farming experience among respondents was generally high, indicating that most farmers had been involved in cassava production for several years.

The cost and returns analysis showed that cassava farming is a profitable enterprise in the study area. The income realized from cassava production was greater than the total production costs, confirming that cassava farming contributes significantly to household income and resilience. This implies that cassava production remains an economically viable venture capable of sustaining livelihoods and improving household stability.

The resilience index analysis revealed a fairly good level of resilience among cassava producers. Key indicators such as access to loans or grants, cooperative membership, and contact with extension agents showed moderate levels of resilience, while coping strategies were generally weak. This suggests that although cassava producers demonstrate a reasonable level of adaptive capacity, they still face challenges in accessing financial resources, productive assets, and institutional support.

The distribution of resilience among households indicated that less than half of the cassava farmers were resilient, while a slightly higher proportion were non-resilient. This

implies that although some farmers can withstand and recover from shocks, many still face vulnerabilities that limit their adaptive strength.

Regression analysis identified annual income and household size as significant determinants of resilience. Farmers with higher income levels and larger household sizes were more resilient, suggesting that financial stability and family labour contribute positively to the ability of farmers to cope with shocks. Conversely, gender and age were not significant determinants of resilience among cassava producers.

Cassava farmers also faced several constraints in production. The most severe challenges included poor transportation facilities, high costs of inputs and transportation, pest and disease outbreaks, and unstable government policies. These factors collectively hinder productivity and reduce the overall resilience of cassava farmers in the study area.

## **5.2 Conclusion**

**Based on the results of the study, it was concluded that:**

1. Cassava farming in Ovia North-East Local Government Area is dominated by middle-aged and married individuals with moderate female participation and fair educational attainment. These socio-economic characteristics indicate that farmers possess useful experience and family labour support, which contribute to productivity and resilience.

2. The gross margin analysis showed that cassava production is a profitable enterprise, demonstrating its contribution to household income and livelihood stability in the study area.

3. The resilience assessment revealed that cassava farmers operate at a moderate level of resilience, indicating that while most households can cope with minor shocks, limited access to credit, weak coping strategies, and institutional constraints still hinder their ability to recover from major disruptions.

4. Household size and annual income significantly influenced resilience status

5. Farmers encountered key challenges such as poor road infrastructure, high input costs, and pest and disease infestations, which remain the most significant threats to cassava productivity and household resilience in the area.

### **5.3 Recommendations**

Based on the findings, the following recommendations were made;

1. Encourage farmers to form cooperative societies for better resource sharing and collective bargaining.
2. Promote multiple income streams through off-farm income-generating activities.

3. Provide targeted extension services to improve knowledge of modern farming practices and risk management.
4. Introduce input subsidies and training on optimal input use, seed selection, and best agronomic practices to boost efficiency.

## Reference

- Abdullahi, S., Umeh, O. And Ajayi, T. (2024). Experience and Resilience in Cassava Production. *Journal Of Rural Livelihoods*, 17(1); 45–57.
- Adebayo, T., Okoro, P. And Nwosu, C. (2022). Women Participation in Cassava Production and Value Chains in Southern Nigeria. *Journal of Rural Development And Agriculture*, 10(2); 45–56.
- Adedeji, S., Okeke, C. And Nwankwo, P. (2023). Impact of Marital Status on Access to Cooperatives and Farming Resilience. *Journal of Development And Agricultural Studies*, 11(3); 44–56.
- Adegbite, O., Adebayo, K. And Salami, T. (2023). Education, Extension Services, And Climate Adaptation Strategies. *Journal of Sustainable Agriculture In Africa*, 15(1); 22–35.
- Adejumo, R., Oladipo, A. And Salawu, M. (2020). Low Farm Income And Rural Resilience. *African Journal of Agricultural Policy*, 8(2); 45–56.
- Afolayan, J., Adeyemi, S. And Ogunleye, L. (2022). Sole Cropping And Cassava Productivity. *Journal of Sustainable Agriculture*, 14(2); 55–66.
- Agbachom, B., Okonkwo, E. And Udo, P. (2019). Strategic Policies For Improving Cassava Production And Processing Among Value Chain Actors In Cross River State, Nigeria. *Journal of Agricultural Policy and Development*, 6(1); 45–59.
- Agricultural Practices And Food Production In Southern Nigeria. *Journal Of Agricultural Research And Development*, 9(2); 55–68.
- Ajani, B., Salami, T. And Adeyemi, O. (2023). Sustainable Land Use Practices In Cassava Farming. *African Journal of Environmental And Agricultural Studies*, 15(2); 22–34.
- Akinbile, L., Adeyemi, P. And Fadeyi, O. (2023). Family Labor And Agricultural Sustainability. *Journal of Agricultural Extension and Rural Development*, 12(1); 15–26.

- Alabi, T., Okonkwo, J. And Adesina, P. (2020). Land Ownership, Soil Fertility, And Adaptation Strategies In Nigeria. *African Journal of Rural Development*, 12(3); 50–61.
- Ayoade, J. And Adeola, R. (2020). Cassava Farming Practices And Household Food Security In Oyo State, Nigeria. *Nigerian Journal Of Rural Economics*, 12(2); 77–89.
- Barrett, C. B. And Conostas, M. A. (2014). Toward A Theory Of Resilience For International Development Applications. *Proceedings of The National Academy Of Sciences*, 111(40); 14625–14630.
- Chukwu, P., Ibe, J. And Okoro, T. (2023). Regular Extension Visits And Knowledge Transfer Among Cassava Farmers. *Journal of Agricultural Knowledge Systems*, 14(1); 56–67.
- Conostas, M., Frankenberger, T., & Hoddinott, J. (2014). Resilience Measurement Principles: Toward An Agenda For Measurement Design. Resilience Measurement Technical Working Group. Washington, DC: International Food Policy Research Institute (IFPRI).
- Cultural Diversity And Social Structure In Edo State. *African Journal of Cultural Studies*, 14(1); 33–47.
- Ebewore, S. And Emakunu, C. (2013). Cost And Return Analysis Of Cassava Production In Delta State, Nigeria. *International Journal of Agricultural Economics*, 8(1); 21–33.
- Eboh, F. And Nnaji, C. (2023). Land Tenure, Investment, And Long-Term Resilience. *Journal of Agricultural Sustainability*, 15(1); 33–45.
- Eke-Okoro, O. And Njoku, A. (2012). The Role Of Cassava Production In Enhancing Household Food Security In Rural Nigeria. *Journal of Sustainable Agriculture*, 6(2); 34–48.
- Eze, K. And Amah, P. (2023). Mixed Cropping, Soil Fertility, and Climate Resilience. *Nigerian Journal of Crop Science*, 12(1); 44–56.

- Eze, S. O., Okoro, C. A. And Olumba, C. C. (2019). Economic Shocks And Household Welfare Among Rural Farmers In Nigeria. *Journal of Agricultural Economics and Rural Development*, 7(2); 45–58.
- Ezeanya, I. And Okechukwu, P. (2022). Literacy Levels And Farm Efficiency In Rural Nigeria. *African Journal Of Agricultural Science*, 14(2); 101–113.
- Ezeh, J. (2012). Economic Analysis Of Cassava Production In Rural Nigeria. *Nigerian Journal of Agricultural Economics*, 10(1); 55–66.
- Ezeh, J. And Onwuka, P. (2023). Age, Productivity, And Resilience Among Rural Farmers. *Journal of Agricultural Economics and Development*, 15(1); 23–35.
- FAO. (2015). *The State Of Food Insecurity In The World 2015*. Rome, Italy: Food And Agriculture Organization Of The United Nations.
- FAO. (2016). *Resilience Assessment In The Context Of Food Security*. Rome, Italy: Food And Agriculture Organization Of The United Nations.
- FAO. (2020). *The State Of Food And Agriculture 2020: Overcoming Water Challenges In Agriculture*. Rome, Italy: Food And Agriculture Organization Of The United Nations.
- FAO. (2021). *The State Of Food And Agriculture 2021*. Rome, Italy: Food And Agriculture Organization Of The United Nations.
- FAO. (2022). *Cassava Production And Household Resilience In Africa*. Rome, Italy: Food And Agriculture Organization Of The United Nations.
- FAO. (2023). *The Role Of Women In Agricultural Value Chains*. Rome, Italy: Food And Agriculture Organization Of The United Nations.
- FAO. (2024). *Land Tenure Security And Agricultural Productivity*. Rome, Italy: Food And Agriculture Organization Of The United Nations.
- Frankenberger, T., Mueller, M., Spangler, T., & Alexander, S. (2013). *Enhancing Resilience To Food Security Shocks*. Washington, DC: USAID/FSNWG.
- IITA. (2021). *Annual Report: Cassava Program*. Ibadan, Nigeria: International Institute Of Tropical Agriculture.

- IITA. (2023). Certified Cassava Stems And Productivity Enhancement In Nigeria. Ibadan, Nigeria: International Institute Of Tropical Agriculture.
- IPCC. (2022). Climate Change 2022: Impacts, Adaptation And Vulnerability. Working Group II Contribution To The Sixth Assessment Report Of The Intergovernmental Panel On Climate Change. Geneva, Switzerland: Intergovernmental Panel On Climate Change.
- Marshall, A. (1920). Principles Of Economics (8th Ed.). London: Macmillan And Co.
- National Population Census Report, 2006. National Bureau Of Statistics/NPC.
- National Population Commission. (2006). Population And Demographic Statistics Of Edo State. Abuja, Nigeria: National Population Commission.
- Ndiribe, C., Eze, A. And Onwualu, F. (2022). Household Size And Agricultural Resilience In Nigeria. *African Journal of Food Security*, 9(2); 31–42.
- NRCRI. (2020). Cassava Production And Research Updates. Umudike, Nigeria: National Root Crops Research Institute.
- Nwachukwu, A., Eze, P. And Uche, F. (2022). Social Resilience And Cooperative Participation. *Journal Of Rural Economics And Development*, 12(1); 29–42.
- Nwafor, C. And Ogbu, P. (2023). Land Ownership And Resilient Agricultural Practices. *African Journal of Agriculture And Environment*, 11(2); 40–52.
- Nweke, F. I., Spencer, D. S. C. And Lynam, J. K. (2002). The Cassava Transformation: Africa’s Best-Kept Secret. Michigan State University Press.
- Nweke, F. I., Spencer, D. S. C. And Lynam, J. K. (2002). The Cassava Transformation: Africa’s Best-Kept Secret. Michigan State University Press.
- Nwosu, F. And Ogbu, C. (2024). Crop Rotation And Fallow Management For Cassava Resilience. *Journal of Agricultural Sustainability In Africa*, 16(1); 41–53.
- Odeyemi, F. And Ojo, T. (2021). Cooperative Membership And Access To Inputs. *Nigerian Journal of Agricultural Cooperatives*, 10(2); 41–53.
- Ogunbameru, F., Adeyemo, J. And Akande, S. (2021). Land Tenure Security And Investment In Soil Management. *Journal of Rural Land Use Studies*, 10(3); 23–35.

- Ogunleye, B., Adekunle, R. And Bello, J. (2021). Farming Experience *And Cassava Yield Stability*. *Nigerian Journal of Agricultural Productivity*, 13(4); 88–99.
- Ogunniyi, L. (2008). Economics Of Cassava Production In Rural Nigeria. *Journal of Agricultural Management*, 4(2); 33–45.
- Ogunniyi, L. (2011). Profitability Analysis Of Smallholder Cassava Production. *African Journal of Agricultural Research*, 6(9); 2023–2032.
- Ogunniyi, L., Adeyemi, S. And Akintola, T. (2021). Age Distribution And Productivity Among Smallholder Cassava Farmers. *African Journal of Agricultural Research*, 16(4); 112–123.
- Okeke, F. And Amah, P. (2024). Market Access, Value Addition, And Adaptive Capacity In Cassava Farming. *Journal of Agricultural Economics And Policy*, 16(1); 33–44.
- Okike, E., Nwankwo, F. And Onwualu, A. (2016). Agricultural Resilience And Food Security Among Rural Households In Anambra State, Nigeria. *Journal Of Rural Development Studies*, 11(1); 20–34.
- Okoduwa, A. And Alufohai, G. (2020). Market Access And Infrastructural Constraints Of Cassava Farmers In Edo State, Nigeria. *Nigerian Journal of Agricultural Economics*, 11(1); 98–110.
- Okoli, E., Nwosu, P. And Okechukwu, F. (2020). Education And Adoption Of Improved Technologies Among Farmers. *Journal of Agricultural Extension*, 11(3); 67–78.
- Okonkwo, C., Eze, P. And Nwafor, A. (2021). Continuous Cropping, Soil Fertility, And Productivity. *Nigerian Journal of Sustainable Agriculture*, 13(3); 44–56.
- Oladipo, E., Lawal, O. And Salami, A. (2021). Climate Variability And Smallholder Farmers' Adaptation Strategies In Nigeria. *African Journal of Environmental Management*, 12(3); 112–124.
- Olajide, A., Bello, M. And Adeyemi, K. (2024). Middle-Aged Farmers And Rural Agricultural Labor In Nigeria. *International Journal of Food And Agriculture*, 18(1); 55–67.

- Olanrewaju, T. And Akintola, S. (2023). Household Labour And Food Security. *Journal of Rural Livelihoods*, 14(1); 18–30.
- Olayemi, J. And Fawole, O. (2021). Family Labor, Production Costs, And Resilience In Cassava Farming. *Nigerian Journal Of Agribusiness*, 10(1); 78–89.
- Olayide, O. E., Alabi, T. And Adeyemi, O. (2018). Constraints To Cassava Production And Value Addition Among Rural Farmers In Nigeria. *Journal Of Rural Studies And Development*, 5(1); 77–89.
- Olukosi, J. O. And Erhabor, P. O. (1988). Introduction To Farm Management Economics: Principles And Applications. Living Books Series, AB Publishers.
- Oluwatayo, I. And Ojo, T. (2022). Marital Status And Farm Productivity In Rural Nigeria. *Nigerian Journal Of Rural Studies*, 14(2); 60–72.
- Oluwatusin, F. And Shittu, T. (2014). Cassava Production And Household Food Security In Ekiti State, Nigeria. *Journal Of Agricultural Science*, 6(3); 101–112.
- Oluwole, A. And Daniel, F. (2022). Self-Propagation Of Cassava Stems And Yield Potential. *Nigerian Journal Of Crop Production*, 9(2); 34–46.
- Omotayo, A., Akinwale, J. And Adeoye, K. (2022). Family Labour And Income Stability In Cassava Farming. *Nigerian Journal Of Agribusiness*, 11(2); 29–40.
- Onyekachi, E. And Nwachukwu, F. (2021). Female Participation In Cassava Farming And Household Nutrition. *Nigerian Journal of Agricultural Economics*, 12(3); 78–89.
- Owolabi, J. And Eze, K. (2021). Extension Contact And Adoption Of Innovations In Cassava Farming. *African Journal of Extension Systems*, 12(3); 23–34.
- Salau, S., Adeoye, F. And Olatunji, A. (2019). Effect Of Cassava Products Consumption On Food Security Among Farming Households In Kwara State, Nigeria. *Nigerian Journal of Food Security*, 8(1); 14–27.
- Stuart, G., Okafor, P. And Edebiri, A. (2021).

- Tendall, D. M., Joerin, J., Kopainsky, B., Edwards, P., Shreck, A., Le, Q. B., ... & Krystalli, R. (2015). Food System Resilience: Defining The Concept. *Global Food Security*, 6; 17–23.
- Umeh, A., Eze, C. And Nwankwo, F. (2023). Farming Experience And Household Resilience Among Cassava Farmers. *Journal Of Agricultural Research And Development*, 15(2); 34–46.
- World Bank. (2023). Nigeria Development Update: Seizing The Opportunity. Washington, DC: World Bank..

# QUESTIONNAIRE

Phone number \_\_\_\_\_  
Name of respondent \_\_\_\_\_  
State \_\_\_\_\_  
Local Government Area \_\_\_\_\_  
Community \_\_\_\_\_

**INSTRUCTION: Please tick ( ✓)where applicable**

## SECTION A: SOCIO-ECONOMIC CHARACTERISTIC

1. Gender: Male [ 1 ] Female [ 2 ]
2. Age: \_\_\_\_\_(years) coded value
3. Marital Status: (a) Single [ 1 ] (b) Married [ 2 ] (c) Divorced [ 3 ]
4. Household Size: persons \_\_\_\_\_ . coded value
5. Highest Educational Level attained: (a) No formal Education [ 1 ] (b) First School living certificate [ 2 ] (c) Junior Secondary School [ 3 ] (d) Senior Secondary School [ 4 ] (e) OND/NCE [ 5 ] (f) HND/B.Sc. [ 6 ] Post Graduate [ 7 ]
6. Cassava farming experience \_\_\_\_\_(years)
7. Contact with extension agent. Weekly [ 1 ], Monthly [ 2 ], Quarterly [ 3 ] and Yearly [ 4 ]
8. Member of cooperative. (a) Yes [ 1 ] (b) No [ 2 ]
9. Annual income \_\_\_\_\_ coded value
10. Type of cropping: Sole cropping [ 1 ] Mixed cropping [ 2 ] others (specify) \_\_\_\_\_
11. What is the total quantity of cassava harvested from your farm land? (a) coded value (bags) (b) coded value (wheel barrows) (c) coded value (basins) (d) coded value (heaps).
12. Average cost of the total quantity of cassava harvested from your farm land? (a) coded value (bags) (b) coded value (wheel barrows) (c) coded value (basins) (d) coded value (heaps).

## SECTION B: Resilience index and Status.

Please tick ( ✓)where applicable

1. What is your yearly income generated from cassava production ? ₦ \_\_\_\_\_  
coded value
2. Source of credit \_\_\_\_\_ coded value
3. In the past 12 months, did you receive any credit (loan or grant) for farming? [ 1 ] Yes [ 2 ] No
4. Which of the following assets do you own or have access to?" [ 1 ] Land [ 2 ] Mobile phone [ 3 ] Bicycle/Motorbike [ 4 ] Tractor [ 5 ] Storage facilities
5. How often did you receive agricultural advice from extension agents in the past farming season? [ 1 ] Regularly (Monthly or more) [ 2 ] Occasionally (2–3 times a year) [ 3 ] Rarely (Once a year) [ 4 ] Never
6. Are you a member of any farmers' cooperative or group? [ 1 ] Yes [ 2 ] No
7. How easy is it for you to sell your cassava produce? [ 1 ] Very easy (good market nearby and regular sales) [ 2 ] Fair [ 3 ] Difficult [ 4 ] Very difficult/no access

8. Which of the following coping strategies have you used during difficult seasons (e.g., flood, drought, crop failure)? [ 1 ] Reduced food consumption [ 2 ] Sold assets [ 3] Borrowed money[ 4] Changed cropping pattern[ 5] Sought external help[ 6] Did nothing

**SECTION C: COSTS AND RETURNS OF CASSAVA PRODUCTION**

10. Cost of Labour for each Farm Operations in your farm per production cycle.

**1. Fixed input used:**

<b>ITEM</b>	<b>NUMBER</b> <u>coded</u> <u>value</u>	<b>UNIT COST</b> <u>coded value</u>	<b>Depreciation/ life span</b>
Cutlasses			
Hoe			
Spade/shovel			
Knife			
Head pan			
Files			
Wheel barrow			
Sprayer			
Motor bike			
Vehicle			
Processing machine			
Basins/baskets			
Others specify			

**2. Cost of variable inputs used in cassava production**

<b>Variable inputs</b>	<b>QUANTITY PER HECTARE</b> <u>coded</u> <u>value</u>	<b>COST PER UNIT</b> <u>coded</u> <u>value</u>
Cassava stem		
Fertilizer		
Herbicides		
Land		
Bags		
Fuel (Diesel)		
Water		
Peeling		
Processing		

**SECTION D: FACTORS INFLUENCING CASSAVA PRODUCTION**

16. What is your source of land? (a) Personal Purchase [ ] (b) Rent [ ] (c) Family Land [ ] (d) Others: \_\_\_\_\_
17. How much do you pay for the land per annum? ₦ \_\_\_\_\_ - \_\_\_\_\_
18. What is your source of cassava stems for planting? (a) Own farm [ ] (b) Market [ ] (c) Friends [ ] (d) Others: \_\_\_\_\_
19. What quantity of cassava stems do you use annually? \_\_\_\_\_ coded value
20. At what interval do you plant cassava? \_\_\_\_\_ coded value
21. What is the unit cost of cassava stems? ₦ \_\_\_\_\_ coded value
22. What type of land ownership do you have? (a) Personal purchase [ 1 ] (b) Rent [ 2 ] (c) Lease [ 3 ] (d) Family land [ 4 ]
23. How much do you pay for the land annually? ₦ \_\_\_\_\_ coded value
24. What is your source of labour? (a) Family [ 1 ] (b) Hired [ 2 ]
25. From the quantity of cassava harvested, what quantity was lost before sales? \_\_\_\_\_ coded value
26. How much do you sell your cassava produce? ₦ \_\_\_\_\_ coded value
27. How much do you earn from other activities you engage in? ₦ \_\_\_\_\_ coded value

**SECTION E: PRODUCTION CONSTRAINTS (Rank them in order of seriousness)**

Constraint	Very serious (5)	Serious (4)	Moderately serious (3)	Least serious (2)	Not serious (1)
Inadequate land/space					
Inadequate finance					
Pests and diseases					
Poor market access					
High cost of inputs					
Inadequate tools/equipment					
Poor road network					
The high cost of transportation					
The high cost of feeds					
Emergence of pests					
Outbreak of disease					
Lack of storage facility					
Inadequate water supply					
Lack of credit facility					
Unstable government policy					
Poor transportation facilities					
Theft					
Others (specify)					